Assessing Implicit Evaluative Attitudes Toward Violence in Male Students, Male
Community Members, and Men Convicted of Violent Offences

by

Sacha Maimone

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Sacha Maimone

Abstract

According to theory and research, evaluative attitudes are considered a central and precipitating factor in behaviour; however, this construct appears less focussed on within the violence literature. Evaluative attitudes can be classified as *explicit* (assessed with self-report scales) and *implicit*, often assessed using response latency measures. Some studies have reported a link between implicit evaluative attitudes toward violence, violent behaviour, and risk relevant constructs, whereas others have reported no link. The aim of this dissertation was to modify existing implicit procedures to assess implicit evaluative attitudes toward violence alongside other commonly assessed violent cognitions. Three response latency measures were administered: a traditional Implicit Association Test (IAT), Personalized IAT, and Relational Responding Task. A Pre-test was conducted to determine the optimal categories and stimuli to use for the implicit measures ($N = 207$ online adult males). The relationships between implicit evaluative attitudes toward violence, explicit evaluative attitudes toward violence, beliefs regarding violence, and violent behaviour were assessed among three samples of adult males: undergraduate students ($N = 156$) and community members ($N = 95$; Study 1), men convicted of violent offences ($N = 33$; Study 2), and community members recruited online ($N = 627$ and 820 ; Study 3). Overall, implicit evaluative attitudes toward violence were more strongly related to beliefs regarding violence than explicit evaluative attitudes toward violence. More positive implicit evaluative attitudes toward violence were consistently related to greater likelihood of violence. Explicit evaluative attitudes toward violence and beliefs regarding violence were moderately to strongly associated with one another, as well as violent outcomes. Using regression analyses, implicit evaluative attitudes toward

violence consistently explained additional variance in likelihood of violence over explicit/self-report violent cognitions, as well as moderated the relationships between explicit/self-report violent cognitions and some violent outcomes (e.g., likelihood in Studies 1 and 3 and violence risk in Study 2). In Study 3, results from an exploratory factor analysis (EFA) demonstrated that each measure assessed its own cognitive construct regarding violence. Most factors from the EFA were significantly and incrementally related to violent outcomes. These findings will advance understanding of violent cognitions, their assessment, and role in violent behaviour.

Keywords: implicit evaluative attitudes, explicit evaluative attitudes, beliefs regarding violence, violent cognitions, violent behaviour

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Assessing Implicit Evaluative Attitudes Toward Violence in Male Students, Male Community Members, and Men Convicted of Violent Offences

In 2018, 82.4% of overall crimes reported to police were violent in nature – a 1% increase over 2017 (Moreau, 2019). Additionally, in 2019, the overall severity of violent crime increased 7% from 2018, with a Violent Crime Severity Index (i.e., this is a weighted average in which more serious offences are given more weight and is calculated by summing the weighted offences, dividing by the population, and standardizing the resulting value) of 89.7 reported by Statistics Canada (Moreau et al., 2020). Overall, 678 homicides were reported to police – 20 more than in 2018 (Moreau et al., 2020). Moreover, the rate of violent offences specific to firearms increased by 21% over 2018 (i.e., discharging a firearm with intent increased by 28%, pointing a firearm increased by 17%, and using a firearm in the commission of an indictable offence increased by 14%; Moreau et al., 2020). Given the pervasiveness of violent crime in recent years, violent behaviour evidently poses a significant social and public health problem. According to many theories of violent behaviour, cognitive constructs such as neutralizations, excuses, and justifications are considered to play a central role in the perpetration of violence (e.g., Anderson & Bushman, 2002; Andrews & Bonta, 2010; Bandura, 1973). The role of these cognitive constructs in antisocial, including violent, behaviour has been widely examined in prior research (Brugman et al., 2015), confirming its importance; however, a cognitive construct that seems to have not received as much attention in the theoretical and empirical literature on violence is the construct of *evaluative attitudes* (for a review see Hermann & Nunes, 2016; Hermann et al., 2018; Nunes et al., 2015; Nunes, Pedneault, & Hermann, 2021). Evaluative attitudes are typically defined as evaluations of

psychological objects such as people, things, or behaviours (e.g., Ajzen, 2001; Eagly & Chaiken, 1993, 2007; Fazio, 2007). Other widely cited definitions of evaluative attitudes include (a) “a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor” (Eagly & Chaiken, 1993, p. 1), (b) an association between a psychological object and an evaluation of that object (Fazio, 2007; see also Fazio, 1995; Fazio et al., 1982), and (c) “the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question” (Ajzen, 1991, p. 188).

The construct of evaluative attitudes is considered an important, and often causal, factor when explaining a variety of behaviours outside the realm of violence (e.g., smoking, eating, exercise, etc.) (e.g., Ajzen, 1991, 2001). For instance, previous meta-analyses have found medium ($r = .38$, $k = 88$; Kraus, 1995) to large ($r = .52$, 95% confidence interval = $[.49, .54]$, $N = 4,598$; Glasman & Albarracín, 2006) average correlations between evaluative attitudes and subsequent behaviour.

Social psychological theories suggest that evaluative attitudes can be classified as *explicit* and *implicit* (see Gawronski & Bodenhausen, 2006). Explicit evaluative attitudes are defined as deliberative propositions about a psychological object and are assessed using self-report scales. Implicit evaluative attitudes are defined as immediately activated evaluations of psychological objects and are often assessed using response latency measures. Further, research has found that both implicit and explicit evaluative attitudes independently predict behaviour (Cameron et al., 2012). Given this review, there appears to be an evident gap within the violence literature regarding the assessment of evaluative attitudes toward violence. In addition, prior research stresses the importance of distinctively assessing implicit and explicit evaluative attitudes, as they provide

complementary information in predicting behaviour (Cameron et al., 2012). Following from this, the current dissertation aims to develop a better understanding of the relationship between evaluative attitudes and violent behaviour, by distinctively assessing implicit evaluative attitudes toward violence, from other explicit/self-report violent cognitive constructs, and their relationship to violent behaviour.

Chapter 1: Social Psychological Theories of Evaluative Attitudes

Theory of Planned Behaviour

Ajzen (1991) proposed that performance of a behaviour is determined by people's intentions to perform the behaviour and their perceived behavioural control over the behaviour. Intentions to perform the behaviour is determined by one's attitude towards the behaviour, subjective norms concerning the behaviour, and belief in one's ability to perform the behaviour (i.e., behavioural control or self-efficacy; see Figure 1). Attitudes are thought to form when one links probable outcomes to the behaviours being contemplated. These outcomes are evaluated either positively or negatively. In this sense, the attitudes implicated in this model are evaluative in nature. More favourable (i.e., more positive) evaluative attitudes and subjective norms towards a behaviour, as well as greater behavioural control (i.e., greater self-efficacy to perform the behaviour), results in greater intention to perform the behaviour. Greater intention increases the likelihood that the behaviour will be acted out.

Figure 1

Model of Ajzen's Theory of Planned Behaviour

Note. Adapted from “The Theory of Planned Behavior,” by I. Ajzen, 1991,

Organizational Behavior and Human Decision Processes, 50, p. 182

(<https://doi.org/10.1080/08870446.2011.613995>). Copyright 1991 by Academic Press Inc.

Motivation and Opportunity as Determinants (MODE) Model

Fazio (1990) defined evaluative attitudes as object-evaluation associations that are stored in memory and stated that there are two modes of processing through which they become activated: *automatic* and *deliberative*. This concept of dual processing modes through which evaluative attitudes can be activated mirrors the implicit/explicit distinction put forth by other theorists within this literature (e.g., Gawronski & Bodenhausen, 2006). Fazio (1990) also proposed that evaluative attitudes are formed through repeated exposure to an attitude object and become strengthened over time. The type of behavioural response that occurs depends on what processing mode is activated. For instance, Fazio (1990) stated that stronger evaluative attitudes are more likely to be immediately activated in the presence of an object for which it is held, and thus, are more likely to be activated through the automatic processing mode. At this stage, if there is lack of motivation or opportunity to deliberate on the evaluative attitude, a consistent behavioural response will be produced (Fazio, 1990; 1995; see Figure 2). In contrast, when an evaluative attitude is weak (e.g., has never been encountered before), there may be no evaluative attitude already stored in memory and automatic activation will not occur. This will result in the attitude being activated through the deliberative processing mode. When the deliberative processing mode is activated, one uses external information available to evaluate the object. In addition, sometimes a strong evaluative attitude may be deemed as inappropriate or invalid (e.g., in opposition with societal norms) if motivation and opportunity to deliberate on the evaluative attitude occurs. If this occurs,

the initially activated evaluative attitude may be inconsistent with the behavioural response. Considering this, implicit evaluative attitudes may be more likely to influence more spontaneous behaviour. Further, measures designed to assess implicit evaluative attitudes (i.e., response latency measures), may be better able to capture evaluative attitudes that are activated through an automatic processing mode because these procedures may result in less opportunity to deliberate on activated evaluative attitudes.

Figure 2

Schematic Diagram of Fazio's MODE Model

Note. From “Multiple Processes by Which Attitudes Guide Behavior: The MODE Model as an Integrated Framework,” by R. H. Fazio, in M. P. Zanna (Ed.), *Advances in Experimental Social Psychology* (Vol. 23, p. 84), 1990, New York: Academic Press ([https://doi.org/10.1016/S0065-2601\(08\)60318-4](https://doi.org/10.1016/S0065-2601(08)60318-4)). Copyright 1990 by Academic Press Inc.

The Meta-Cognitive Model (MCM)

In the meta-cognitive model (MCM; Petty et al., 2007) evaluative attitudes are believed to be stored in memory and they can vary in strength. Once an evaluative attitude is activated from memory, it may be modified according to the context in which it was activated. The context may determine whether the activated evaluative attitude

motivates behaviour. This premise is consistent with the MODE model in which an activated evaluative attitude can be modified if external information is deliberated on and, based on this deliberation, it is considered invalid or inappropriate. In this case, a behavioural response will be produced that is inconsistent with the initially activated evaluative attitude.

In the MCM it is also hypothesized that evaluative attitudes are stored in memory along with “validity tags” (Petty et al., 2007, p. 663). Validity tags are thought to effect whether an evaluative attitude is used through the process of meta-cognition, which is defined as “thoughts about thoughts or thought processes” (Petty et al., 2007, p. 663). More specifically, people are believed to tag their evaluative attitudes as true or false. These validity tags are stored in memory along with the accompanying evaluative attitude. Further, the strength of the association between evaluative attitudes and their assigned validity tags is believed to vary and this determines whether the validity tag is activated along with the evaluative attitude. To illustrate, if there is a strong association between an evaluative attitude and an assigned validity tag, the validity tag (e.g., true) will be activated along with the evaluative attitude (e.g., violence is good) when an associated object is encountered. The authors argued that assigning validity tags to evaluative attitudes and storing them in memory aids in making the decision-making process more efficient. They also proposed that, similar to the evaluative attitudes stored in memory, these validity tags may be context specific. Therefore, different validity tags (e.g., true or false) may be activated along with the same evaluative association (e.g., violence is good) in different contexts. This may occur through experience and learning to associate an invalidity tag (e.g., false) with a particular evaluative attitude over time in

certain contexts. It is also proposed that evaluative attitudes that are not linked to validity tags are believed to be true until evidence becomes available that invalidates (or validates) them; however, the authors state that motivation is required in order to invalidate a stored evaluative attitude.

In the MCM, an argument is also made for why measures designed to assess implicit evaluative attitudes (i.e., response latency measures) may diverge from measures designed to assess explicit evaluative attitudes (i.e., self-report scales). It is proposed that response latency measures assess evaluative attitudes without activating assigned validity tags. In contrast, self-report measures are more likely to activate validity tags along with the associated evaluative attitude. Therefore, if one holds a strong positive evaluative attitude, but it is linked to an invalidity tag, response latency measures will likely activate the positive evaluative attitude. Whereas self-report measures will likely activate a negative evaluative attitude because the assigned invalidity tag is more likely to be activated along with the evaluative attitude. The authors proposed reasons for why this may occur. First, they argue that response latency measures are less likely to activate validity tags because they are a form of meta-cognition and are not linked to the object in question, but rather linked to the evaluative attitude; therefore, it will take longer for validity tags to be activated. This suggests that response latency measures may not be able to capture the validity tag due to the longer retrieval time needed. Second, they argue that often the associations between validity tags and evaluative attitudes are not as strong as the associations between evaluative attitudes and associated objects, making the former less likely to be immediately activated.

In conclusion, evaluative attitudes are consistently implicated in theories from the social psychological literature linking attitudes to behaviour. Many of these theories also suggest that there are two separate and underlying cognitive systems through which evaluative attitudes may influence behaviour (Fazio, 1990; Gawronski & Bodenhausen, 2006; Petty et al., 2007); therefore, evaluative attitudes can be divided into two, likely distinct, cognitive constructs—implicit evaluative attitudes and explicit evaluative attitudes—which may differentially influence behaviour (Szlachcic et al., 2015; Jeon et al., 2017). Although much theory and research focusses on the assessment of these cognitive constructs within the general field of psychology, outside of the violence literature, these constructs appear largely absent from theory and research on violent cognition. However, the overall construct of *violent cognition*, often excluding evaluative attitudes, is regarded as important in theory, research, and practice in forensic psychology and is often considered when estimating the risk of violent re-offending (e.g., Anderson & Bushman, 2002; Andrews & Bonta, 2010; Bandura, 1973). As evidenced by the theories covered below, the conceptualization and measurement of violent cognition appears to encompass several potentially distinct constructs such as justifications, excuses, rationalizations, neutralizations, beliefs, etc. (for a review see Hermann & Nunes, 2018; Hermann et al., 2018; Nunes et al., 2015; Nunes, Pedneault, & Hermann, 2021), which may also be differentially related to violent behaviour. Untangling this network of cognitive constructs and their relationship to violence is important because it will inform future research regarding the underlying cognitive mechanisms that influence violent behaviour and, in turn, will further understanding of the offence cycle of violence.

Chapter 2: Theories and Models of Violence

In this section, I provide a review of some of the prominent theories and models that have been developed to describe the link between cognitive constructs regarding violence and violent (or aggressive) behaviour. Generally, these theories and models focus on the relationship between cognitive constructs such as justifications and excuses for violence and their link to violent behaviour and thus, focus on how these cognitive constructs are implicated in the perpetration of violence. As evidenced by my review, the mention of evaluative attitudes is largely absent from these theories and models; nonetheless, they help illustrate the potential link between several cognitive constructs regarding violence and violent behaviour.

Neutralization Theory

Sykes and Matza (1957) proposed that people engage in criminal behaviour through the use of neutralizations such as excuses and justifications. Examples of neutralizations include “crime is necessary for me to survive”, or “the victim had it coming and got what they deserve”. In this sense, neutralizations are comprised of cognitive constructs that facilitate the perpetration of criminal behaviour. The authors postulated that people neutralize their crimes through using justifications and excuses for their behaviour in order to reduce feelings of dissonance (e.g., shame or guilt) that arise through engaging in behaviours that are in opposition to their internally held values and beliefs. Therefore, according to the neutralization theory, cognitive constructs such as excuses and justifications lead to persistence in a criminal lifestyle by minimizing the guilt felt due to committing violent acts.

Some researchers have criticized Sykes and Matza's (1957) theory, stating that neutralizations are not needed among those who engage in criminal, or violent, behaviour because these individuals would have a general approval of violence (i.e., that it is not wrong) and thus, hold cognitions that are supportive of such behaviours, regardless of the circumstances (Cloward & Ohlin, 1960; Cohen, 1955; Hindelang, 1970; Hindelang, 1974; Miller, 1958). In this case, neutralizations, such as justifications and excuses, are not needed to reduce any dissonance experienced by behaving violently because no dissonance is experienced among these individuals (Cloward & Ohlin, 1960; Cohen, 1955; Miller, 1958). However, Sykes and Matza (1957) argue that people generally are disapproving of violence and thus, develop specialized justifications for their behaviours in order to engage in violence and continue to do so (also see Cressey, 1953). Agnew (1994) found further support for the neutralization theory by examining neutralizations of violence (i.e., assessed by four self-report items dealing primarily with techniques of neutralization known as denial of the victim and denial of responsibility) distinctively from general approval of violence (i.e., item asked, "How wrong is it for someone your age to hit or threaten to hit someone without any reason?" and was rated on the following response categories: [1] *very wrong*, [2] *wrong*, [3] *a little bit wrong*, and [4] *not wrong at all*) in a nationally representative sample of 1,626 youth aged 11 to 17 years. Relationships between variables, as well the moderating role of general approval of violence on the relationships between neutralizations of violence and violent behaviour, were examined cross-sectionally and longitudinally. Agnew (1994) reported that only 0.5% of participants selected *not wrong at all* to the general approval of violence item and 93% selected either *wrong* or *very wrong* (7% selected *a little bit wrong*). Therefore,

almost all participants had a general disapproval of violence. However, a large percentage of participants accepted neutralizations of violence, with 54% accepting at least one neutralization (i.e., out of four), 30% accepting at least two, and 13% accepting at least three (Agnew, 1994). Of note, a moderate and positive relationship was observed between one's acceptance of neutralization techniques for violence and one's general approval of violence ($r = .34, p < .01$). Results of the moderated regressions assessing whether the relationship between neutralizations and violent behaviour varies depending on whether one has a general disapproval or approval of violence found that when this effect was observed cross-sectionally, significant main effects were found for neutralizations of violence ($b = .74$) and approval of violence ($b = .19$), as well as a significant interaction between these two variables, on violent behaviour. After probing the interaction, the strongest relationship between more acceptance of neutralizations of violence and more violent behaviour was observed for those who were more approving of, or indifferent to, violence. When these effects were observed longitudinally, only the main effect associated with neutralizations of violence was significantly related to subsequent violence, assessed one year later ($b = .20$, and $b = -.09$ for approval of violence), as well as the interaction between neutralizations of violence and approval of violence. After probing the interaction, the strongest relationship between more acceptance of neutralizations of violence and subsequent violent behaviour was found for those who were more disapproving of violence, which contrasts the results of the cross-sectional analysis (Agnew, 1994). Agnew's longitudinal results show support for the Neutralization Theory because they suggest that those who generally disapprove of violence would rely more on neutralization techniques for violence to reduce the

dissonance experienced by engaging in violent behaviour; this, in turn, would cause the behaviour to persist in the future.

The Neutralization Theory has been successfully applied to many forms of criminal and/or violent behaviour including sexual offending. For instance, Bohner et al. (1998) suggested that rapists endorse a cognitive construct that is referred to as rape myths (or cultural stereotypes about rape) that are used as neutralizations. They stated that rape myths lead to the commission of rape because they are conducive to such deviant behaviours. They also proposed that rape might be prevented by showing rapists that these rape myths are not realistic interpretations and by replacing them with cognitions that are more realistic and not conducive to crime.

The General Aggression Model (GAM)

Anderson and Bushman (2002) proposed that cognitive factors within the individual, referred to as person inputs, influence aggressive and/or violent behaviour. They suggested that person inputs consist of enduring traits, as well as many cognitions, such as motivations, attitudes, beliefs, and other knowledge structures. It is also proposed that situation inputs, such as less enduring cognitive, affective, and arousal states that arise in certain situational contexts, also influence violent behaviour along with the above cognitions. Person (e.g., cognitions) and situation inputs influence one's internal states, which in turn, influence one's behaviour. Therefore, violent behaviour occurs when person and situation inputs create internal states that are conducive to violence.

Anderson and Bushman (2002) also hypothesized that there are two appraisal processes involved in violence. These processes consist of immediate appraisal and reappraisal. Immediate appraisal occurs more rapidly; for instance, immediate appraisal

may be relied on if a threat is perceived and one must appraise the situation quickly. In this case, violent behaviour may be engaged in immediately following the threat if the immediate appraisal interprets the situation or person as threatening. However, if there are enough cognitive resources and time available, this may lead to reappraisal of the situation or person. During reappraisal, the immediate appraisal (e.g., act in a violent manner in response to the situation) may be considered inappropriate for the situation and the individual may choose to act differently (e.g., act in a non-violent manner in response to the situation). Therefore, this model proposes that if there is enough time and cognitive resources available, immediate responses may be overridden and this may lead to acting inconsistently with one's initial cognitions regarding violence.

Chapter 3: Cognitive Constructs Regarding Violence

As is evidenced by the review of prominent violence theories and models outlined above, evaluative attitudes toward violence often appear absent from the theoretical literature on violence. Much of the literature focusses on cognitive constructs such as excuses, justifications, and rationalizations, among others. These will be referred to here and throughout as general *beliefs regarding violence* in an attempt to use a more inclusive term given that it is often unclear whether these, as well as other cognitive constructs mentioned in the violence literature, contain an evaluative component (e.g., they seem to be used most often to minimize the dissonance [e.g., shame, guilt, etc.] experienced by the perpetration of behaviours that are generally not viewed as socially acceptable). Although these cognitive constructs are likely also important for understanding the perpetration of violence, the lack of focus on evaluative attitudes appears to be an evident and important gap that needs addressing within the violence literature given that most prominent behavioural theories from the social psychological literature focus on evaluative attitudes as an important motivational, and often causal, factor for a variety of behaviours. Further, distinctly assessing these cognitive constructs is important because they may be differentially related to violence. For instance, some cognitive constructs may develop post-offence and may be either more important for the persistence of violence or have little, if any, causal influence on violent behaviour, whereas other cognitive constructs may develop pre-offence and may be more important for the initiation of violence (i.e., more related to future behaviours, e.g., Dean et al., 2007; Maruna & Copes, 2005). Preliminary research suggests that evaluative attitudes toward violence may be distinct from measures designed to assess beliefs regarding violence

(e.g., Criminal Attitudes towards Violence Scale; Polaschek et al., 2004, Violence Scale of the Measures of Criminal Attitudes and Associates; Mills et al., 2002). For instance, research by my colleagues and I found that evaluative attitudes toward violence are correlated but distinct from other cognitive constructs commonly assessed within the violence literature and that they were independently associated with violent behaviour (Nunes et al., 2015; Nunes, Pedneault, & Hermann, 2021). These findings suggest that both evaluative attitudes toward violence and these other cognitive constructs may be relevant for understanding violent behaviour because they may play different roles in violence.

In terms of research on violence, most studies have focused on the assessment of general beliefs regarding violence using self-report measures. Often the items within these measures seem to assess several different cognitive constructs regarding violence (e.g., excuses, justifications, attitudes, rationalizations, etc.). One such measure is the Violence scale of the Measures of Criminal Attitudes and Associates (MCAA-V; Mills et al., 2002). To illustrate, consider the following items from the MCAA-V, “It is reasonable to expect a fight from someone you cheated”, “Someone who makes you very angry deserved to be hit”, and “It’s understandable to hit someone who insults you” (Mills et al., 2002). These items may or may not reflect evaluative attitudes and rather, some may more closely reflect excuses and justifications regarding violence. Below is a review of the research conducted to date from the forensic psychological literature, that assesses the relationship between beliefs regarding violence and violent behaviour.

Beliefs Regarding Violence

There is some evidence to suggest that beliefs regarding violence are important for understanding violent behaviour. For instance, higher scores on the MCAA-V, corresponding to more violence-supportive beliefs, were significantly and moderately correlated with more prior violent behaviour in a sample of 568 male undergraduate students ($r = .37$; Nunes et al., 2015), as well as weakly correlated with greater violent recidivism in another sample of 144 incarcerated males from a federal correctional institution ($r = .19$; Mills et al., 2004). In addition, a recent study by Maimone and Nunes (2020) examined the relationship between beliefs regarding violence using the Violence scale of the Measures of Criminal Attitudes and Associates – Revised (MCAA-R-V; Mills, 2007) and self-reported prior violent behaviour among a sample of 125 male undergraduate students from Carleton university. This study also assessed the relationship between the scores on the MCAA-R-V and self-reported risk of violent behaviour among a sample of 19 men who had been charged with violent and non-violent offences. Analyses revealed that higher scores on the MCAA-R-V were significantly and moderately correlated with self-reported prior violent behaviour ($r = .31, p < .01$) among male students. More violence-supportive beliefs were also significantly and strongly associated with self-reported risk of violent behaviour ($r = .60, p < .01$) among males who had been charged with violent and non-violent offences.

A study conducted by Kelty et al. (2011) used a violent cognition measure called the Justification for Violence Scale (JFV) to assess justifications for violence. The JFV is a 14-item self-report questionnaire that includes social situations in which violence may be justifiably used or not. Some examples of items contained within this measure are “If

people threaten my family/friends they deserve to get hurt” and “Sometimes hitting people is the only way to get justice”. A 5-point response scale is used ranging from (1) ‘*strongly agree*’ to (5) ‘*strongly disagree*’. Higher scores indicate a greater willingness to justify the use of violence in the situations provided; in other words, higher scores indicate more violence-supportive beliefs. The authors also assessed the relationship between this measure and the physical aggression scale of the Aggression Questionnaire (AQ; Buss & Perry, 1992). The AQ is a self-report questionnaire consisting of 29 items assessing participants’ level of verbal aggression, physical aggression, hostility, and anger; however, only results pertaining to physical aggression scales are reviewed here. Items, such as “if somebody hits me, I hit them back”, are rated on a 5-point Likert scale ranging from (1) ‘*extremely not like me*’ to (5) ‘*extremely like me*’. Higher scores indicate greater physical aggression. Using 134 women and 76 men, Kelty et al. (2011) found that more violence-supportive beliefs, as assessed by scores on the JFV, were associated with more physical aggression among men ($r = .62, p < .01$) and women ($r = .58, p < .01$). Kelty et al. (2011) conducted a subsequent study assessing whether beliefs regarding violence, as assessed by the JFV, were higher (i.e., more justification for violence) among men who were convicted of non-sexual, violent offences, in comparison to samples of male and female students (96 males and 139 females), as well as male and female community members (108 males and 100 females). They found that males convicted of non-sexual, violent offences, endorsed significantly more violence-supportive beliefs, as indicated by higher scores on the JFV ($M = 45.95, SD = 12.26$), in comparison to male students ($M = 34.54, SD = 9.27$), female students ($M = 25.81, SD = 6.32$), male

community members ($M = 22.00$, $SD = 5.45$), and female community members ($M = 23.74$, $SD = 6.08$), $F(4, 525) = 112.19$, $p < .001$; $\eta^2 = .46$.

Anderson et al. (2006) used the Velicer Attitudes Toward Violence Scale (VATVS) to assess beliefs regarding violence among a sample of 817 students enrolled in introductory psychology courses at Iowa State University. The VATVS is a self-report questionnaire consisting of the following four factors: Violence in War (e.g., “Killing civilians should be accepted as an unavoidable part of war”), Penal Code Violence (e.g., “Violent crimes should be punished violently”), Corporal Punishment of Children (e.g., “A parent hitting a child when he/she does something bad on purpose teaches the child a good lesson”), and Intimate Violence (e.g., “It is all right for a partner to choke the other if insulted or ridiculed”). Items are responded to on a 5-point Likert scale with higher scores indicating more violence-supportive beliefs. Participants also completed the physical aggression subscale of the AQ (Buss & Perry, 1992), as well as the violence subscale of the National Youth Survey (NYS; Elliot et al., 1986). The NYS is an interview style questionnaire, comprised of an extensive set of questions, including items pertaining to the extent of participants’ offense behaviour within the past year (Elliot et al., 1986). Specifically, the violence subscale consists of 10 items for which participants are asked to indicate how often they engaged in a variety of physically aggressive behaviours within the past year by selecting a response on an 11-point Likert scale ranging from (1) ‘*0 times in the last year*’ to (11) ‘*more than 27 times in the last year*’ (Elliot et al., 1986). Only higher scores on the intimate partner violence subscale of the VATVS were significantly related to more violence, as assessed by scores on the violence scale of the NYS ($b = 0.43$, $p < .05$). Higher scores on all subscales of the

VATVS were significantly related to more physical aggression on the AQ (i.e., Violence in War, $b = 0.43, p < .05$; Penal Code Violence, $b = 0.10, p < .05$; Corporal Punishment of Children, $b = 0.25, p < .05$; and Intimate Violence, $b = 0.33, p < .05$).

Polaschek et al. (2004) used the Criminal Attitudes to Violence Scale (CAVS) to assess beliefs regarding violence among 143 convicted males who were currently serving sentences in Wellington, New Zealand. The CAVS is a 20-item self-report measure designed to assess beliefs related to non-sexual, physically violent behaviours. Items, such as “Lots of people are out to get you so you have to be violent”, are rated on a 5-point Likert scale ranging from (1) ‘*strongly disagree*’ to (5) ‘*strongly agree*’; therefore, scores can range from 20 to 100 with higher scores indicating more violence-supportive beliefs. The physical aggression subscale of the AQ (Buss & Perry, 1992) was used to assess the extent to which participants were physically aggressive. Scores on this subscale range from 9 to 45, with higher scores indicating more physical aggression. More violence-supportive beliefs, as assessed by scores on the CAVS, were strongly associated with more physical aggression, as assessed by scores on the AQ-PA, $r = .75, p < .01$. They also found that those who had a current or previous conviction for violent offences had significantly more violence-supportive beliefs, as assessed by higher scores on the CAVS ($M = 58.8, SD = 19.7$), than those who did not have a current or previous conviction for violent offences ($M = 49.0, SD = 19.5, d = 0.50$). In addition, they found that those who had one or more violent index offences had significantly more violence-supportive beliefs ($M = 61.2, SD = 19.3$) than those who did not have one or more violent index offences ($M = 52.8, SD = 21.2, d = 0.41$). Polaschek et al. (2004) replicated this study with a sample of 155 convicted males currently serving sentences in Wellington, New

Zealand. Results from the previous study were replicated; males who had a current or previous conviction for non-sexual, violent offences had significantly more violence-supportive beliefs, as assessed by higher scores on the CAVS ($M = 56.8$, $SD = 19.3$), in comparison to those who did not have a current or previous conviction for non-sexual, violent offences ($M = 41.8$, $SD = 21.3$, $d = 0.74$). In addition, those who had one or more violent index offences had significantly more violence-supportive beliefs ($M = 57.7$, $SD = 20.3$) in comparison to those who did not have violent index offences ($M = 51.0$, $SD = 20.0$).

Hutchings et al. (2010) also used the CAVS to assess beliefs regarding violence in a sample of 28 male undergraduate students from a university in the Southeast of England (age ranged from 18 to 24 years with a mean age of 19.68 years). The authors compared those who were physically aggressive (i.e., who scored in the top 25% of the physical aggression subscale of the AQ) to those who were not physically aggressive (i.e., who scored in the bottom 25% of the physical aggression subscale of the AQ) on the CAVS. As hypothesized, those who were physically aggressive had significantly more violence-supportive beliefs, as assessed by higher scores on the CAVS ($M = 55.29$, $SD = 11.46$), in comparison to those who were not physically aggressive ($M = 43.64$, $SD = 10.23$, $t(1, 26) = -2.837$, $p = .009$).

A recent study by Nunes, Pedneault, Hermann, and Fraser (2021) examined the relationship between scores on the MCAA-R-V and the CAVS, assessing beliefs regarding violence, and self-reported prior violent behaviour, as well as propensity for violence, in a sample of 342 men recruited online. More violence-supportive beliefs, as assessed by scores on the MCAA-R-V and CAVS, were significantly and moderately

associated with more prior violent behaviour ($r = .40, p < .001$ for the MCAA-R-V and $r = .42, p < .001$ for the CAVS). Further, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V and CAVS, were significantly and strongly associated with greater propensity for violence ($r = .61, p < .001$ for the MCAA-R-V and $r = .57, p < .001$ for the CAVS).

Warnock-Parkes et al. (2008) used the Maudsley Violence Questionnaire (MVQ; Walker, 2005) to assess the relationship between beliefs regarding violence and violent convictions, as well as violent institutional misconducts, among 64 convicted males, diagnosed with mental health illnesses, who were currently serving their sentences in 7 different secure forensic mental health units. The MVQ is a 56-item self-report questionnaire consisting of two subscales: Machismo (42 items) and Acceptance of Violence (14 items). Items are designed to assess the following cognitive constructs regarding violence: beliefs, acceptance of rules, distortions, and attributions. More specifically, the Machismo subscale is designed to assess violence that is perceived to be justified in response to a perceived threat, and that is related to manliness, strength, and assertiveness, whereas the Acceptance of Violence subscale is designed to assess the extent to which participants believe that violence is justified in everyday life. Higher scores on both MVQ subscales indicated more violence-supportive beliefs. Official files were coded for frequency of violent incidents, including violent convictions and violent institutional misconducts, which served as the outcome measures for violent behaviour. Warnock-Parkes and colleagues found that higher scores on the Machismo subscale of the MVQ showed small to moderate associations with more violent convictions ($r = .25, p = .045$) and more violent institutional misconducts ($r = .36, p = .004$). In addition,

higher scores on the Acceptance of Violence subscale showed small to moderate associations with more violent institutional misconducts ($r = .29, p = .019$), but were not associated with violent convictions ($r = .07, p = .570$).

Evaluative Attitudes Toward Violence

As outlined above, evaluative attitudes can be further divided into implicit and explicit (e.g., Gawronski & Bodenhausen, 2006). Implicit evaluative attitudes are considered immediately activated and are often measured using response latency measures such as the Implicit Association Test (IAT; Greenwald et al., 1998), whereas explicit evaluative attitudes are considered deliberative and are often measured using self-report scales such as semantic differential items or feeling thermometers (Jouriles et al., 2013; Werner & Nixon, 2005). Therefore, it is believed that the resulting explicit evaluative attitude is the result of effortful and conscious thought (Dienes & Perner, 1999). In contrast, evaluative attitude theories from the social psychology literature suggest that implicit evaluative attitudes are activated immediately in the presence of an attitude object and will influence behaviour when said evaluative attitude is strong and/or motivation and opportunity to deliberate on the activated evaluation is low (MODE; Fazio, 1990; see Olson & Fazio, 2009 for a review; Associative-Propositional Evaluation [APE] model; Gawronski & Bodenhausen, 2006; MCM; Petty et al., 2007). Therefore, implicit evaluative attitudes are believed to lack conscious thought and are a result of a held “knowledge structure” in memory that is the culminated outcome of one’s various experiences throughout life regarding a particular attitude construct (see Greenwald & Banaji, 1995; Jeon et al., 2017). Implicit evaluative attitudes have been studied extensively within social psychology to assess a wide variety of constructs with some

success. For instance, Greenwald et al. (2009) found a small significant effect ($r = .27$, $k = 184$, $N = 14,900$) between implicit evaluative attitudes, stereotypes, self-concept, and self-esteem, measured using IAT measures and criterion variables (behaviour, judgments, or physiological responses).

Research has found that implicit and explicit evaluative attitudes are associated with relevant criterion variables (Greenwald et al., 2009), and are intercorrelated (Hofmann et al., 2005) but distinct constructs (e.g., Nosek & Smyth, 2007). Also, consistent with theory, previous meta-analyses have found that both implicit and explicit evaluative attitudes provide unique and complementary information that predicts behaviour (e.g., Cameron et al., 2012; Glasman & Albarracín, 2006; Greenwald & Farnham, 2000; Kraus, 1995; Nosek & Smyth, 2007; for reviews, see Nunes et al., 2015, 2018; Nunes, Pedneault, & Hermann, 2021). This suggests that the assessment of implicit and explicit evaluative attitudes distinctly may be required to fully understand the nature of the relationship between evaluative attitudes and behaviour.

To date, there has been little attention to evaluative attitudes toward violence in the theoretical and empirical literature and even less attention to implicit evaluative attitudes toward violence (Maimone & Nunes, 2020; Nunes et al., 2015, 2018; Nunes, Pedneault, & Hermann, 2021). In addition, mixed results have been found within the few studies that have assessed evaluative attitudes toward violence; however, there is some evidence to suggest they may be relevant. Below is a review of the empirical literature to date that assesses evaluative attitudes (implicit and explicit) toward violence specifically.

Explicit Evaluative Attitudes Toward Violence

Nunes et al. (2015) examined the relationship between explicit evaluative attitudes toward violence and violent behaviour in a sample of 568 male undergraduate students. Explicit evaluative attitudes toward violence were assessed with a series of semantic differential scales. In this procedure, participants were required to evaluate *violence* on seven 7-point scales ranging from *very negative* to *very positive*, *extremely not fun* to *extremely fun*, *very unpleasant* to *very pleasant*, *very wrong* to *very right*, *very bad* to *very good*, *very not enjoyable* to *very enjoyable*, and *very immoral* to *very moral*. In this study, prior violent behaviour was assessed using a self-report measure that asked participants a series of eight items regarding their involvement in violent behaviour since the age of 16. We found that more positive explicit evaluative attitudes toward violence were significantly and moderately associated with more self-reported prior violent behaviour ($r = .37$).

A more recent study (Maimone & Nunes, 2020) examined the relationship between explicit evaluative attitudes toward violence and self-reported prior violent behaviour among a sample of 122 male undergraduate students from Carleton University. Explicit evaluative attitudes toward violence were assessed with a series of 7-point semantic differential items on six bipolar scales, ranging from *negative* to *positive*, *not fun* to *fun*, *bad* to *good*, *wrong* to *right*, *immoral* to *moral*, and *not enjoyable* to *enjoyable*. Total scores were computed by averaging the scales. Participants were required to complete the measure of evaluative attitudes toward violence along with a self-report measure of violent behaviour. Correlational analysis revealed that explicit evaluative attitudes toward violence were not significantly related to prior violent behaviour ($r =$

.06). This study also consisted of an experimental component in which participants completed the measure of explicit evaluative attitudes toward violence, once again, following an experimental manipulation in which exposure to violence was manipulated through a simulated violence computer task (i.e., playing a violent video game or watching someone else play a violent video game). Thus, the aim of the experimental manipulation was to examine whether exposure to violence leads to changes in explicit evaluative attitudes toward violence. Participants were separated into four groups consisting of those who simulated violence ($n = 41$), those who watched someone else simulate violence ($n = 26$), those who simulated a peaceful task ($n = 38$), and those who watched someone else simulate a peaceful task ($n = 17$). Although no significant differences were found in explicit evaluative attitudes toward violence before and after being exposed to violence, there was a somewhat moderate difference found in explicit evaluative attitudes toward violence when comparing pre- and post-manipulation scores for those who simulated violence ($d = -0.28$) and a large difference found for those who watched someone else simulate violence ($d = -0.51$), such that more positive explicit evaluative attitudes toward violence were found following exposure to violence. Although not significant, these effects suggest that being exposed to violence cues has an influence on one's explicit evaluative attitudes toward violence. Very small insignificant differences between pre- and post- manipulation scores on the semantic differential scales, assessing explicit evaluative attitudes toward violence, were found for those who were exposed to the peaceful computer task (i.e., $d = -0.03$ for those who simulated a peaceful task and $d = 0.04$ for those who watched someone else simulate a peaceful task). Last, to assess the relationship between explicit evaluative attitudes toward violence and

likelihood of violence, participants filled out a self-report measure designed to assess likelihood of violence after the manipulation was administered. The analysis revealed that more positive explicit evaluative attitudes toward violence were significantly and weakly related to greater likelihood of violence ($r = .18, p < .05$).

Using the same semantic differential scales described in the Maimone and Nunes' (2020) study, Nunes, Pedneault, Hermann, and Fraser (2021) assessed explicit evaluative attitudes toward violence and their relationship to self-reported prior violent behaviour, as well as current propensity for violence among 342 community men recruited from an online panel. Analyses revealed that more positive explicit evaluative attitudes toward violence were significantly and moderately correlated with more prior violent behaviour ($r = .40, p < .001$) and greater propensity for violence ($r = .42, p < .001$). The relationship between explicit evaluative attitudes toward violence and two measures of beliefs regarding violence (i.e., MCAA-R-V and CAVS) were also assessed. More positive explicit evaluative attitudes toward violence were significantly and strongly associated with more violence-supportive beliefs ($r = .61, p < .001$ for the MCAA-R-V and $r = .62, p < .001$ for the CAVS).

Additional research has been conducted using similar self-report measures (i.e., semantic differential scales) to assess explicit evaluative attitudes toward rape with some success. For instance, more positive explicit evaluative attitudes toward rape were associated with more prior sexual aggression (e.g., $d = 0.76-1.20$ in Nunes et al., 2013; $r = .25$ in Nunes et al., 2018), as well as greater proclivity to engage in sexual aggression (i.e., $r = .63$ in Hermann et al., 2018) and greater likelihood of sexual aggression (i.e., $r = .56$ in Hermann et al., 2018; $r = .32$ in Nunes et al., 2018) among samples of male

undergraduate students. In addition, more positive explicit evaluative attitudes toward rape were associated with more self-reported current sexually aggressive behaviour (i.e., $d = 0.40$ to 1.10 in Hermann & Nunes, 2018), as well as greater proclivity to engage in sexually aggressive behaviour (i.e., $r = .56$ in Hermann et al., 2018), greater likelihood of sexual aggression (i.e., $r = .63$ in Hermann et al., 2018), and more subsequent self-reported sexually aggressive behaviour, after controlling for sexually aggressive behaviour at an initial administration (standardized probit regression coefficient = 0.20 , $p = .008$ in Hermann & Nunes, 2018) among samples of community men.

In contrast, other studies have found no relationship between explicit evaluative attitudes toward violence, measured using similar self-report scales, and violent behaviour. For instance, Snowden et al. (2004) assessed explicit evaluative attitudes toward violence, along with implicit evaluative attitudes toward violence (see below section for results regarding this construct), in a sample of 121 adult males convicted of violent offences, all diagnosed with personality disorders. Explicit evaluative attitudes toward violence were assessed with a feeling thermometer that required participants to rate target concepts (i.e., *violence* or *peace* word) on a scale ranging from 0 (*cold/unfavourable*) to 99 (*warm/favourable*), and semantic differential scales that required participants to rate target concept words on six 7-point Likert scales. The semantic differential scales assessing *violence* were averaged to create the index used as one of the indicators of explicit evaluative attitudes toward violence. The sample of 121 males was split into two groups consisting of those who had received a prior conviction for murder (murderers; $n = 30$) and those who had received no prior conviction for murder (non-murderers; $n = 91$). The non-murderers served as the control group and their

offences included sexual and violent offences. Overall, more negative explicit evaluative attitudes toward violence were found among murderers compared to non-murderers. However, given that offence severity may not be relevant or related to violent propensity, these findings should be interpreted with caution. Relatedly, murderers might not be expected to have more positive explicit evaluative attitudes toward violence than males incarcerated for other types of violent offences. Therefore, these findings do not suggest that explicit evaluative attitudes toward violence cannot discriminate between violent and non-violent individuals. Importantly, Snowden et al. (2004) found no relationship between implicit and explicit evaluative attitudes toward violence ($r = -.05$ to $.06$).

A recent study by Jeon et al. (2019) assessed the relationship between explicit evaluative attitudes toward aggression and acts of school violence in 100 adolescents recruited from middle and high schools in South Korea. More specifically, participants were between the ages of 13 and 18, with 50 participants actively receiving counselling services as a result of committing acts of violence at school at least once. The remaining 50 adolescents had not committed any acts of school violence. These authors assessed explicit evaluative attitudes toward general aggression and explicit evaluative attitudes toward retaliated aggression using a self-report questionnaire containing 20 items that asked about the perpetration of various aggressive behaviours. Items were evaluated on a 4-point scale by indicating whether the aggressive behaviour was *perfectly OK*, *sort of OK*, *sort of wrong*, or *really wrong*. Items were summed into two subscales; General Aggression (i.e., items asked about how *okay* it is to engage in acts of physical and verbal aggression) and Retaliated Aggression (i.e., items asked about how *okay* it is to retaliate using acts of physical and verbal aggression in response to provocation). Higher scores

corresponded to more positive explicit evaluative attitudes toward general aggression and retaliated aggression. Participants consisted of 100 adolescents who were actively receiving counseling services. Out of this total sample, 50 adolescents had committed at least one act of violence at school and 50 had never committed any violent school acts. Independent samples *t*-tests revealed no significant differences between these two groups on explicit evaluative attitudes toward general aggression, $t(98) = -0.44, p = .660$, or explicit evaluative attitudes toward retaliated aggression, $t(98) = -1.30, p = .197$, suggesting that adolescents who have committed at least one violent school act do not differ from adolescents who have never committed a violent school act in their explicit evaluative attitudes toward general and retaliated aggression.

Implicit Evaluative Attitudes Toward Violence

As stated elsewhere, implicit evaluative attitudes are often assessed with response latency measures such as the IAT (Greenwald et al., 1998). In IAT measures, attitudes are inferred from the speed with which participants sort target words into binary categories consisting of target (or attitude) concepts, such as *violence* and *peace*, and evaluative attributes, such as *positive* and *negative*. To illustrate this procedure, participants may be presented with a stimulus word related to *violence*, *peace*, *positive*, or *negative*, and then must sort the stimulus word into the above categories. Some trials may consist of the following categories, ‘*violence or positive*’ and ‘*peace or negative*’, whereas other trials may consist of ‘*violence or negative*’ and ‘*peace or positive*’. In this procedure, if one is more quickly able to sort the target words when violence is paired with positive, than when violence is paired with negative, it is hypothesized that he or she holds more positive evaluative attitudes toward violence. A traditional IAT procedure consists of

seven blocks with both concept categories (i.e., *violence* and *peace*) and evaluative attribute categories (i.e., *positive* and *negative*) included in Blocks 3, 4, 6, and 7, referred to as the combined blocks. Within these blocks, the main concept category shares a response key with the same attribute category in Blocks 3 and 4 (i.e., *VIOLENCE* or *positive*) and the main concept category shares the same response key with the opposite attribute category for both Blocks 6 and 7 (i.e., *VIOLENCE* or *negative*). Blocks 3 and 6 are often referred to as practice trials and Blocks 4 and 7 as critical, or test, trials. The IAT has experienced widespread attention over the past two decades in various areas of psychology (e.g., prejudice, preference, politics, morality, suicidality, and personality; see Carpenter et al., 2019) and is generally regarded as a valid and reliable tool for assessing a variety of implicit evaluative attitude constructs (Greenwald & Banaji, 2017).

In regard to the potential distinctiveness between implicit measures of evaluative attitudes (i.e., IAT) and explicit measures of evaluative attitudes (i.e., self-report semantic differential scale), the author of the MODE (see Fazio, 1990) model suggests that there exists a mental dual-processing system that underlies these constructs, and thus, measures. For instance, Fazio (1990) proposed that if there are not enough resources (i.e., motivation and opportunity) to deliberate on activated evaluative attitudes, they are more likely to have an immediate effect on behaviour. In other words, the activated evaluative attitude will be consistent with the resulting behaviour if resources are depleted. Accordingly, response latency measures (e.g., the IAT; Greenwald et al., 1998) may be better able to assess initially activated evaluative attitudes because they rely on response times to assess the construct of interest (i.e., evaluations of violence), rather than deliberative thought; therefore, there is less time, opportunity, and motivation to

deliberate on the activated evaluative attitudes (see MODE; Fazio, 1990; MCM; Petty et al., 2007). Also, most response latency measures rely on priming participants with stimuli consisting of violent words or images, which may be better able to activate more immediate evaluative attitudes towards an object than reading/responding to an item from a self-report scale, which is more likely to involve conscious thought.

Researchers have begun to use IAT measures to assess implicit evaluative attitudes toward violence (e.g., Bluemke & Zumbach, 2012; Blumenthal et al., 2019; Eckhardt & Crane, 2014; Eckhardt et al., 2012; Sprunger & Eckhardt, 2017; Polaschek et al., 2010; Jeon et al., 2017; Robertson & Murachver, 2007; Maimone & Nunes, 2020; Snowden et al., 2004; Zwets et al., 2015). Table 1 below displays a summary of information per study reviewed in this section, including the details of each IAT used to assess implicit evaluative attitudes toward violence. Although contradictory evidence has been reported among these studies, there is some evidence suggesting that this construct may be important to consider. For instance, Snowden et al. (2004) assessed implicit evaluative attitudes toward violence, along with explicit evaluative attitudes (see description of results involving this construct in above section), in a sample of 121 adult males convicted of violent offences, all diagnosed with personality disorders. Implicit evaluative attitudes toward violence were assessed with an IAT measure (see Table 1 for details regarding categories used). As outlined in the above section, the sample of 121 males was divided into two groups consisting of those who had received a prior conviction for murder (murderers; $n = 30$) and those who had received no prior conviction for murder (non-murderers; $n = 91$; their offences included sexual and violent offences). Participants were also divided into low, medium, and high psychopathy groups

based on their scores on the PCL-R (Hare, 1991). These authors found that murderers who were high in psychopathy had the most positive implicit evaluative attitudes toward violence. These results do not speak to whether implicit evaluative attitudes toward violence can discriminate between violent and non-violent individuals but suggest that this construct may be involved in violent behaviour for some groups of convicted males (i.e., those convicted of murder who are also high in psychopathy).

Robertson and Murachver (2007) examined implicit evaluative attitudes toward violence in a sample of 39 incarcerated intimate partner violence perpetrators and 133 non-incarcerated participants (students and community members) who served as a comparison group. An IAT measure (see Table 1 for details regarding categories) was used to assess participants' implicit evaluative attitudes toward violence. Differences in implicit evaluative attitudes toward violence were examined between the incarcerated and non-incarcerated participants. Lower scores on the IAT trials reflected more positive implicit evaluative attitudes toward violence. Incarcerated participants ($M = 1.09$) had significantly more positive implicit evaluative attitudes toward violence in comparison to the non-incarcerated participants ($M = 1.24$, $\eta^2 = .028$).

Bluemke and Zumbach (2012) examined the relationship between implicit evaluative attitudes toward aggression and aggressive behaviour in a sample of 196 German-speaking students and community members. Implicit evaluative attitudes toward aggression were assessed with an IAT measure (see Table 1 for details regarding categories) and the IAT effect was calculated such that higher scores (or more positive scores) on the IAT indicated more negative implicit evaluative attitudes toward aggression. Aggressive behaviour was assessed with the Physical Aggression subscale of

the AQ (Buss & Perry, 1992). They found a significant negative relationship between IAT effect and physical aggression ($r = -.12$), suggesting that those who had more positive implicit evaluative attitudes toward aggression tended to report more physical aggression.

Eckhardt et al. (2012) also assessed implicit evaluative attitudes toward violence in a sample of 50 men from an intimate partner violence intervention program and 40 non-violent men from the community, who served as the comparison. Once again, an IAT measure (see Table 1 for details regarding categories used) was used to assess implicit evaluative attitudes toward violence. Men in treatment for intimate partner violence had significantly more positive implicit evaluative attitudes toward violence (i.e., more strongly associated *violence* with *good*) in comparison to the nonviolent men ($d = 0.45$).

Similarly, Eckhardt and Crane (2014) examined implicit evaluative attitudes toward violence in a sample of 26 males on probation for intimate partner violence offences. Implicit evaluative attitudes toward violence were assessed with an IAT measure (see Table 1 for details regarding categories used). Participants were followed for a 6-month period. Those who were arrested during this period for either violating probation or for a subsequent criminal offence were classified as *recidivists* ($n = 10$) and those who were not arrested, obtained minor probation violations, or were temporarily removed from treatment were classified as *non-recidivists* ($n = 16$). In this study, the IAT score was calculated by dividing the response times for sorting stimulus words when *VIOLENCE* was paired with *good* by the response times for sorting stimulus words when *VIOLENCE* was paired with *bad*. Therefore, if participants more quickly sorted stimulus words when *VIOLENCE* was paired with *good*, then this would result in a larger IAT

score. These authors found a significant difference in implicit evaluative attitudes toward violence (or IAT scores) between recidivists ($M = .54$, $SD = .61$) and non-recidivists ($M = 1.01$, $SD = .42$, $t(23) = 2.25$, $p = .04$, $d = 0.92$), suggesting that recidivists more quickly sorted stimulus words when *VIOLENCE* was paired with *good* (and *NON-VIOLENCE* was paired with *bad*). In other words, these results suggest that recidivists had more positive implicit evaluative attitudes toward violence than non-recidivists.

Sprunger and Eckhardt (2017) examined the relationship between implicit evaluative attitudes toward violence and prior self-reported intimate partner violence. In addition, these authors examined whether scores on an IAT measure, used to assess implicit evaluative attitudes toward violence, predicted future intimate partner violence intent after a simulated dating scenario. Participants consisted of 106 undergraduate students (59.4% female) from a large midwestern university. Participants were randomly assigned to receive the provocation simulated dating scenario ($n = 59$) or non-provocation simulated dating scenario ($n = 47$). During the provocation scenario, participants listened to an audio recording involving an imaginary relationship scenario involving jealousy that was designed to induce anger. During this recording, participants were asked to imagine that they arrived at their partner's apartment after class and overheard their partner engaged in a flirtatious interaction with someone of the opposite-sex. During the non-provocation scenario, participants listened to a nonprovoking scenario in which they were asked to imagine waiting for their partner to arrive at a restaurant for a date. An IAT measure (see Table 1 for details regarding categories) was administered to assess implicit evaluative attitudes toward violence. More positive implicit evaluative attitudes toward violence, as assessed by scores on the IAT measure, were significantly associated with a

greater variety of physically assaultive acts perpetrated against an intimate partner over the past year, $r(104) = .20, p < .05$. The authors also found that more positive implicit evaluative attitudes toward violence and more aggression-supportive beliefs in dating situations were significantly associated with greater intent to be physically aggressive toward a future dating partner, $R^2_2 = .37, F(3, 102) = 19.91, p < .001$, and added incremental predictive variance in predicting this outcome over and above which dating scenario condition was administered (i.e., provocation scenario in which jealousy was involved or the neutral non-provocation scenario in which no jealousy was involved), $\Delta R^2_2 = .18, F(2, 102) = 14.43, p < .001$. Implicit evaluative attitudes toward violence did not interact significantly with the dating scenario administered and only showed a significant main effect in predicting intent to be physically aggressive toward a future dating partner, as outlined above, suggesting that the influence of implicit evaluative attitudes toward violence on likelihood of physical aggression is independent of whether there are salient provoking and/or violent cues in the environment. This is in contrast to the authors initial hypothesis, as well attitudinal theories from the social psychology literature (e.g., MODE; Fazio, 1990 and APE; Gawronski & Bodenhausen, 2006), proposing that the influence of implicit evaluative attitudes on behaviour would be stronger when there are more salient cues in the environment because the processes by which implicit evaluative attitudes influence behaviour are more immediate and devoid of conscious thought. Last, these authors examined whether implicit evaluative attitudes toward violence, as assessed by scores on the IAT measure administered, predicted intent to be physically aggressive over and above self-reported beliefs regarding aggression in dating situations. Hierarchical linear regressions, with IAT scores included in the second

step, revealed that implicit evaluative attitudes toward violence did not account for incremental variance in likelihood of physical aggression over and above variance accounted for by beliefs regarding aggression in dating situations, $\Delta R^2_2 = .02$, $F(1, 101) = 2.75$, $p = .10$.

In a recent study, Jeon et al. (2019) examined the relationship between implicit evaluative attitudes toward violence and violent behaviour among 100 adolescent participants (i.e., $n = 50$ who had committed at least one act of school violence and $n =$ who had not committed any acts of school violence). Implicit evaluative attitudes toward violence were assessed with an IAT measure (see Table 1 for details regarding categories). As was done in the current research project, the target-concept words used in the authors' IAT measure were initially pilot tested on a sample of 70 undergraduate students to ensure they were easily classified into IAT categories (i.e., *violence*, *peace*, *positive*, and *negative*). An IAT score was computed such that higher scores indicated more negative implicit evaluative attitudes toward violence. These authors found significant group differences on implicit evaluative attitudes toward violence between the adolescent who committed acts of school violence and those who had not committed acts of school violence. More specifically, adolescents who had committed acts of school violence had significantly more positive implicit evaluative attitudes toward violence ($M = 0.51$, $SD = 0.28$) in comparison to adolescents who had not committed acts of school violence ($M = 1.03$, $SD = 0.15$), $t(98) = -11.56$, $p < .001$, $d = 2.31$.

Previous research has also had some success using IAT measures (see Table 1 for details regarding the categories used) to assess implicit evaluative attitudes toward rape. For instance, more positive implicit evaluative attitudes toward rape were significantly

associated with more prior sexual coercion ($d = 0.76$), as well as greater likelihood to rape ($d = 0.94$) in a sample of 86 male undergraduate students (Nunes et al., 2013). In addition, more positive implicit evaluative attitudes toward rape were significantly associated with more current self-reported sexually aggressive behaviour ($d = 0.38$ and 0.17), as well as predicted more self-reported sexually aggressive behaviour at a second administration four months later, while controlling for sexually aggressive behaviour at the initial administration (standardized probit regression coefficient = 0.17 , $p = .045$) in a sample of 248 community men recruited online (Hermann & Nunes, 2018). However, one study found no relationship between implicit evaluative attitudes toward rape, assessed with two IAT measures (see Table 1 for details regarding categories), and self-reported proclivity to engage in sexually aggressive behaviour or likelihood to rape in samples of male students or community men (Hermann et al., 2018).

Last, other studies have found no link between implicit evaluative attitudes toward violence and indicators of violent behaviour. For instance, Polaschek et al., (2010) used an IAT measure (see Table 1 for details regarding categories) to assess implicit evaluative attitudes toward violence in a sample of 30 males imprisoned for violent offences. Violent behaviour was assessed using therapists' violence risk ratings. These researchers found that implicit evaluative attitudes toward violence were not significantly associated with participants' violence risk ratings.

A study by Zwets et al. (2015) examined the relationships between implicit evaluative attitudes toward violence, psychopathy, and aggression in a Dutch sample of 110 male forensic psychiatric inpatients who were detained for a serious violent offence. Implicit evaluative attitudes toward violence were, again, assessed with an IAT measure

(see Table 1 for details regarding categories). A positive IAT score indicated more positive implicit evaluative attitudes toward violence (i.e., that violence was more strongly associated with pleasant than unpleasant). The Physical Aggression subscale of the Aggression Questionnaire – Short Form (AQ-SF; Bryant & Smith, 2001; Dutch version: Hornsveld et al., 2009) was used to assess physical aggression, which was adapted from the Physical Aggression subscale of the original AQ (Buss & Perry, 1992). A weak and non-significant relationship was found between IAT scores and physical aggression ($r = .13, n.s.$).

A recent study by Blumenthal et al. (2019) assessed implicit evaluative attitudes toward violence using three different versions of the IAT, with each comparing the attitude concept of *violence* (or *peace*) against different attribute categories; one against conventional valence attribute categories (i.e., *good* vs. *bad*), one against attribute categories representing “hedonic values” (p. 237; i.e., *enjoy* vs. *dislike*), and one against attribute categories representing arousal states (i.e., *exciting* vs. *boring*; see Table 1 for further details regarding the categories used). The stimuli for the concept categories of *violence* and *peace*, used in all three IATs, consisted of 12 pictures selected from the International Affective Picture System (IAPS; Lang et al., 1997), with six containing violent content and six containing peaceful content. Twelve words were selected for each IAT version, representing their respective attribute categories (i.e., six different words for each attribute). Higher scores on all IATs represented more positive implicit evaluative attitudes toward violence. The relationships between implicit evaluative attitudes toward violence and self-reported reactive/proactive aggression, as well as prior violent convictions, were assessed among a sample of 108 convicted adult males who were all

diagnosed with a personality disorder. Relationships between implicit evaluative attitudes toward violence and both outcomes were examined within those who had been convicted of homicide (i.e., homicide group), those who had not been convicted of homicide (i.e., non-homicides group; of note this group also contained those who had been convicted of violent offences other than homicide), and the entire sample of convicted males.

Blumenthal et al. (2019) hypothesized that the homicide group would not show a positive association between constructs given that IAT measures are believed to activate more immediate evaluative attitudes toward an object and thus, are expected to correlate with more spontaneous behaviours rather than behaviours that require active forethought as in most cases of homicide. The conventional IAT, consisting of valence attribute categories, did not significantly correlate with either self-reported reactive/proactive aggression (i.e., $r = -.00$ for entire sample, $r = -.06$ for homicide group, and $r = .10$ for non-homicide group) or prior violent convictions (i.e., $r = -.14$ for entire sample, $r = -.15$ for homicide group, and $r = -.15$ for non-homicide group). Likewise, the IAT that contained attribute categories representing hedonic values did not significantly correlate with either self-reported reactive/proactive aggression (i.e., $r = .07$ for entire sample, $r = .01$ for homicide group, and $r = .17$ for non-homicide group) or prior violent convictions (i.e., $r = .02$ for the entire sample, $r = .09$ for the homicide group, and $r = -.05$ for the non-homicide group). Last, more positive implicit evaluative attitudes toward violence, as assessed by the IAT that contained attribute categories representing arousal states, were significantly and weakly to moderately correlated with more self-reported reactive/proactive aggression among those in the non-homicide group (i.e., $r = .29$, $p < .05$); however, scores on this IAT were not significantly correlated with self-reported reactive/proactive

aggression for those in the homicide group (i.e., $r = .03$) or when examining the entire sample (i.e., $r = .08$) nor were they correlated with prior violent convictions when examining either participant group (i.e., $r = -.11$ for the homicide group and $r = -.15$ for the non-homicide group) or when examining the entire sample (i.e., $r = -.14$).

Maimone and Nunes (2020) assessed implicit evaluative attitudes toward violence (along with explicit evaluative attitudes toward violence – see above section) in a sample of 122 male undergraduate students. Implicit evaluative attitudes toward violence were, once again, assessed using an IAT measure (see Table 1 for details regarding categories). The outcome in this study consisted of prior violent behaviour assessed using a self-report questionnaire. Maimone and Nunes (2020) found that implicit evaluative attitudes toward violence were not associated with self-reported prior violent behaviour ($r = .01$). In this study, we also examined whether scores on the IAT measure, designed to assess implicit evaluative attitudes toward violence, could be changed through exposure to violence. The hypothesis was that participants' who were exposed to violence would have more positive implicit evaluative attitudes toward violence because attitudinal theories from the social psychology literature propose that implicit evaluative attitudes become stronger following salient cues associated with the attitude object (i.e., in this case salient violent cues; see MODE model; Fazio 1990; APE model; Gawronski & Bodenhausen, 2006). As outline above, there were four experimental conditions: engaging in simulated violence ($n = 41$), watching someone else engage in simulated violence ($n = 26$), engaging in a peaceful task ($n = 38$), or watching someone else engage in a peaceful task ($n = 17$). Analyses revealed that, in general, participants' implicit evaluative attitudes toward violence were significantly more positive following the

manipulation regardless of the manipulation condition that was received. The effect sizes found for differences between pre- and post-manipulation scores on the IAT measure were as follows: $d = -1.01$ for those who engaged in a peaceful task, $d = -1.27$ for those who engaged in a simulated violence task, $d = -0.81$ for those who watched someone else engage in a peaceful task, and $d = -0.84$ for those who watched someone else engage in a simulated violence task. It is unclear why these results were observed, but one explanation could be that participants received more positive scores on the IAT measure following the manipulation due to practice effects given that all participants completed the IAT measure both before and after receiving the manipulation. In this case, being exposed to violence did not influence participants' implicit evaluative attitudes toward violence. Last, to assess likelihood of violence, we had participants complete a self-report measure designed to assess this construct, following the manipulation. No association between implicit evaluative attitudes toward violence and self-reported likelihood of violence was found ($r = .05$).

Using the same IAT procedure as in the study outlined above, Maimone and Nunes (2020) found no significant ($r = .02$) relationship between implicit evaluative attitudes toward violence and self-reported prior violent behaviour in a sample of 125 male undergraduate students. Last, the same IAT measure was administered among a sample of 19 adult males incarcerated in a provincial correctional facility. Risk of violent behaviour was assessed using a self-report measure. Analysis revealed that implicit evaluative attitudes toward violence were not related to self-reported risk of violent behaviour ($r = -.16$).

Table 1

Summary of the Research to Date Using IAT Measures to Assess Implicit Evaluative Attitudes Toward Violence and Examine Their Relationship to Outcomes of Violent Behaviour

Study	IAT Categories		Sample	Outcome	Sig.?	Direction
	Concept Categories	Attribute Categories				
Snowden et al., 2004	VIOLENCE PEACE	pleasant unpleasant	121 males convicted of violent offences	Murder and psychopathy	Yes	Positive ^a
Robertson & Murachver, 2007	VIOLENCE NON-VIOLENCE	good bad	39 males and females convicted of IPV	IPV	Yes	Positive
			67 male and female students			
			66 male and female community members			
Bluemke & Zumbach, 2012	AGGRESSIVE PEACEFUL	positive negative	196 male and female students	Self-reported physical aggression	Yes	Positive
Eckhardt et al., 2012	VIOLENCE PEACEFUL	good bad	50 males convicted of IPV	IPV	Yes	Positive

			40 male community members			
Eckhardt & Crane, 2014	VIOLENCE NON-VIOLENCE	good bad	26 males on probation for IPV	General recidivism	Yes	Positive
Sprunger & Eckhardt, 2017	VIOLENCE PEACEFUL	good bad	106 male and female students	Self-reported physically assaultive behaviour	Yes	Positive
Jeon et al., 2019	VIOLENCE PEACE	positive negative	100 male and female adolescents	Acts of school violence	Yes	Positive
Nunes et al., 2013	RAPE NOT RAPE	good bad	86 male students	Self-report prior sexual coercion and likelihood to rape	Yes	Positive
Hermann & Nunes, 2018	RAPE NOT RAPE	positive negative	248 male community members recruited online	Self-reported sexually aggressive behaviour (at first and second admin.)	Yes	Positive
	RAPE CONSENTING SEX	positive negative				
	RAPE CONSENTING SEX	good bad				
	RAPE NOT RAPE	good bad				

Polaschek et al., 2010	VIOLENCE HOUSEWORK	good bad	30 males convicted of violent offences	Risk of violent recidivism	No	N.S.
Hermann et al., 2018	RAPE CONSENTING SEX	positive negative	150 male students 378 male community members	Self-reported proclivity to engage in sexual aggression and likelihood to rape	No	N.S.
Zwets et al., 2015	VIOLENCE PEACE	pleasant unpleasant	110 male forensic psychiatric inpatients	Self-reported physical aggression	No	N.S.
Blumenthal et al., 2019	VIOLENCE PEACE	good bad enjoy dislike exciting boring	108 convicted males (consisted of those convicted of violent and non-violent offences)	Self-reported reactive/ proactive aggression Prior violent convictions	No (except one sig. effect)	N.S. (but positive for the one sign. effect)
Maimone & Nunes, 2020	VIOLENCE PEACE	good bad	122 male students 125 male students	Self-reported prior violence and likelihood of violence in student samples	No	N.S.

19 males convicted of violent and non- violent offences	Self-reported risk of violence in convicted sample
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Note. IPV = Intimate Partner Violence. N.S. = Not significant.

^apositive refers to a significant relationship between more positive implicit evaluative attitudes toward and more violent behaviour

Relationship between Implicit Evaluative Attitudes and Other Violent Cognitions

Among the studies reviewed above that used IAT measures to assess implicit evaluative attitudes toward violence, scores on these measures have been mostly unrelated to scores on self-report explicit measures of evaluative attitudes toward violence. For instance, implicit evaluative attitudes toward violence, as assessed by various IAT measures, were unrelated to explicit evaluative attitudes toward violence (e.g., Maimone & Nunes, 2020; Polaschek et al., 2010; Snowden et al., 2004) and explicit evaluative attitudes toward sexual aggression (e.g., Hermann et al., 2018). However, one subsequent study reported that more positive implicit evaluative attitudes toward sexual aggression were significantly and weakly related to more positive explicit evaluative attitudes toward sexual aggression (Hermann & Nunes, 2018). Scores on the various IAT measures were also unrelated to self-reported beliefs regarding intimate partner violence (e.g., Eckhardt & Crane, 2014; Eckhardt et al., 2012; Robertson & Murachver, 2007; Sanchez-Prada et al., 2018; Sprunger & Eckhardt, 2017), violence (e.g., Maimone & Nunes, 2020; Polaschek et al., 2010), and sexual aggression (e.g., Hermann et al., 2018). In addition, a recent study conducted by Sanchez-Prada et al. (2018) found that scores on self-report measures of beliefs regarding intimate partner violence against women (IPVAW) largely overestimated participants' negative beliefs regarding IPVAW in comparison to scores on the IAT measure administered, for which substantially fewer participants were classified as having negative implicit evaluative attitudes toward IPVAW. These authors suggest that this highlights the need to administer both self-report/explicit and implicit evaluative attitude measures, as well as the potential

vulnerability of self-report/explicit evaluative attitude measures to socially desirable responding (see Sanchez-Prada et al., 2018).

In general, the literature regarding the use of IAT measures to assess implicit evaluative attitudes toward violence has been sparse. Although mostly contradictory results have been reported by empirical research regarding their relationship with indicators of violent behavior and other self-report/explicit violent cognitive constructs, there is some evidence suggesting that they may be at least correlated to some of these violence-relevant constructs. Table 2 summarizes the state of the literature to date regarding the relationships between implicit evaluative attitudes toward violence, explicit evaluative attitudes toward violence, and violent behaviour. Given the overall mixed evidence regarding these relationships, more research is needed to determine whether evaluative attitudes are important to consider when attempting to understand violent behaviour and especially whether there is value in measuring implicit evaluative attitudes toward violence along with more commonly assessed violent cognitive constructs (e.g., explicit evaluative attitudes toward violence and beliefs regarding violence).

This sparse and inconsistent evidence highlights an evident gap within the empirical research regarding the assessment of implicit evaluative attitudes toward violence. Further examining the bivariate relationships between these constructs is important for extending this literature and establishing a foundation for more sophisticated empirical research in the future. Additionally, understanding how different cognitive constructs are related to violence and other relevant constructs will help establish a clearer comprehension of the offence cycle of violence.

Table 2

Synthesis of the Empirical Research to Date Regarding the Relationships Between Implicit Evaluative Attitudes Toward Violence, Explicit Evaluative Attitudes Toward Violence, Beliefs Regarding Violence, and Violent Behavior

	Implicit Evaluative attitudes	Explicit/Self-Report Evaluative attitudes	Beliefs	Violent behaviour
Implicit evaluative attitudes	–	0	0	?
Explicit/Self-report Evaluative attitudes	0	–	+	+
Beliefs	0	+	–	+
Violent behaviour	?	+	+	–

Note. + = evidence of positive association. 0 = evidence of no association. ? = no or mixed evidence regarding association.

Chapter 4: Limitations of Previous Research Assessing Implicit and Explicit Evaluative Attitudes Toward Violence

It is evident from the literature reviewed above that findings are somewhat discrepant regarding whether implicit evaluative attitudes toward violence are important for understanding violent behaviour. However, when interpreting results across prior studies using IAT measures to assess implicit evaluative attitudes toward violence, several methodological features should be considered. First, attention should be paid to the categories and stimuli utilized. IAT measures require participants to evaluate an attitude concept (i.e., *violence*) relative to some opposite concept category (i.e., *peace*); therefore, the categories that are chosen may alter the IAT effect. Also, prior research has found the largest effect sizes when using contrasting categories (Lane et al., 2007). If most participants do not regard the opposite concept category (e.g., *peace*) as the ‘true’ opposite of the main attitude concept (i.e., *violence* in this case) this may result in ambiguity when sorting the stimulus words into categories (i.e., *violence* or *peace*). In turn, this may result in a diminished IAT effect. The type of stimuli can also have an effect on resulting IAT scores. Research has found that stimulus words that are easily classified produce more accurate results because this reduces error variance. In contrast, if ambiguity occurs when classifying stimuli, then this results in slower reaction times, producing increased error variance. Accordingly, a potential reason for the disparity in results among previous studies assessing implicit evaluative attitudes toward violence is that most IATs differed in the categories and stimuli that were used. Therefore, different versions may have been more accurate in assessing/capturing the intended construct.

A second potential issue that should be considered when interpreting scores on IAT measures is whether the scores reflect participants' personal attitudes towards an object or culturally accepted beliefs about the phenomenon under investigation. To illustrate, Olson and Fazio (2004) proposed that traditional IAT measures containing attribute (i.e., *Positive* and *Negative*) and concept (i.e., *Violence* and *Peace*) categories might more closely reflect societal attitudes (or as Olson and Fazio called them, *extrapersonal associations*) rather than one's own personal attitudes. Olson and Fazio (2004) stated that personalized IAT measures should be used in which the categories of *I like* and *I dislike* are used instead of the traditional attribute categories, such as *positive* and *negative*, because attribute categories have greater potential for activating normative beliefs about the attitude under investigation. Accordingly, it is possible that some IAT measures, and implicit measures more generally, may perform better than others, which may further account for discrepant findings among previous studies.

Third, the specific procedure and scoring algorithm should be considered and fully articulated for purposes of transparency. Several IAT-scoring algorithms have been proposed in the past, which may have an effect on the results of IAT procedures, as well as those used to assess implicit evaluative attitudes toward violence. Often details regarding the particular IAT procedure used are not fully articulated in empirical research, perhaps with the goal of brevity in mind; however, it is important to be transparent in the procedure administered (e.g., whether feedback was included or not when an incorrect response was made), as prior research has found different results regarding IAT effects, especially in the distribution of scores on the IAT measure used, as well as in the significance of relationships between implicit and explicit evaluative

attitude measures. In addition, details regarding the IAT-scoring algorithm used have largely been omitted from prior research involving IAT measures, including those assessing implicit evaluative attitudes toward violence. Articles often refer to using a scoring algorithm that is consistent with recommendations made in Greenwald and colleagues' article published in 2003, but the specific scoring algorithm chosen is not specified and the details pertaining to it are not fully articulated. This may be important given that Greenwald et al. (2003) recommend several alternative options to steps included in their improved scoring algorithm and the results associated with different scoring algorithms vary slightly, especially in regard to the relationship between implicit and explicit evaluative attitude measures. Although the disparity between different IAT-scoring algorithms was slight, it may still be important to provide transparency regarding the particular scoring algorithm used because this could account for some of the disparity in results reported in prior research using IAT measures to assess the relationships between implicit evaluative attitudes toward violence and other constructs. This may be especially true, given that historically much research focusses on the significance of relationships rather than on the magnitude of the effect.

Some attention has been paid to the optimization of the reliability and validity associated with different IAT-scoring algorithms within prior research (e.g., Blanton et al., 2015; Fazio & Olson, 2003; Glashouwer et al., 2013; Greenwald et al., 2003; Nosek et al., 2014; Nosek et al., 2007). A recent study by Sanchez-Prada et al. (2018) used an IAT measure to assess implicit evaluative attitudes toward intimate partner violence against women (IPVAW) among 190 undergraduate psychology students from two Spanish universities (32 men and 158 women). This IAT measure of IPVAW consisted of the

following categories: *GENDER VIOLENCE or good* and *NON-GENDER VIOLENCE or bad*, or *GENDER VIOLENCE or bad* and *NON-GENDER VIOLENCE or good*.

Specifically, Sanchez-Prada and colleagues were interested in assessing the validity of two different procedures for administering this IAT. These two procedures consisted of (a) including feedback in which participants are forced to select the correct response to proceed to the next IAT trial after selecting the incorrect response and (b) providing no feedback when an incorrect response was made. The validity of two different IAT algorithms was also examined, namely (1) replacing error latencies with the mean of correct latencies for a corresponding block, plus 600 milliseconds, and (2) using the built-in error penalty, associated with the IAT procedure involving feedback, for which the time taken to select the correct response is added to the error latency for a particular trial. Participants' scores on the IAT measures were computed such that higher scores corresponded to more negative implicit evaluative attitudes toward IPVAV or, as the authors referred to it, '*rejection*' of gender violence (Sanchez-Prada et al., 2018, p. 8). Scores on the IAT measures were classified into one of four categories corresponding to different magnitudes of rejection consisting of IAT scores $\geq -.15$ and $< .15$ classified as '*null rejection*', IAT scores $\geq .15$ and $< .50$ classified as '*mild rejection*', IAT scores $\geq .50$ and $< .80$ classified as '*moderate rejection*', and IAT scores $\geq .80$ classified as '*strong rejection*'. Results reported in Table 3 below, adapted from Sanchez-Prada et al. (2018), show that the classification of IAT effect scores into these categories varied between IAT procedures used (i.e., whether feedback or no feedback was used in the IAT procedure), with the IAT procedure in which no feedback was included overestimating the number of *strong rejections* in comparison to the IAT procedure in which feedback

was included. However, the classification of scores into rejection categories was very similar for both forms of IAT-scoring algorithms (i.e., replacing error latencies with the mean of the corresponding block for correct latencies, plus 600 milliseconds or using a built-in error penalty [only possible for the IAT procedure including feedback]), with a very small preference for using the built-in error penalties. These results provide evidence that including feedback in the IAT procedure and using a built-in error penalty (i.e., time taken to select the correct response is added to the error latencies for trials in which errors occur) are the most advantageous methods for maximizing validity of IAT effects.

Table 3*Frequency Distribution of IAT Effects*

IAT Condition		Without Feedback	With Feedback	
		+600 ms	+600 ms	Built-in error penalty
IAT effect (rejection level)	Null ($-.15 \leq D < .15$)	5 (5.0%)	2 (2.2%)	2 (2.2%)
	Mild ($.15 \leq D < .50$)	19 (18.8%)	14 (15.7%)	15 (16.9%)
	Moderate ($.50 \leq D < .80$)	22 (21.8%)	39 (43.8%)	40 (44.9%)
	Strong ($D \geq .80$)	55 (54.4%)	34 (38.2%)	32 (36.0%)
	Total	101 (100%)	89 (100%)	89 (100%)

Note. IAT = Implicit Association Test. From “Implicit and Explicit Attitudes Toward Intimate Partner Violence Against Women: An Exploratory Study,” by A. Sanchez-Prada, C. Delgado-Alvarez, E. Bosch-Fiol, and V. A. Ferrer-Perez, 2018, *Journal of Interpersonal Violence*, 14(1), p. 9 (<http://doi.org/10.1177/0886260518789903>).

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Related issues may arise regarding explicit measures of evaluative attitudes toward violence. For instance, explicit evaluative attitudes toward violence have mostly been assessed with self-report measures, such as semantic differential scales. These measures often require participants to evaluate the word *violence* on a series of bipolar evaluative anchors (e.g., negative—positive; not fun—fun; unpleasant—pleasant; wrong—right; bad—good; not enjoyable—enjoyable; immoral—moral; see Nunes et al., 2015). However, as with traditional IAT measures, there is ambiguity in this procedure that introduces the potential for participants to evaluate *violence* against culturally accepted beliefs rather than their own personal evaluative attitudes towards violence. Accordingly, Nunes, Pedneault, and Hermann (2021) developed and validated a new self-report measure: The Evaluation of Violence Questionnaire (EVQ) in which participants rate a series of violent behaviours (e.g., “You hitting a guy who disrespects you”) on 4-point evaluative scales (e.g., very negative, a bit negative, a bit positive, very positive). This procedure may reduce the ambiguity because it specifies the respondent as the person doing the violent behaviour rather than being the victim, and it provides more specific violent behaviours and contexts, some of which may be perceived as mitigating circumstances (e.g., provocation vs. no mention of provocation). These features would be expected to provide a more accurate and comprehensive assessment of evaluative attitudes toward violence. Accordingly, the EVQ was included across studies in the current dissertation, along with traditional semantic differential scales, to assess explicit evaluative attitudes toward violence. A detailed description of the EVQ can be found in the *Measures* section of Study 1 below.

Summary

It is evident from the literature summarized above that more clarity is needed in understanding the relationship between implicit evaluative attitudes toward violence and other explicit/self-report violent cognitive constructs, as well as their relationship to outcomes of violent behaviour. Many attitude theories within social psychology stress the importance of distinctively assessing implicit evaluative attitudes from other cognitive constructs (e.g., MODE; Fazio, 1990). Further, research suggests that implicit and explicit evaluative attitudes are distinct, but correlated, cognitive constructs that uniquely predict behaviour (e.g., Cameron et al., 2012).

A particular response latency measure – the Implicit Association Test (Greenwald et al., 1998)—has experienced widespread usage over the last two decades and has been adapted to assess a variety of implicit evaluative attitudes; thus, contributing to great gains in various areas of psychology (e.g., prejudice, preference, politics, morality, suicidality, and personality; see Fazio & Olson, 2003; Friesen et al., 2006; Nosek et al., 2002; Marquardt & Hoeger, 2009; Nock et al., 2010; Fatfouta & Schroder-Abe, 2018). Given its popularity and increasing usage, it seems obvious to adapt this procedure to assess other socially sensitive topics such as violence—an evident and pervasive threat to public safety. Empirical research to date that has adapted IAT measures to assess implicit evaluative attitudes toward violence and assessed their relationship to indicators of violence is sparse and somewhat inconsistent. However, there is some evidence suggesting that it is an important construct that adds explanatory power when attempting to understand violence (Bluemke & Zumbach, 2012; Eckhardt & Crane, 2014; Eckhardt et al., 2012; Sprunger & Eckhardt, 2017; Jeon et al., 2017; Robertson & Murachver,

2007; Snowden et al., 2004). Several limitations are noted in previous research that may explain the inconsistency in results (e.g., different stimuli, the same response latency measure [IAT] used across studies, variations in IAT procedure and scoring, inconsistencies in samples, different in violent outcomes used across studies, etc.).

Importantly, this research needs to be replicated and expanded upon using several different measures, as well as samples from a broader range of populations (e.g., male students, male community members, males convicted of violent offences, and males recruited through an online panel), in order to achieve more comprehensive and reliable conclusions regarding whether implicit evaluative attitudes toward violence are related to violent behaviour, as well as other important violent cognitive constructs (i.e., explicit evaluative attitudes toward violence and beliefs regarding violence). As a result, the aim of the current dissertation was to develop a better understanding of cognitive constructs regarding violence, and in particular, implicit evaluative attitudes toward violence.

Specifically, I explored the relationships between implicit evaluative attitudes toward violence, other seemingly important violent cognitive constructs, and outcomes of violent behaviour, as well as the distinctiveness of measures designed to assess these violent cognitions. In the current dissertation, these relationships were assessed in male students, male community members, males convicted of violent offences, and online male panels. In addition, the distinctiveness of measures designed to assess various cognitive constructs regarding violence was assessed in a large sample of males recruited online.

Overview of the Dissertation

Overall, four distinct studies were conducted in the current dissertation. The convergence between modified implicit measures of evaluative attitudes toward violence and explicit measures of evaluative attitudes toward violence, as well as self-report measures of general beliefs regarding violence, was assessed among samples of male students, male community members (in-lab and online), and males convicted of violent offences. In addition, the convergence between these measures of cognitions regarding violence and various outcomes of violent behaviour was assessed across studies. Initially, a Pre-test was conducted, using a sample of male community participants recruited online ($N = 210$), to determine the optimal categories and stimuli to use for the response latency measures designed to assess implicit evaluative attitudes toward violence. Response latency measures were then adapted based on the results obtained from the pre-test data.

First, the created response latency measures were administered to samples of male undergraduate students ($N = 164$) and community members ($N = 108$) to assess implicit evaluative attitudes toward violence, along with explicit evaluative attitudes toward violence, general beliefs regarding violence, and violent behaviour. This served as Study 1 and was conducted to determine which violent cognitive constructs were most strongly associated with violent behaviour and whether they correlated with one another. Once this was determined, these measures were administered to a sample of males convicted of violent offences ($N = 42$) in Study 2, and two samples of male community participants recruited online ($N = 1,465$) in Study 3. In Study 3, I also investigated whether the violent cognition measures administered online assessed distinct cognitive constructs. This involved examining the underlying constructs being assessed by the measures that were

significantly related to violent behaviour in the above analyses involving the male student and community samples from Study 1. These final analyses were solely conducted on the combined sample of community males recruited online ($N = 1,465$) from Study 3 in order to maintain a homogeneous sample, as well as to achieve adequate power for more sophisticated statistical analyses (i.e., exploratory factor analysis).

Research Questions, Hypotheses, and Analyses

Table 4 below outlines the study objectives, research questions, and hypotheses. Research questions for *Objective 1* were examined by initially assessing the bivariate relationships between implicit measures of evaluative attitudes toward violence, explicit measures of evaluative attitudes toward violence, and self-report measures of general beliefs regarding violence, as well their relationship to indicators of violent behaviour (e.g., past, propensity, and likelihood) among two samples: a sample of male undergraduate students ($N = 164$) and a sample of male community members ($N = 108$). As stated above, this served as Study 1, in which the objective was to determine the violent cognition measures that were most strongly associated with indicators of violent behaviour and whether these measures were associated with one another. Once this was determined, these measures were administered to the following samples: a sample of males convicted of violent offences ($N = 42$; Study 2), and two samples of male community members recruited through an online panel ($N = 638$ and $N = 827$; Study 3). Hierarchical multiple linear regressions were also conducted in which explicit evaluative attitudes toward violence/beliefs regarding violence were entered in the first step, followed by implicit evaluative attitudes toward violence entered in the second step, with

indicators of violent behaviour as the outcome. This analysis was conducted among all samples (i.e., Studies 1, 2, and 3).

Moderated linear regressions were also conducted assessing whether the interaction between explicit evaluative attitudes toward violence (as well as self-report beliefs regarding violence, in order to be inclusive and comprehensive) and implicit evaluative attitudes toward violence was significantly related to violent behaviour (e.g., self-reported prior violence, current propensity for violence, and likelihood of violence). Simple effects analyses were then conducted as a follow-up to see where the differences were. This analysis was conducted among all samples (i.e., Studies 1, 2, and 3).

According to the MODE model reviewed above, there is a dual processing framework through which evaluative attitudes can be activated (Fazio, 1990). Implicit evaluative attitudes are believed to be activated immediately (i.e., through the automatic processing mode) in the presence of an attitude object (e.g., violence). However, under certain circumstances evaluative attitudes activated through an automatic processing mode may be changed/not relied on to motivate behaviour. These circumstances include the following: when there is opportunity or motivation to deliberate and the initial evaluative attitude is deemed invalid or inappropriate, when the implicit evaluative attitude towards the object is weak, and when no implicit evaluative attitude towards the object exists. Therefore, according to this model, the extent to which explicit evaluative attitudes are consistent with the resulting behaviour depends on several factors, one being the strength of an implicit evaluative attitude.

Given that implicit evaluative attitudes are said to be activated first and then either acted on or changed according to the factors listed above, implicit evaluative

attitudes toward violence were proposed to moderate the relationship between explicit evaluative attitudes toward violence and violent behaviour. I proposed here that the strength of one's implicit evaluative attitude towards violence (i.e., whether it is more positive or more negative) would affect the strength of relationship between one's explicit evaluative attitude towards violence and violent behaviour (e.g., how likely one is to be violent in the future). This follows from the idea proposed by the authors of the MODE model suggesting that those who have never encountered an attitude object before may not have an implicit evaluative attitude that is activated from memory and will have to construct an evaluative attitude based on whatever information is present at the time of deliberation (i.e., rely on evaluative attitudes that are activated through a deliberative processing mode). In this case, the explicit evaluative attitude that is constructed may be less reliable and more weakly related to behaviour (e.g., past, propensity, and likelihood). Further, when a strong implicit evaluative attitude toward an object exists and is activated, this limits the motivation to deliberate on its validity. In the case, the explicit evaluative attitude will likely be consistent with the initial implicit evaluative attitude and will be more likely to influence behaviour. In line with this, one might expect that those who hold more neutral (i.e., weaker) implicit evaluative attitudes toward violence, may have weaker relationships between their explicit evaluative attitudes toward violence and self-reported violent behaviour, in comparison to those who have high or low scores on measures designed to assess implicit evaluative attitudes toward violence (i.e., those who have stronger positive or negative implicit evaluative attitudes toward violence).

To address *Objective 2*, in Study 3, the items from the various violent cognition measures were factor analyzed using an Exploratory Factor Analysis (EFA). EFA allows

one to explore the underlying constructs being assessed by the items included in the analysis (i.e., factor structure of the items). In EFA, if items load (i.e., cluster together) onto one factor, this suggests that they are assessing the same underlying cognitive construct; however, if items load onto different factors, this suggests that they are assessing distinct underlying cognitive constructs. Multiple linear regressions were then conducted to partly address *Objective 3*, in which all factors found in the EFA were entered in one step, with violent behaviour as the outcome. Last, hierarchical multiple linear regressions were conducted to assess whether the factors found to be significantly related to indicators of violent behaviour in the multiple linear regression explained additional variance in these indicators over and above one another. These analyses were conducted among a combined sample of online male community members (i.e., $N = 1,465$) to achieve adequate power for a more sophisticated statistical analysis (i.e., EFA).

Table 4

Overview of Study Objectives, Research Questions, Analyses, and Hypotheses

Research Question	Analysis	Hypotheses
<i>Pre-test Study</i>		
<i>Objective:</i> To extend previous research using response latency measures to assess implicit evaluative attitudes toward violence by determining the optimal categories and stimulus words to use for these measures in the proposed dissertation.		
What do participants identify as the opposite of violence?	Descriptive statistics (i.e., frequency)	There are no hypotheses because this was exploratory.
Are the stimulus words easily classified?		
<i>Study 1</i>		
<i>Objective 1:</i> To examine the relationship between implicit measures of evaluative attitudes toward violence, as well as their relationship to a more commonly used measure of beliefs regarding violence, and explicit measures of evaluative attitudes toward violence. Also, to examine the relationship between these violent cognition measures and indicators of violence.		
Are the various violent cognition measures associated with one another?	Pearson Correlation Spearman's rho Correlation	Higher scores on the violent cognition measures, indicating cognitions supportive of violence, will be associated with more self-reported violent behaviour (i.e., past, current propensity, likelihood). In addition, violent cognition measures will be positively associated with one another.
Are the various violent cognition measures associated with indicators of violent behaviour?		
Do implicit evaluative attitudes toward violence explain additional variance in violent behaviour over and above explicit	Hierarchical multiple regression	Implicit evaluative attitudes toward violence will significantly explain additional variance in violent behaviour over and above explicit

evaluative attitudes toward violence/beliefs regarding violence?		evaluative attitudes toward violence/beliefs regarding violence.
Do implicit evaluative attitudes toward violence moderate the relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and indicators of violent behaviour?	Moderated regression	The relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and violent behaviour will vary depending on one's implicit evaluative attitudes. In other words, implicit evaluative attitudes toward violence will moderate these relationships.
Study 2		
<i>Objective 1:</i> To examine the relationship between violent cognition measures found to be related to other expected violent cognition measures and indicators of violent behaviour after analyzing the data collected from Study 1 above. Also, to examine the relationship between these violent cognition measures and indicators of violence.		
Are the various violent cognition measures associated with one another?	Pearson Correlation Spearman's rho Correlation	Higher scores on the violent cognition measures, indicating more cognitions supportive of violence, will be associated with more violent behaviour. In addition, violent cognition measures will be positively associated with one another.
Are the various violent cognition measures associated with indicators of violent behaviour?		
Do implicit evaluative attitudes toward violence explain additional variance in violent behaviour over and above explicit evaluative attitudes toward violence/beliefs regarding violence?	Hierarchical multiple regression	Implicit evaluative attitudes toward violence will significantly explain additional variance in violent behaviour over and above explicit evaluative attitudes toward violence/beliefs regarding violence.
Do implicit evaluative attitudes toward violence moderate the relationships	Moderated regression	The relationships between explicit evaluative attitudes toward violence/beliefs regarding

between explicit evaluative attitudes toward violence/beliefs regarding violence and indicators of violent behaviour?	violence and violent behaviour will vary depending on one's implicit evaluative attitudes. In other words, implicit evaluative attitudes toward violence will moderate these relationships.
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Study 3

Objective 1: To re-examine the relationships found in Study 2 in a larger samples of community males recruited through an online panel.

Are the various violent cognition measures associated with one another?	Pearson Correlation Spearman's rho Correlation	Higher scores on the violent cognition measures, indicating more cognitions supportive of violence, will be associated with more violent behaviour. In addition, violent cognition measures will be positively associated with one another.
Are the various violent cognition measures associated with indicators of violent behaviour?		
Do implicit evaluative attitudes toward violence explain additional variance in violent behaviour over and above explicit evaluative attitudes toward violence/beliefs regarding violence?	Hierarchical multiple regression	Implicit evaluative attitudes toward violence will significantly explain additional variance in violent behaviour over and above explicit evaluative attitudes toward violence/beliefs regarding violence.
Do implicit evaluative attitudes toward violence moderate the relationships between explicit evaluative attitudes toward violence/beliefs regarding and indicators of violent behaviour?	Moderated regression	The relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and violent behaviour will vary depending on implicit evaluative attitudes toward violence (i.e., implicit evaluative attitudes will moderate these relationships).

Objective 2: To assess the distinctiveness of these violent cognition measures.

Do measures assessing implicit evaluative attitudes toward violence, explicit evaluative attitudes toward violence, and general beliefs regarding violence assess distinct cognitive constructs?

Exploratory Factor Analysis

Items in measures of implicit evaluative attitudes toward violence will form one factor, beliefs regarding violence will form a second factor, and explicit evaluative attitudes toward violence will form a third factor.

Objective 3: To examine whether the factors found from the EFA analysis above are independently associated with violent behaviour and explain additional variance in violent behaviour when together.

Are the factors found in the EFA independently associated with indicators of violent behaviour and together do they explain additional variance in the indicators of violent behaviour?

Multiple linear regression

Hierarchical multiple regression

The factors found in the EFA will be independently associated with violent behaviour. Together these factors will account for additional variance in violent behaviour (i.e., explain more information together than alone).

Note. For Objective 1, across studies, both Pearson's r correlations (i.e., parametric test) and Spearman's rho correlations (non-parametric test) were conducted in order to account for any violated assumptions when running the parametric test.

Design Overview

The current dissertation consisted of a Pre-test, and three studies (i.e., Study 1, Study 2, and Study 3), and utilized a cross-sectional, retrospective, correlational design (see Table 5 below for details regarding sample size, completion time, and compensation for the collected samples). All questionnaires were administered to participants on PC laptop computers using either online survey methods or other computer software tools (i.e., E-Prime). The order of measures was counterbalanced and the order of items within each measure was randomized in order to protect against any potential order effects. Indicators of violent behaviour included information regarding participants' prior violent behaviour, propensity for violence at the time of assessment, and likelihood of violence. In addition, file reviews were conducted for the males convicted of violent offences in Study 2, in order to obtain information on indicators of violent behaviour (e.g., risk of violent recidivism, number of violent charges and convictions, etc.; see Appendix A for the coding form that was used). Specifically, I coded for whether they were currently serving a sentence for any violent offences, as well as whether they had any prior violent charges and/or convictions (i.e., violent institutional misconducts were also coded, but this information was often unavailable; see below for further information). Risk levels to reoffend were also coded, as well as scored, from official files (see description of measures in Study 2 below for more details).

Table 5

Summary of Participant Compensation

Sample	Sample Size	Completion Time (Minutes)	Type and Amount of Compensation
<i>Pre-test</i>			
Administered various stimulus words and potential categories (e.g., violence vs. peace) to the sample below in order to determine the optimal categories and stimulus words to use for the response latency measures designed to assess implicit evaluative attitudes toward violence in the current project.			
Community	210	20	\$2.58 CAD (\$2.00 USD) ^a
<i>Study 1</i>			
Administered response latency measures, using the determined stimuli above, designed to assess implicit evaluative attitudes toward violence, along with explicit measures of evaluative attitudes toward violence, and measures of beliefs regarding violence, as well as violent behaviour (past, propensity, and likelihood) to the samples below.			
Student	164	45	1.0% credit increase
Community	108	45	\$20.00
<i>Study 2</i>			
Administered a subset of the violent cognition measures administered in Study 1, as well as measures of violent behaviour (past, propensity, and likelihood) to a sample of males convicted of violent offences from the Secure Treatment Unit (STU).			
STU residents	42	45	1 packet of coffee and a cookie
<i>Study 3</i>			
Administer the same subset of violent cognition measures administered in Study 2, as well as measures of violent behaviour (past, current propensity, and likelihood) to an online panel of male community members.			
Community	1,465	35 (and 2 nd 25)	\$2.58 CAD (\$2.00 USD) ^a

^aThe amount and conditions of compensation are specified in panel participants'

agreement with the company managing this survey panel and each partner has its own

approach to compensating panelists for completing marketing surveys. The amount

number is a rough estimate of the amount of compensation received by each panel member that completes the survey.

Pre-test: Establishing Stimuli and Categories for Response Latency Measures

As outlined above, though past research on implicit evaluative attitudes toward violence has only used IAT measures, a limitation is that there has been little consistency between studies in the stimulus words and category labels used. This likely contributed to the mixed findings regarding this construct due to issues with the accuracy of its measurement among these different versions. As stated elsewhere, IAT measures require participants to sort stimulus words into categories that represent an attitude construct, such as *violence*, against an opposite concept category, such as *peace*. If participants do not consider the opposite concept category (e.g., *peace*) as the true opposite of the main attitude concept (e.g., *violence*), then this may result in ambiguity when sorting these stimulus words and the resulting index created may not reflect participants' implicit evaluative attitudes toward violence. Therefore, the categories that are chosen may affect the ability to accurately quantify implicit evaluative attitudes. In addition, the ease with which participants are able to sort the stimulus words into these categories will affect their response times and thus the resulting index used to quantify the construct of interest. If ambiguity occurs when sorting stimulus words, either due to difficulty in reading the words or identifying which category they should belong to, then this will result in slower reaction times, thus, increasing error variance.

Due to these limitations, a Pre-test was conducted to pilot test potential categories for the response latency measures used in the current dissertation, as well as various stimulus words. Participants were asked to identify what they considered was the true opposite of *violence* and *violent* (through open-ended and multiple-choice questions). They were also required to sort 83 words into various categories. There was no

hypothesis proposed here, as the analyses were exploratory in nature. The main objective was to determine an opposite concept category that should be used in the IAT measures and select five words for each category. Specifically, five words were selected for the main concept category (i.e., *violence*), five words were selected for the identified opposite concept category (e.g., *peace*), and five words were selected for each attribute category (e.g., *positive* and *negative*).

Methods

Participants

Participants consisted of 210 community men that were recruited through an online Qualtrics (<http://www.qualtrics.com>) panel. This is a pool of participants that is recruited by Qualtrics (through online partner companies) to complete online research studies (see Appendix B for a list of commonly asked questions and Appendix C for the Qualtrics invitation template). Qualtrics handles all recruitment, data collection, and compensation. The amounts of compensation participants receive depends on their agreement with Qualtrics and each partner company has its own approach to compensating its panelists. Awards given to participants who complete the online surveys are often in the form of gift cards, loyalty points, entry into draws for prizes, and cash awards. The form of compensation is clearly communicated to participants when they sign-up to be panel members. Therefore, researchers do not directly compensate participants, instead researchers pay Qualtrics and its partners, who then provide the form of award to their panelists for completing the survey.

All participants ($N = 210$) were male, 18 years of age or older, and understood written English. Five quality control questions were included in the online survey (see

Appendix D). These questions were included to ensure that participants were attending to the questions being asked (e.g., Please select “Positive”). All participants answered all five quality control questions correctly. Of the 210 participants who completed this online survey, three were excluded due to not having enough variance across items. In other words, they answered with the same response across most of the items contained in the online survey, suggesting that they were not attending to the items in the survey and their responses were likely unreliable. This left a final sample of 207 adult male participants. Of these, 103 (49.8%) were currently residing in the USA and 104 (50.2%) were currently residing in Canada. In addition, 139 (67.1%) participants were White, 24 (11.6%) were Asian, 11 (5.3%) were Black, 9 (4.3%) were Hispanic/Latino, 5 (2.4%) were Indigenous, 1 (0.5%) was Pacific Islander, 13 (6.3%) were of more than one ethnicity, and 5 (2.4%) identified as other. Of the 13 who were of more than one ethnicity, the majority ($n = 7$ or 53.8%) were of White and Hispanic/Latino ethnicities. Ages ranged from 18 to 77 years old, with the majority ($n = 135$ or 65.2%) being between 18 and 30 years old. The majority of participants were most sexually attracted to women ($n = 162$ or 80.7%), 29 (14.0%) were most sexually attracted to men, 8 (3.9%) were most sexually attracted to both women and men, and 3 (1.4%) selected ‘other’. When asked about the highest level of education they had completed, the breakdown was as follows: 82 (39.6%) completed high school, 46 (22.2%) completed an undergraduate degree, 29 (14.0%) completed community college, 29 (14.0%) completed a Master’s degree, 10 (4.8%) completed a Doctoral degree, 6 (2.9%) selected ‘other’, and 5 (2.4%) had missing information regarding their level of education. Last, 109 (52.7%) were currently single, 52 (25.1%) were married, 15 (7.2%) were in a romantic relationship, 15 (7.2%) were

living with a romantic partner, 13 (6.3%) were separated/divorced/widowed, and 3 had missing information regarding their current marital status.

Measures

Demographic Questions. Participants were asked to report on various demographic information such as biological sex, sexual orientation, age, country of residence, ethnicity, level of education, and relationship status (see Appendix E).

Opposite of Violence and Violent Questions. Participants were asked the following open-ended questions: “What is the opposite of violence?” and “What is the opposite of violent?”. The following self-report multiple choice questions were also asked: “Which of the following do you feel best represents the opposite of violence?” and “Which do you feel best represents the opposite of violent?”. The following response options were provided for both of the latter two questions: *Peace, Peaceful, Positive, Good, Non-violent*. These questions were asked to ascertain what participants believed the opposite of violence and violent is (see Appendix F).

Stimulus Rating Tasks. Participants were asked to complete stimulus rating tasks in which they were asked to categorize 83 words as either ‘*Violent*’, ‘*Neither*’, or ‘*Non-violent*’ and then again as either ‘*Positive*’, ‘*Neither*’, or ‘*Negative*’ (see Appendix G). Whether participants were required to rate the words as ‘*Violent*’, ‘*Neither*’, ‘*Non-violent*’ or ‘*Positive*’, ‘*Neither*’, ‘*Negative*’ was randomized, as well as the order of the words, to protect against any order effects that may occur while participants were categorizing the words.

Procedure

In the Pre-test, an online panel was recruited through Qualtrics (<http://www.qualtrics.com>) that completed a 20-minute online survey in which they rated words related to violence peace, positive, and negative, as well as answer questions to identify what the opposite of violence is according to most participants. The inclusion criteria for the Pre-test were that participants must be male, 18 years of age or older, and understand written English. Panelists who completed the current survey also had to reside in Canada or the USA. In order to complete the survey and receive full compensation, panelists also had to answer five quality control questions correctly (see Appendix D for list of quality control questions that were included). Quality control questions were items that were included to ensure that participants were attending to the questions being asked (e.g., Please select “I Agree”). These items were randomly interspersed within the online survey. Panel members that met these criteria were invited by Qualtrics to take part in the current study by completing the online survey. If participants accepted this invitation, they were given a link to complete the survey. Once they began the online survey, they were first presented with the consent form (see Appendix H) that outlined the inclusion criteria, benefits to participating, study objectives and procedures, as well as potential risks to participating. The consent form also informed participants that they may withdraw or refuse to answer any questions at any point while completing the online survey. Only those who consented to participate were allowed to move forward. If consent was given, they first completed a series of demographic questions (see Appendix E). They were then asked four questions to ascertain what they believe is the opposite of violence. In the first two questions participants were asked to write what they believe the

opposite of “violent” and “violence” is. Next, they were asked to select a term that best represents the opposite of “violent” and “violence” from drop down menus of possible words that could be interpreted as the opposite (see Appendix F). Last, participants were required to categorize 83 words into the categories of violent, neither, or non-violent and then again into the categories of positive, neither, or negative (see Appendix G for a list of words and rating scales). The order of the rating tasks (e.g., whether they were asked to categorize the words into the categories of ‘Violent’, ‘Neither’, ‘Non-violent’ or ‘Positive’, ‘Neither’, ‘Negative’) was randomized, as well as the order of the words, to protect against any potential order effects. At the end of the survey participants were debriefed (see Appendix I), as well as compensated. Qualtrics approach to compensating panelists is as follows. Panelists are provided a list of surveys for which they meet the study inclusion criteria. Compensation associated with each survey is also listed. When panelists finish participating, they are compensated with the posted cash-equivalent incentive (each survey has a cash equivalent value in the range of \$1.00 to \$1.75); however, participants are not fully compensated under the following circumstances: If they speed through the survey and take too little time to complete the survey, if participants answer all the questions with the same response (aka straightlining), and if participants are screened out as ineligible after initially completing the screening questions (e.g., male, 18 years of age or older, understand written English, live in Canada or USA). All panelists are made aware of these exceptions before signing up to participate in a research panel. In the current study, participation was confidential, as well as anonymous. Qualtrics protects participants’ privacy through extensive security and rigorous privacy standards.

Results and Discussion

Descriptive statistics were examined on the sample of 207 male community participants to determine the optimal categories and stimulus words for the response latency measures used to quantify implicit evaluative attitudes toward violence. In particular, frequency statistics (i.e., frequencies and percentages) were ran to determine how many participants endorsed certain categories and identified words as belonging to a particular category. Details regarding the decision criteria used are outlined below.

As evidenced in Table 6 below, when participants were asked the open-ended question “What is the opposite of violence?”, the large majority identified ‘*peace*’ ($n = 124$ or 59.9%) as the opposite, followed by ‘*non-violence*’ ($n = 12$ or 5.80%), ‘*calm*’ ($n = 8$ or 3.86%), ‘*love*’ ($n = 7$ or 3.38%), and ‘*peaceful*’ ($n = 6$ or 2.90%). As evidenced in Table 7, when participants were asked the open-ended question “What is the opposite of violent?”, the answers were more varied and fewer participants endorsed solely one answer. Most indicated ‘*peaceful*’ ($n = 56$ or 27.05%) as the opposite of ‘*violent*’, followed by ‘*calm*’ ($n = 34$ or 16.43%), ‘*peace*’ ($n = 19$ or 9.18%), ‘*non-violent*’ ($n = 15$ or 7.25%), ‘*love*’ ($n = 9$ or 4.35%), ‘*gentle*’ ($n = 8$ or 3.86%), ‘*safe*’ ($n = 6$ or 2.90%), and ‘*loving*’ ($n = 4$ or 1.93%). Participants were also asked to answer two multiple choice questions; “Which of the following do you feel best represents the opposite of violence?” and “Which of the following do you feel best represents the opposite of violent?”. Both questions required participants to select one of the following response options: *peace*, *peaceful*, *positive*, *good*, or *non-violent*. As evidenced in Table 8, when asked “Which of the following do you feel best represents the opposite of violence?”, the large majority of participants selected ‘*Peace*’ ($n = 134$ or 66.7%) as their response. As evidenced in Table

9, when asked, “Which of the following do you feel best represents the opposite of violent?”, the answers were, once again, more varied with most participants selecting ‘*Peaceful*’ ($n = 79$ or 38.2%) as their response, followed by ‘*Non-violent*’ ($n = 61$ or 29.5%) and ‘*Peace*’ ($n = 56$ or 27.1%). Therefore, ‘*Violence*’ was chosen as the main attitude construct category and ‘*Peace*’ was selected as the opposite concept category. In other words, these categories were selected to be used in the response latency measures to quantify implicit evaluative attitudes toward violence. These categories were chosen because there was less variability when identifying the opposite of ‘*Violence*’ rather than ‘*Violent*’ and ‘*Peace*’ was selected by the majority of participants as the opposite of violence.

Table 6

Frequencies and Percentages for Participants' Answers to the Question "What is the opposite of violence?"

Answer	Frequency	%
Peace	124	59.90
Non-violence	12	5.80
Calm	8	3.86
Love	7	3.38
Peaceful	6	2.90
Good	4	1.93
Kindness	4	1.93
Safety	4	1.93
Compassion	2	0.97
Happiness	2	0.97
I don't know	2	0.97
Pacifism	2	0.97
Acceptance	1	0.48
Affection	1	0.48
Agape	1	0.48
Amiability	1	0.48
Benevolence	1	0.48
Calmness	1	0.48
Caring	1	0.48
Friendliness	1	0.48
Friendly	1	0.48
Gentle	1	0.48
Getting along	1	0.48
Greatness	1	0.48
Greatness	1	0.48
Happy	1	0.48
Harmony	1	0.48
Knowledge	1	0.48
Life without death	1	0.48
Loving	1	0.48
Messaging	1	0.48
No violence	1	0.48
Nothing	1	0.48
Passive	1	0.48

Patience	1	0.48
Peaceful living	1	0.48
Peacefulness	1	0.48
Submission	1	0.48
Subservience	1	0.48
Sweet	1	0.48
Tolerance	1	0.48
Useless	1	0.48
Total	207	

Note. The responses do not add up to the total value because only those responses that were reasonable were included.

Table 7

Frequencies and Percentages for Participants' Answers to the Question "What is the opposite of violent?"

Answer	Frequency	%
Peaceful	56	27.05
Calm	34	16.43
Peace	19	9.18
Non-violent	15	7.25
Love	9	4.35
Gentle	8	3.86
Safe	6	2.90
Loving	4	1.93
Happy	3	1.45
Passive	3	1.45
Friendly	2	0.97
Harmony	2	0.97
I don't know	2	0.97
Kind	2	0.97
Nice	2	0.97
Pacifist	2	0.97
Bad	1	0.48
Beatings	1	0.48
Benevolent	1	0.48
Cine	1	0.48

Compassion	1	0.48
Compassionate	1	0.48
Getting along	1	0.48
Great	1	0.48
Kindness	1	0.48
Loved	1	0.48
More happy	1	0.48
Neutral	1	0.48
Not aggressive	1	0.48
Not attacking	1	0.48
Nothing	1	0.48
Pacifier	1	0.48
Pacifism	1	0.48
Pacifistic	1	0.48
Patient	1	0.48
Peace and quiet	1	0.48
Purple	1	0.48
Quiet	1	0.48
Rational	1	0.48
Serene	1	0.48
Serenity	1	0.48
Soft	1	0.48
Subservient	1	0.48
Tame	1	0.48
Tranquil	1	0.48
Understanding	1	0.48
Unnecessary	1	0.48
Yellow	1	0.48
Total	207	

Note. The responses do not add up to the total value because only those responses that were reasonable were included.

Table 8

Frequencies and Percentages for Participants' Responses to the Question "Which of the following do you feel best represents the opposite of violence?"

Response option	Frequency	%
Peace	138	66.7
Peaceful	30	14.5
Positive	5	2.4
Good	3	1.4
Non-violent	31	15.0
Total	207	100.0

Table 9

Frequencies and Percentages for Participants' Responses to the Question "Which of the following do you feel best represents the opposite of violent?"

Response option	Frequency	%
Peace	56	27.1
Peaceful	79	38.2
Positive	2	1.0
Good	9	4.3
Non-violent	61	29.5
Total	207	100.0

Table 10

Frequencies and Percentages of Participants' Responses When Rating Non-Violent

Words (chosen for the category of 'Peace')

Word	Frequency (%)		
	Violent	Neither	Non-violent
Peace	3(1.4)	12(5.8)	192(92.8)
Peaceful	2(1.0)	13(6.3)	192(92.8)
Cuddle	2(1.0)	17(8.2)	188(90.8)
Harmony	6(2.9)	14(6.8)	187(90.3)
Make peace	9(4.3)	12(5.8)	186(89.9)
Nice	6(2.9)	16(7.7)	185(89.4)
Calm	4(1.9)	18(8.7)	185(89.4)
Love	4(1.9)	19(9.2)	184(88.9)
Smile	2(1.0)	26(12.6)	179(86.5)
Happy	4(1.9)	25(12.1)	178(86.0)
Patience	1(0.5)	32(15.5)	174(84.1)
Pleasant	7(3.4)	27(13.0)	173(83.6)
Laughter	2(1.0)	32(15.5)	173(83.6)
Good	3(1.4)	32(15.5)	172(83.1)
Laugh	2(1.0)	41(19.8)	164(79.2)
Serenity	6(2.9)	40(19.3)	161(77.8)
Tranquil	10(4.8)	40(19.3)	157(75.8)
Calm down	10(4.8)	43(20.8)	153(73.9)
Agree	2(1.0)	58(28.0)	147(71.0)
Quiet	1(0.5)	64(30.9)	142(68.6)
Reconciliation	5(2.4)	62(30.0)	140(67.6)
Passive	8(3.9)	59(28.5)	140(67.6)
Joke	5(2.4)	72(34.8)	130(62.8)
Talk	2(1.0)	76(36.7)	129(62.3)
Compromise	10(4.8)	69(33.3)	128(61.8)
Whisper	3(1.4)	87(42.0)	116(56.0)
Give in	4(1.9)	102(49.3)	101(48.8)

Table 11
Frequencies and Percentages of Participants' Responses When Rating Positive Words

Word	Frequency (%)		
	Positive	Neither	Negative
Happy^a	198(95.7)	4(1.9)	3(1.4)
Trust	197(95.2)	8(3.9)	2(1.0)
Joy	197(95.2)	8(3.9)	2(1.0)
Good^a	196(94.7)	9(4.3)	1(0.5)
Sunshine	195(94.2)	7(3.4)	5(2.4)
Pleasant ^a	195(94.2)	9(4.3)	3(1.4)
Nice ^a	195(94.2)	8(3.9)	4(1.9)
Harmony ^a	193(93.2)	13(6.3)	1(0.5)
Paradise	193(93.2)	11(5.3)	3(1.4)
Love	192(92.8)	8(3.9)	7(3.4)
Beautiful	192(92.8)	13(6.3)	2(1.0)
Smile ^a	192(92.8)	12(5.8)	2(1.0)
Freedom	191(92.3)	13(6.3)	3(1.4)
Honest	190(91.8)	13(6.3)	4(1.9)
Hope	190(91.8)	14(6.8)	3(1.4)
Laugh ^a	187(90.3)	17(8.2)	3(1.4)
Calm ^a	185(89.4)	12(5.8)	9(4.3)
Laughter ^a	185(89.4)	19(9.2)	2(1.0)
Cuddle ^a	185(89.4)	19(9.2)	3(1.4)
Patience ^a	180(87.0)	24(11.6)	3(1.4)
Gifted	179(86.5)	22(10.6)	6(2.9)
Lucky	175(84.5)	30(14.5)	1(0.5)
Vacation	174(84.1)	31(15.0)	2(1.0)
Rainbow	172(83.1)	31(15.0)	3(1.4)
Serenity ^a	170(82.1)	31(15.0)	6(2.9)
Rest	156(75.4)	45(21.7)	6(2.9)
Agree ^a	155(74.9)	46(22.2)	6(2.9)
Tranquil ^a	154(74.4)	41(19.8)	12(5.8)
Health	146(70.5)	57(27.5)	4(1.9)
Reconciliation ^a	141(68.1)	53(25.6)	12(5.8)
Sleep	139(67.1)	62(30.0)	6(2.9)
Present	122(58.9)	83(40.1)	2(1.0)
Compromise ^a	117(56.5)	72(34.8)	18(8.7)
Joke ^a	115(55.6)	83(40.1)	9(4.3)
Quiet ^a	100(48.3)	100(48.3)	7(3.4)

^aWords that were also rated as non-violent or could be perceived as non-violent words

Table 12

Frequencies and Percentages of Participants' Responses When Rating Negative Words

Word	Frequency (%)		
	Positive	Neither	Negative
Evil	6(2.9)	6(2.9)	195(94.2)
Disaster	4(1.9)	10(4.8)	193(93.2)
Poison ^a	9(4.3)	10(4.8)	188(90.8)
Disease	2(1.0)	19(9.2)	186(89.9)
Cancer	6(2.9)	16(7.7)	185(89.4)
Mean	8(3.9)	21(10.1)	178(86.0)
Pollution	6(2.9)	26(12.6)	175(84.5)
Rotten	6(2.9)	28(13.5)	173(83.6)
Poverty	7(3.4)	29(14.0)	171(82.6)
Deceitful	9(4.3)	29(14.0)	169(81.6)
Sickness	3(1.4)	35(16.9)	169(81.6)
ill	8(3.9)	39(18.8)	159(76.8)
Vomit	2(1.0)	46(22.2)	159(76.8)
Stink	4(1.9)	54(26.1)	148(71.5)
Ugly	8(3.9)	55(26.6)	144(69.6)
Accident	5(2.4)	68(32.9)	134(64.7)

^aWords that were also rated as non-violent or could be perceived as violent words

Table 13

Frequencies and Percentages of Participants' Responses When Rating Violent Words

(chosen for the category of 'Violence')

Word	Frequency (%)		
	Violent	Neither	Non-violent
Violence	197(95.2)	5(2.4)	5(2.4)
Murder	196(94.7)	9(4.3)	2(1.0)
Kill	196(94.7)	11(5.3)	0(0.0)
Torture	195(94.2)	6(2.9)	6(2.9)
Assault	195(94.2)	7(3.4)	5(2.4)
Violent	193(93.2)	8(3.9)	6(2.9)
Punch	189(91.3)	12(5.8)	6(2.9)
Stab	189(91.3)	13(6.3)	4(1.9)
Attack	188(90.8)	13(6.3)	6(2.9)
Fight	187(90.3)	14(6.8)	6(2.9)
Beat up	186(89.9)	14(6.8)	7(3.4)
Hit	182(87.9)	15(7.2)	10(4.8)
Strangle	180(87.0)	17(8.2)	10(4.8)
Brawl	179(86.5)	16(7.7)	12(5.8)
Choke	173(83.6)	25(12.1)	9(4.3)
Threaten	172(83.1)	28(13.5)	7(3.4)
Smack	170(82.1)	22(10.6)	14(6.8)
Kick	166(80.2)	30(14.5)	11(5.3)
Shove	164(79.2)	33(15.9)	10(4.8)
Aggressive	160(77.3)	36(17.4)	11(5.3)
Hurt	154(74.4)	43(20.8)	10(4.8)
Injure	153(73.9)	41(19.8)	13(6.3)
Poison	153(73.9)	43(20.8)	10(4.8)
Smother	103(49.8)	64(30.9)	40(19.3)
Scrap	88(42.5)	93(44.9)	26(12.6)

Participants were also asked to sort 83 words related to the constructs of *violence*, *peace*, *positive*, and *negative* into the categories of *violent*, *neither*, or *non-violent* and *positive*, *neither*, or *negative*. This was done to determine the optimal stimulus words to use for the response latency measures. Therefore, frequencies and percentages were

examined to determine which words had highest agreement for one category among the sample of 207 male community online panel participants. When selecting words, the most highly rated words for each category (i.e., *violent*, *non-violent*, *positive*, and *negative*) were selected; however, there were some exceptions to this. For instance, duplicates of the selected categories (i.e., *violence*, *peace*, *positive*, and *negative*) were selected only when there were not enough other highly rated words for the category in question. Also, words that seemed too highly definitionally related to another category, in other words could be highly synonymous for two categories (e.g., *peace* and *non-violent*), were avoided even if they were not highly rated on another category. Additionally, words that seemed to require a higher reading level were dropped because of the likely lower education and reading ability of the sample of men who had been convicted of violent offences collected in Study 2. These three exceptions all applied when selecting words for the category of '*peace*'. For instance, as is evidenced in Table 10, the words of *peaceful* and *peace* were selected as stimulus words for the category of '*peace*' because other highly rated words required a higher reading ability (i.e., *harmony*) or were too definitionally related to another category (i.e., the word *nice*, which could be a '*positive*' word). In addition, the word *make peace* was not selected because it contained two separate words, which may introduce ambiguity, and is too similar to the already selected words of *peaceful* and *peace*. Also, when selecting stimulus words for the category of '*positive*', words such as *trust*, *pleasant*, *nice*, *harmony*, and *love* were not selected because they are too definitionally related to the category of '*peace*' (see Table 11). Also, when selecting stimulus words for the category of '*negative*', the word *poison* was not selected because it is too definitionally related to the category of '*violence*' (e.g., giving

poison to someone can be an act of violence; see Table 12). Last, some of the words that were highly rated as *violent* were dropped because they were too violent in nature and/or highly related to the word *murder*, which was selected as one of the stimulus words for the category of ‘*violence*’ (e.g., *kill, torture, stab*). These were replaced with words that were more synonymous with general violence (e.g., *assault, punch, attack, fight*). In addition, the words of *violence* and *violent* were not selected because they are duplicates of the category (i.e., ‘*violence*’) and there were other words that were rated almost as highly as *violent* (see Table 13). Consequently, the following stimulus words were selected for the category of ‘*violence*’: *murder, assault, punch, attack, and fight* (see Table 13). The following stimulus words were selected for the category of ‘*peace*’: *peaceful, peace, cuddle, calm, and love* (see Table 10). The following stimulus words were selected for the category of ‘*positive*’: *happy, joy, good, sunshine, and beautiful* (see Table 11). Last, the following stimulus words were selected for the category of ‘*negative*’: *evil, disaster, cancer, disease, and mean* (see Table 12). In conclusion, the categories of ‘*Violence*’ and ‘*Peace*’, along with the above listed stimulus words, were selected to be used in the response latency measures, designed to assess implicit evaluative attitudes toward violence, that were administered across all subsequent studies throughout the current dissertation (see *Measures* section in Study 1, below for details).

Study 1: Examining Implicit Evaluative Attitudes Toward Violence and Other Explicit/Self-report Violent Cognitive Constructs Among In-Lab Samples

In Study 1, two variants of the IAT were administered to assess implicit evaluative attitudes toward violence, along with explicit measures of evaluative attitudes toward violence, beliefs regarding violence, and violent behaviour. As outlined above, several considerations should be made when administering IAT measures to assess implicit evaluative attitudes. For instance, the particular concept categories (i.e., *violence* and *peace*) and attribute categories (i.e., *positive* and *negative*), stimuli (i.e., words or images), scoring algorithm, and general procedure (e.g., feedback vs. no feedback on error trials) can affect the results of IAT measures (e.g., relationships with constructs of interest). Another consideration is whether IAT measures activate personal implicit evaluative attitudes toward an object (e.g., I think violence is bad) or culturally accepted beliefs about the object (e.g., society thinks violence is bad; see Olson & Fazio, 2004). To account for this possibility, Olson and Fazio (2004) proposed using a personalized IAT procedure in which the evaluative attribute categories of *positive* and *negative*, for example, are replaced with personalized categories of *I like*, and *I dislike*. In line with this, in the current dissertation I administered a personalized version of the IAT, along with a traditional version, to assess implicit evaluative attitudes toward violence. In the personalized IAT, the following categories were used: *VIOLENCE or I like* and *PEACE or I dislike*, or *VIOLENCE or I dislike* and *PEACE or I like* (see *Measures* section below for more details regarding this measure).

Relatedly, De Houwer et al. (2015) put forth another potential issue with the IAT procedure. They argued that the IAT captures associations between concepts (i.e.,

violence and *good*) while ignoring how those concepts are related to one another (also see Hughes et al., 2012). For example, the two propositional beliefs, “violence is good” and “me doing violence is good”, both associate the two concepts of “violence” and “good”, but they represent a different type of relation between these concepts. Further, these two propositional statements might be differentially related to behaviour (De Houwer et al., 2015). Regardless, IAT measures designed to assess implicit evaluative attitudes toward violence and thus, that contain categories associated with these propositions (e.g., *violence*, *non-violence*, *good*, and *bad*), may not be able to differentiate between these two different propositional statements (De Houwer et al., 2015). In addition, different participants may associate these two concepts, “violence” and “good” in accordance with different propositional beliefs and thus, the same IAT measure may activate different implicit associations among different participants. However, De Houwer and colleagues (2015) stated that the Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes et al., 2010) may be better able to differentiate between propositional beliefs at an implicit level. For example, in an IRAP, designed to assess implicit self-esteem, participants are presented with either “I am” or “I am not” at the top of a computer screen. They are then presented with evaluative attribute words in the form of adjectives of “positive” and “negative”. For some trials, participants are instructed to respond *as if* the statement of “I am positive” is correct. Therefore, for all trials where “I am” and then an adjective of *positive* is presented or “I am not” and then an adjective of *negative* is presented, participants are to select the response “correct”. Conversely, for trials where “I am” and then an adjective of *negative* is presented or “I am not” and then an adjective of *positive* is presented, participants are to select the response of “false”. The task then

switches, and participants are instructed to respond *as if* the statement of “I am negative” is correct. Therefore, there are two different types of critical blocks as is the case with IAT measures. An overall index is calculated, much in the same way as with the IAT, by comparing response times across the different types of blocks. To show evidence that traditional IAT measures may activate different implicit associations for different participants, Remue and colleagues (2013, 2014) conducted two studies; in the first study they administered an IAT measure to assess implicit self-esteem and in the second they administered two versions of the IRAP to assess implicit self-esteem. More specifically, these authors administered one IRAP assessing the implicit belief that “I am good” and the other assessing the implicit belief that “I want to be good” (also see DeRaedt et al., 2006). Remue et al. (2013) found that IAT scores did not differ between depressed and non-depressed participants. In contrast, Remue et al. (2014) found lower scores on the IRAP assessing the implicit belief “I am good” than on the IRAP assessing the implicit belief “I want to be good”, among depressed participants. In addition, they observed the opposite results among non-depressed participants; lower scores on the IRAP assessing “I want to be good” than on the IRAP assessing “I am good”.

Considering the above, De Houwer and colleagues (2015) created a new measure, the Relational Responding Task (RRT), that very closely follows the procedure used in the IRAP in which participants are instructed to respond in accordance with a particular implicit belief/association; however, instead of the partial statements of “I am” and “I am not”, as in the IRAP, the RRT presents full statements in the center of a computer screen (e.g., “I like myself”). For example, in an RRT designed to assess implicit self-esteem, during one type of critical block, participants would be instructed to respond *as if* they

believe they are good, by selecting the response “true” when statements are in line with this belief (e.g., I like myself) and “not true” when statements are not in line with this belief (e.g., I dislike myself). In the second type of critical block, participants would be instructed to respond *as if* they believe they are bad, by selecting the response “true” when statements are in line with this belief (e.g., I dislike myself) and “not true” when statements are not in line with this belief (e.g., I like myself). Differences in response times between the two types of blocks is calculated to provide an index, in line with the IAT-scoring algorithm suggested by Greenwald et al. (2003). De Houwer and colleagues (2015) administered a version of the RRT to assess implicit prejudice toward Flemish people vs. immigrants. They observed moderate relationships between scores on the RRT and explicit measures of racism. In line with the recommendations made by De Houwer and colleagues (2015), I administered a modified version of the RRT in the current study (see *Measures* section below for a detailed description) to assess implicit evaluative attitudes toward violence along with the two variants of the IAT (i.e., a traditional version and a personalized version).

In the current study, the relationships between implicit evaluative attitudes toward violence, explicit evaluative attitudes toward violence, and self-reported beliefs regarding violence were assessed. In addition, the relationships between these cognitive constructs regarding violence and self-reported indicators of violent behaviour (i.e., past, propensity, and likelihood) were examined. As reviewed above, contradictory results have been found regarding these relationships. For instance, some studies have found that implicit evaluative attitudes toward violence were related to greater violence and higher levels of risk relevant constructs (e.g., psychopathy) (e.g., Bluemke & Zumbach, 2012; Eckhardt et

al., 2012; Eckhardt & Crane, 2014; Hermann & Nunes, 2018; Jeon et al., 2019; Nunes et al., 2013; Robertson & Murachver, 2007; Snowden et al., 2004; Sprunger & Eckhardt, 2017; Zwetz et al., 2015), whereas others have found no relationship between these constructs (e.g., Blumenthal et al., 2019; Hermann et al., 2018; Maimone & Nunes, 2020; Polaschek et al., 2010). These contradictory findings may be because evaluative attitudes toward violence are difficult to accurately conceptualize and assess. However, previous studies mostly differed in the IAT measure used (i.e., different categories and stimuli) and this may account, at least partly, for the discrepant results regarding implicit evaluative attitudes toward violence.

In addition, I examined whether implicit evaluative attitudes toward violence explained additional variance in self-reported violent behaviour over and above explicit evaluative attitudes toward violence or beliefs regarding violence. Last, I examined whether implicit evaluative attitudes toward violence significantly moderated the relationship between explicit evaluative attitudes toward violence or beliefs regarding violence and violent behaviour. As outlined above, implicit evaluative attitudes toward violence are believed to be activated first in the presence of an attitude object (e.g., violence), and then either motivate the resulting behaviour, or are modified according to factors available in the environment at the time of activation. In addition, the strength of the implicit evaluative attitude towards violence is believed to affect the strength of relationship between explicit evaluative attitudes toward violence/beliefs regarding violence and violent behaviour (see MODE model; Fazio, 1990). This follows from the idea proposed by the authors of the MODE model suggesting that those who have never encountered an attitude object before may not have an existing implicit evaluative

attitude in memory and thus no evaluative attitude will be initially activated. In this case, one has to construct an explicit evaluative attitude based on whatever information is present at the time. Because of this, the explicit evaluative attitude that is constructed in this case may be less reliable and more likely unrelated (or weakly related) to behaviour (e.g., prior violence, propensity for violence, and/or likelihood of violence). In line with this, one might expect that those who hold more neutral implicit evaluative attitudes toward violence may have weaker relationships between their explicit evaluative attitudes toward violence and self-reported violent behaviour, in comparison to those who have high or low scores on measures designed to assess implicit evaluative attitudes toward violence (i.e., those who have stronger positive or negative implicit evaluative attitudes toward violence). Because the relationship between explicit evaluative attitudes toward violence and violent behaviour is expected to change depending on the strength of one's implicit evaluative attitudes toward violence, implicit evaluative attitudes toward violence were proposed to moderate the relationship between explicit evaluative attitudes toward violence/beliefs regarding violence and violent behaviour.

It was hypothesized that more positive implicit evaluative attitudes toward violence would be associated with more positive explicit evaluative attitudes toward violence and more beliefs supportive of violence. It was also hypothesized that more positive explicit evaluative attitudes toward violence would be associated with more violence-supportive beliefs. Further, it was hypothesized that more positive implicit evaluative attitudes toward violence, more positive explicit evaluative attitudes toward violence, and more violence-supportive beliefs would be associated with more prior violence, greater propensity for violence, and greater likelihood of violence. It was also

hypothesized that implicit evaluative attitudes toward violence would explain additional variance in self-report violent behaviour over and above explicit evaluative attitudes toward violence/beliefs regarding violence. Last, it was hypothesized that implicit evaluative attitudes toward violence would moderate the relationship between explicit evaluative attitudes toward violence/beliefs regarding violence and self-report violent behaviour.

Methods

Participants

Participants consisted of male undergraduate students from Carleton University and male community members. Male students were recruited through Carleton University's online recruitment system (i.e., SONA; see Appendix J for the recruitment notice). They did not have to self-report a history of violence to be included in the study. Male community members were recruited through advertisements (see Appendix K) posted on various social media sites. These sites included Craigslist, Kijiji, Facebook, Instagram, Twitter, Reddit, and UsedOttawa. As with the student sample, community men did not have to self-report a history of violence to be included in the study.

All participants had to be male, heterosexual, 18 years of age or older, and understand written English to participate. These criteria were clearly communicated in the recruitment notice for students (see Appendix J) and the advertisement posted online for community members (see Appendix K). Female participants were not recruited because the large majority of people convicted of violent and non-violent offences are male and therefore, sampling females from this population would not provide a large enough pool, and therefore size of sample, for meaningful analysis. Therefore, only male

community participants were recruited to obtain a clean group comparison, homogeneous for gender. Additionally, the majority of the items included within the measures are solely relevant to male participants.

Last, only heterosexual males were included in Studies 1, 2, and 3 because many of the provocative scenarios incorporated in the outcome measures make reference to female intimate partners (i.e., your girlfriend). Therefore, these items would not be applicable to non-heterosexual males. These scenarios have been used in previous research and validated, so changing them would compromise confidence in the validity and comparability of this research. There is also the issue of base-rate – most males convicted of violent and non-violent offences, as in the general population, are heterosexual (e.g., Bagleyphd & Tremblay, 1998; Buffum, 1972; Gagnon, 1968). Therefore, although compensating the community and student samples, by over-sampling non-heterosexual participants, may have been an option, this would not be the case for the group of males convicted of violent offences. In light of this, excluding non-heterosexual males from all samples allowed for comparisons that are homogenous in regard to sexual orientation.

Initially, 164 male undergraduate students and 108 men from the community completed the survey in the Aggressive Cognitions and Behaviour Research (ACBR) Lab at Carleton University. Of the initial sample of 164 undergraduate students, all were male and 18 years of age or older, 161 self-reported being most sexually attracted to women, and 162 self-reported that they understood written English. This left a sample of 160 undergraduate students. An additional two students did not correctly answer three or more of the quality control questions that were randomly interspersed among the items in

the survey. This left a sample of 158 male students. Five quality control questions were included in the survey to ensure that participants included in the analyses were attending to the questions being asked (see Appendix L). They required participants to select a particular response and thus, just simply follow the instructions provided in the question (e.g., Please select 'Agree'). I decided to include those who answered at least three of five quality control questions correctly as the procedure was quite lengthy (e.g., took 45 minutes to 1 hour, as nine main measures administered) and thus, missing/incorrectly answering two quality control questions seemed reasonable. An additional participant was excluded because he struggled with comprehending many of the items and stated that he made some errors while responding. This left a sample of 157 male students. Last, one additional participant was excluded because he had one or more missing score(s) on three of the main measures of interest. Because less than 5% missing data was observed (i.e., only one participant had missing data after excluding participants based on screening criteria), missing values analysis was not conducted and any missing scores were excluded listwise (i.e., across all *main* measures of interest). This left a final sample of 156 male undergraduate students. Displayed in Table 14 are the demographic details regarding this sample.

Table 14

Demographics of the Male Undergraduate Sample in Study 1

Demographic Variables	Frequency	%	<i>N</i>
What is your biological sex?			156
Male	156	100.0	
Female	0	0.0	
Other	0	0.0	
What is your ethnicity?			143
White	85	54.5	
Black	25	16.0	
Indigenous	0	0.0	
Asian	20	12.8	
Pacific Islander	0	0.0	
Hispanic/Latino	3	1.9	
Other	10	6.4	
Who are you most sexually attracted to?			156
Women	156	100.0	
Men	0	0.0	
Both women and men equally	0	0.0	
Other	0	0.0	
How old are you (years)?			156
17 or younger	0	0.0	
18-21	124	79.5	
22-23	15	9.6	
24-29	13	8.3	
30-34	2	1.3	
35-39	2	1.3	
40-49	0	0.0	
50-59	0	0.0	
60 or older	0	0.0	
What is the highest level of education you have completed?			138
High school (or equivalent)	125	80.1	
Community college	7	4.5	
Undergraduate degree	6	3.8	
Master's degree	0	0.0	
Doctoral degree	0	0.0	
What is your current relationship status?			156
Single	96	61.5	
In a romantic relationship	50	32.1	
Living with a romantic partner	9	5.8	
Married	1	0.6	
Separated/divorced/widowed	0	0.0	

Do you speak English fluently?			156
No	1	0.6	
Yes	155	99.4	
Do you understand written English?			156
No	0	0.0	
Yes	156	100.0	
Do you understand spoken English?			156
No	0	0	
Yes	156	100.0	

Note. $N = 156$ male undergraduate students. For the demographic question, “What is your ethnicity?”, there were 13 (8.3% out of 143) participants missing responses because this demographic question was added after they participated in Study 1. For the demographic variable, “What is the highest level of education you have completed?”, there were 18 (11.5% out of 138) participants missing responses because this demographic question was added after they participated in Study 1.

Of the initial sample of 108 in-lab community members, all were male and 18 years of age or older, 103 self-reported being most sexually attracted to women, and 106 self-reported that they understood written English. This left a sample of 101 community men. An additional three participants did not correctly answer three or more of the quality control questions in the survey and were thus, excluded. This left a sample of 98 community men. Last, four additional participants were excluded because they had one or more missing score(s) on at least one of the main measures of interest (i.e., missing total scores were found on three of the main measures). Because less than 5% missing data was observed (i.e., only four participants had missing data after excluding participants based on screening criteria), missing values analysis was not conducted and any missing scores were excluded listwise (i.e., across all *main* measures of interest). This left a final

sample of 95 men from the community. Displayed in Table 15 are the demographic details regarding this sample.

Table 15

Demographics of the Male Community Sample in Study 1

Demographic Variables	Frequency	%	<i>N</i>
What is your biological sex?			95
Male	95	100.0	
Female	0	0.0	
Other	0	0.0	
What is your ethnicity?			95
White	59	62.1	
Black	7	7.4	
Indigenous	4	4.2	
Asian	10	10.5	
East Indian	5	5.3	
Hispanic/Latino	3	3.2	
Arab	2	2.1	
Other	5	5.3	
Who are you most sexually attracted to?			95
Women	95	100.0	
Men	0	0.0	
Both women and men equally	0	0.0	
Other	0	0.0	
How old are you (years)?			95
17 or younger	0	0.0	
18-21	14	14.7	
22-23	16	16.8	
24-29	19	20.0	
30-34	12	12.6	
35-39	10	10.5	
40-49	10	10.5	
50-59	12	12.6	
60 or older	2	2.1	
What is the highest grade you have completed?			95
No schooling completed (includes pre-school)	2	2.1	
Kindergarten to grade 6	0	0.0	
Grade 7	0	0.0	
Grade 8	0	0.0	
Grade 9	0	0.0	

Grade 10	3	3.2	
Grade 11	5	5.3	
Grade 12	44	46.3	
Grade 13	41	43.2	
What is the highest level of education you have completed?			95
Did not complete high school	5	5.3	
High school (or equivalent)	37	38.9	
Community college	10	10.5	
Undergraduate degree	27	28.4	
Master's degree	13	13.7	
Doctoral degree	1	1.1	
Other	2	2.1	
What is your current employment status?			95
Full-time employed	31	32.6	
Part-time employed	18	18.9	
Not employed (Includes homemaker, unable to work, etc.)	12	12.6	
Military	1	1.1	
Full-time student	18	18.9	
Part-time students	4	4.2	
Retired	7	7.4	
Other	4	4.2	
What is your current relationship status?			95
Single	43	43.3	
In a romantic relationship	22	23.2	
Living with a romantic partner	8	8.4	
Married	16	16.8	
Separated/divorced/widowed	6	6.3	
Do you speak English fluently?			95
No	1	1.1	
Yes	94	98.9	
Do you understand written English?			95
No	0	0.0	
Yes	95	100.0	
Do you understand spoken English?			95
No	0	0.0	
Yes	95	100.0	

Note. $N = 95$ men from the community. None were missing any values on the demographic items.

Measures

Demographic Questions. Participants were first asked a series of demographic questions. Specifically, male undergraduate students were asked to report on their biological sex, ethnicity, sexual orientation, age, education, current relationship status, and proficiency in English (see Appendix M). Men from the community were also asked to report on their biological sex, ethnicity, sexual orientation, age, education, current relationship status, and English proficiency, as well as what level of high school education they received and their current employment status (see Appendix N).

Beliefs Regarding Violence.

The Revised Measures of Criminal Attitudes and Associates - Violence scale.

The Violence scale of the revised Measures of Criminal Attitudes and Associates (MCAA-R-V; Mills, 2007, see Appendix O) was administered to assess general beliefs regarding violence. This scale consists of 10 self-report items rated on a 4-point scale from 1 (disagree) to 4 (agree). Ratings are summed to compute a total score, which can range from 10 to 40, with higher scores reflecting greater endorsement of beliefs supportive of violence. Previous research has found good test-retest reliability for the Violence scale ($r = .73$), as well as excellent internal consistency with participants convicted of criminal offences ($\alpha = .84$ in Maimone & Nunes, 2020 and $\alpha = .80$ in Mills et al., 2002), and students ($\alpha = .75$ in Maimone & Nunes, 2020; $\alpha = .79$ in Mills & Kroner, 2001; and $\alpha = .80$ in Nunes et al., 2015). The internal consistency of the MCAA-R-V was .77 among male undergraduate students and .74 among male community members in the current study.

Implicit Evaluative Attitudes Toward Violence.

Implicit Association Test. An adapted version of the Implicit Association Test (IAT) was used in the current study (adapted from Greenwald et al.'s [1998] procedure) to measure implicit evaluative attitudes toward violence (see Figure 3 for an example of an IAT trial contained in the current procedure). In the IAT, implicit evaluative attitudes are inferred from the speed with which one sorts stimulus words (e.g., *attack*, *calm*) into categories. Respondents must sort each stimulus word into one of four categories by pressing one of two keys on a computer keyboard (*d* or *k*). Thus, two categories share one key while the remaining two categories share the other key. Response speed is expected to depend on the extent to which the categories that share the same key are associated in one's memory.

The main task is to categorize stimulus words into categories consisting of an attitude concept (i.e., violence) or an opposite concept category (i.e., peace) and an evaluative scale (i.e., positive or negative) using two buttons on a computer keyboard (e.g., *d* and *k*). As stated previously, a Pre-test was conducted prior to Study 1 in order to determine the optimal categories and stimulus words to use for the IAT in the proposed project. Table 16 contains the stimuli that were selected based on the results of the Pre-test data. For the Violent Evaluation IAT (VE-IAT) used in the current dissertation, participants were asked to categorize stimulus words into one of the following categories: *VIOLENCE*, *PEACE*, *positive*, or *negative*. To make the category pairs distinct from one another, one pair (*VIOLENCE* vs. *PEACE*) and its stimulus words (*MURDER*, *ASSAULT*, *PUNCH*, *ATTACK*, *FIGHT*, *PEACEFUL*, *PEACE*, *CUDDLE*, *CALM*, *LOVE*) were presented in upper-case letters, whereas the other pair (*positive* vs. *negative*) and its

stimulus words (*happy, joy, good, sunshine, beautiful, evil, disaster, cancer, disease, mean*) were presented in lower-case letters.

The VE-IAT in the current study follows the standard procedure regarding the number of trials, blocks, and order presentation (see Nosek et al., 2007, for an overview) and consisted of seven blocks, each categorizing concept words (e.g., *VIOLENCE* or *PEACE*), attribute words (e.g., *positive* words or *negative* words), or both (see Table 17 outlining the blocks of trials). Three of the trials within each block serve as practice trials, while four trials are used to score the responses. Blocks and trials differ by the concept and evaluative attribute categories that are paired, or in other words, share a response key. For instance, in some blocks, *VIOLENCE* and *positive* share a response key (*d*) and *PEACE* and *negative* share a response key (*k*), whereas for other blocks *PEACE* and *positive* share a response key (*d*) and *VIOLENCE* and *negative* share a response key (*k*) (see Figure 3). Those who have more positive implicit evaluative attitudes toward violence (e.g., view violence as positive) are expected to obtain faster response times when the response key shares the categories of *VIOLENCE* or *positive* and *PEACE* or *negative*, thus indicating a greater association in memory between the categories sharing the same key. The difference between the average response latency for one critical phase (e.g., *VIOLENCE* and *negative*/*PEACE* and *positive*) and that for the other critical phase (e.g., *VIOLENCE* and *positive*/*PEACE* and *negative*) creates the index used called the *IAT effect*. This IAT effect is created according to the *D* algorithm outlined by Greenwald et al. (2003). Higher scores indicate more positive implicit evaluative attitudes toward violence (e.g., in this case that *violence* and *positive* are more strongly associated than *violence* and *negative*).

In the original scoring algorithm proposed by Greenwald et al. (1998), the following was suggested: practice trials be excluded from the calculated score (i.e., Blocks 3 and 6); the first two trials of each critical block (i.e., first two trials of Blocks 4 and 7) be excluded; and response latencies for the trials in which errors occurred be retained. Overall, Greenwald et al. (2003) found that the following IAT-scoring method, generally, outperformed others on several criteria (see Greenwald et al., 2003 for details): using data from both the practice (i.e., Blocks 3 and 6) and test trials (i.e., Blocks 4 and 7) in the scoring algorithm; including the first two trials for each block; retaining latencies for trials in which errors occurred; excluding trials with response latencies greater than 10,000 milliseconds (trials in which participants took too long to respond); excluding participants who have more than 10% of trials with recorded response latencies of less than 300 milliseconds; and replacing error latencies (when participants select the incorrect response) with corresponding block means of correct latencies plus 600 milliseconds. Last, Greenwald et al. (2003) found that the *D* algorithm outperformed all other measures of disparity and should be computed by (a) calculating the mean for the time taken (i.e., response latency) to respond correctly to the trials for each block (i.e., Blocks 3, 4, 6, and 7), (b) calculating one pooled standard deviation for the practice trials (i.e., Blocks 3 and 6) and one pooled standard deviation for the test/critical trials (i.e., Blocks 4 and 7), (c) calculating the difference between the mean for Block 6 and the mean for Block 3 and the difference between the mean for Block 7 and the mean for Block 4, (d) dividing each difference by the associated pooled standard deviation (i.e., the pooled standard deviation for Blocks 3 and 6 and the pooled standard deviation for Blocks 4 and 7), and (d) averaging the resulting values from the previous step.

Of note, the above improved scoring algorithm suggests replacing error latencies with the mean of correct latencies for the corresponding block plus 600 milliseconds as a penalty for trials in which errors are made. However, Greenwald et al. (2003) also found recording the time taken until participants identified a correct response, when an incorrect response was selected initially, resulted in approximately equivalent results in terms of the validity of the IAT effect. This could be accomplished by providing participants with feedback when an incorrect response was selected and then requiring them to select the correct response to proceed to the next trial. On average, IAT effects (i.e., the *D* algorithm) in which there was a built-in error penalty requiring participants to select a correct response after an error was made and thus, in which no computed error penalty was used, slightly outperformed on almost all criteria considered by Greenwald et al. (2003). Greenwald et al. (2003) also suggested excluding trials with response latencies below 400 milliseconds (i.e., trials in which participants responses too quickly) in addition to excluding trials with response latencies greater than 10,000 milliseconds. However, this only slightly improved the correlations between implicit and explicit attitude measures and therefore, was considered almost equivalent to the resulting IAT effect value when this step was omitted (i.e., solely excluding trials for which response latencies were greater than 10,000 milliseconds).

In light of this, and in accordance with the recommendations made by Greenwald et al. (2003), as well as Nosek et al. (2007), the following IAT- procedure and scoring algorithm was used in the current study:

1. Include feedback in the IAT procedure such that when participants select an incorrect response a red x appears until they select the correct response at which point, they proceed to the next trial.
2. Use data from both practice and test blocks (i.e., Blocks 3, 4, 6, and 7).
3. Exclude trials with response latencies $> 10,000$ milliseconds.
4. Exclude participants who had response latencies < 300 milliseconds on more than 10% of the IAT trials.
5. Compute the mean of the correct latencies¹ for each block (i.e., Blocks 3, 4, 6, and 7), which includes the error latencies² plus the time taken to select the correct response for trials in which errors are made.
6. Compute one pooled standard deviation for correct latencies for all trials in the practice blocks (i.e., Block 3 and Block 6) and one pooled standard deviation for correct latencies for all trials in the test blocks (i.e., Block 4 and Block 7).
7. Use a built-in error penalty that records the total correct latencies for Blocks 3, 4, 6, and 7 (i.e., for trials in which errors occurred, this means the time until the correct response is selected is added to the time taken to initially select the incorrect response).

¹ The term '*correct latencies*' refers to the time taken to select the correct response for trials in which the correct response was initially selected. For trials in which the incorrect response was initially selected (i.e., an error was made), *correct latencies*, means the time taken to select the correct response added to the time taken to initially select the incorrect response.

² The term '*error latencies*' refers to the time taken to select the incorrect response.

8. Compute two difference scores between the means calculated in step 5: one between the means for Blocks 6 and 3 and the other between the means for Blocks 7 and 4.
9. Divide each mean difference by the corresponding pooled *SD* from step 6.
10. Average the two resulting values from step 9.

The scoring used in the current project is outlined here in an effort to be transparent in regard to all procedures used involving the response latency measures. As outlined above, often details regarding the procedure and scoring-algorithm used are not fully outlined in prior IAT research. Given that prior research has found different results regarding IAT effects, it is important to specify the scoring-algorithm and specific procedure used (e.g., error feedback or no error feedback, etc.) because these differences may, at least partly, account for the discrepancy in results among previous research assessing implicit evaluative attitudes toward violence.

Figure 3

Example of a Trial Contained in the Adapted VE-IAT Measure Administered in the Current Dissertation

In general, IAT measures are considered to be reliable and valid implicit measures of evaluative attitudes (e.g., Greenwald et al., 1998; Greenwald et al., 2009; Hofmann et al., 2005; Lane et al., 2007; Nosek et al., 2007). For instance, in one meta-analysis, Hoffmann et al. (2005) found a mean internal reliability coefficient of .79, across a total of 50 studies, and a mean test-retest coefficient of .51, across a total of 11 studies, all examining the relationship between implicit and explicit evaluative attitudes using IAT and self-report measures, respectively. Also, moderate test-retest reliability has been demonstrated in past research for IATs in general (e.g., Bosson et al., 2000; Cunningham et al., 2001; Hofmann et al., 2005; Lane et al., 2007). Last, Lane et al. (2007) found reliability coefficients ranging from .25 to .69, with a mean and median of .50, across 20 studies that used an IAT to assess implicit evaluative attitudes.

Similarly, moderate internal consistencies have been reported for IAT measures used to assess implicit evaluative attitudes toward rape ($\alpha = .63$ to $.79$; Hermann, 2010; Hermann & Nunes, 2018; Hermann et al., 2018; Nunes et al., 2013). Moderate internal consistencies were also reported in a previous study using a similar IAT measure to the current project to assess implicit evaluative attitudes toward violence ($\alpha = .62$ and $.71$; Maimone & Nunes, 2020). However, excellent internal consistencies have been reported in other research using similar IAT measures to assess implicit evaluative attitudes toward intimate partner violence ($\alpha = .93$ to $.97$; Eckhardt & Crane, 2014) and general violence ($\alpha = .88$ and $.93$; Polaschek et al., 2010). The internal consistency of the VE-IAT was .64 among male undergraduate students and .66 among male community members in the current study.

Prior research has also found adequate validity among IAT measures. For instance, in the same meta-analysis conducted by Hofmann et al. (2005), a small to moderate mean correlation of .24 ($n = 12,289$, $k = 126$) was found between implicit evaluative attitudes, measured with IATs, and explicit evaluative attitudes, measured with self-report scales, measuring the same attitude object. These results provide some evidence for convergent validity between these constructs, but also suggest that IAT measures and self-report measures assessing the same evaluative attitude construct may assess similar, but distinct, constructs. Good predictive validity has also been demonstrated for IAT measures in prior research. For instance, a meta-analysis conducted by Greenwald et al. (2009) found a mean correlation of .27 ($k = 184$) between IAT measures and related criterion variables.

Table 16

VE-IAT Categories and Stimuli

Positive	Negative	PEACE	VIOLENCE
happy	evil	peaceful	murder
joy	disaster	peace	assault
good	cancer	cuddle	punch
sunshine	disease	calm	attack
beautiful	mean	love	fight

Table 17

VE-IAT Blocks of Trials

Block	Number of Trials	Left Key (d) Categories	Right Key (k) Categories
1	20	VIOLENCE	PEACE
2	20	positive	negative
3	20	VIOLENCE + positive	PEACE + negative
4	40	VIOLENCE + positive	PEACE + negative
5	40	PEACE	VIOLENCE
6	20	PEACE + positive	VIOLENCE + negative
7	40	PEACE + positive	VIOLENCE + negative

Note. Block orders counterbalanced so that violence was first paired with positive for approximately half the participants and violence was first paired with negative for the remaining half.

Personalized Implicit Association Test. As noted above, a potential limitation to the traditional IAT measures containing attribute (i.e., *Positive* and *Negative*) and concept (i.e., *Violence* and *Peace*) categories is that this procedure might activate societal evaluative attitudes (or as they call them, *extrapersonal associations*) rather than one's own personal evaluative attitudes. Therefore, scores on traditional IAT measures may not reflect participants' personal evaluative attitudes toward an object, but rather culturally accepted beliefs about the phenomenon under investigation. Olson and Fazio (2004) proposed that personalized IAT measures should be used in which the categories of *I like* and *I dislike* are used instead of the traditional attribute categories, such as *positive* and *negative*, because attribute categories have greater potential for activating normative beliefs about the evaluative attitude under investigation. In light of this, a Personalized Violent Evaluation IAT (P-VE-IAT) was also administered in the current dissertation to assess participants' implicit evaluative attitudes toward violence among all samples. This

procedure replaced the evaluative attribute categories (i.e., positive or negative) with the categories of *I like* or *I dislike*; however, all other elements (i.e., the attitude category and its opposite concept category [*e.g.*, *violence* or *peace*] and all stimulus words) were the same as in the traditional IAT procedure outlined above, and were chosen based on the results of the Pre-test, as were the categories and stimuli in the VE-IAT (see Figure 4 for an example of a trial contained in the P-VE-IAT and Tables 18 and 19 for the categories/stimuli and P-VE-IAT trials.). The internal consistency of the P-VE-IAT was .73 among male undergraduate students and .66 among male community members in the current study.

Figure 4

Example of a Trial Contained in the Adapted P-VE-IAT Measure Administered in the Current Dissertation

Table 18

P-VE-IAT Categories and Stimuli

I like	I dislike	PEACE	VIOLENCE
happy	evil	peaceful	murder
joy	disaster	peace	assault
good	cancer	cuddle	punch
sunshine	disease	calm	attack
beautiful	mean	love	fight

Table 19

P-VE-IAT Blocks of Trials

Block	Number of Trials	Left Key (d) Categories	Right Key (k) Categories
1	20	VIOLENCE	PEACE
2	20	I like	I dislike
3	20	VIOLENCE + I like	PEACE + I dislike
4	40	VIOLENCE + I like	PEACE + I dislike
5	40	PEACE	VIOLENCE
6	20	PEACE + I like	VIOLENCE + I dislike
7	40	PEACE + I like	VIOLENCE + I dislike

Note. Block orders counterbalanced so that violence was first paired with positive for approximately half the participants and violence was first paired with negative for the remaining half.

Relational Responding Task. A modified version of the Relational Responding Task was used in the current dissertation as an alternative way to assess implicit evaluative attitudes toward violence (i.e., Violent Evaluation Relational Responding Task [VE-RRT]; adapted from De Houwer et al.'s [2015] procedure; see Appendix P for stimuli/categories, as well as an example of a VE-RRT trial). The RRT is a response latency measure and is intended to capture participants' implicit evaluative attitudes through the speed with which they identify various sentences as 'true' or 'false' that are

presented in the middle of the computer screen (De Houwer et al., 2015). In the modified procedure, each sentence describes a different act of violence. These sentences were taken and modified from the Evaluation of Violence Questionnaire (EVQ; Nunes, Pedneault, & Hermann, 2021, described below). For half of the trials, participants are instructed to respond ‘as if’ doing violence is good, positive, and/or pleasant. For instance, when presented with sentences that imply positive views of violence (e.g., You hitting a guy who steals from you is positive), participants are instructed to select ‘true’ for these trials and when presented with sentences that imply negative views of violence (e.g., It is bad for you to hit a guy who makes you look stupid) participants are instructed to select ‘false’ for these trials. In contrast, for the other half of the trials, participants are instructed to respond ‘as if’ doing violence is bad, negative, and/or unpleasant. For instance, when presented with sentences that imply positive views of violence (e.g., You hitting a guy who steals from you is positive) participants are instructed to select ‘false’ for these trials and when presented with sentences that imply negative views of violence (e.g., It is bad for you to hit a guy who makes you look stupid) participants are instructed to select ‘true’ for these trials. The order of the trials is counterbalanced so that roughly half of the participants first respond ‘as if’ doing violence is good, positive, and/or pleasant and roughly half first respond ‘as if’ doing violence is bad, negative, and/or unpleasant.

The RRT consists of five blocks of trials. During the first block, participants must sort words into the categories of ‘true’ or ‘false’. Five words are synonyms of ‘true’ and five words are synonyms of ‘false’ (see Appendix P for a list of synonym words). These words are presented one by one in the centre of the computer screen and the categories of

‘true’ and ‘false’ are seen in the upper left and right corners of the computer screen, respectively (see Appendix P). Participants are instructed to press the d key to select ‘true’ and the k key to select ‘false’ for all trials in Blocks 1 through 5. For instance, if participants are presented with the word ‘right’, they would press the d key to indicate ‘true’ because this word is a synonym for true. Conversely, if participants are presented with the word ‘wrong’, they would press the k key to indicate ‘false’ because this word is a synonym for false. The 10 words are presented 4 times in a randomized order for a total of 40 trials in Block 1.

In Block 2, participants are presented with 34 sentences describing violent acts (17 sentences imply a positive view of violence and 17 sentences imply a negative view of violence; see Appendix P for a list of the sentences). The sentences are presented one by one in the centre of the computer screen. Participants are instructed to respond ‘as if’ doing violence is good, positive, and/or unpleasant. Therefore, if they are presented with sentences that imply positive views of violence (e.g., You hitting a guy who steals from you is positive) they should press the d key to select ‘true’ and if they are presented with sentences that imply a negative view of violence (e.g., It is bad for you to hit a guy who makes you look stupid) they should press the k key to select ‘false’. The 34 sentences are presented twice in a randomized order for a total of 68 trials in Block 2. In Block 3, both the sentences and words are presented interspersed in a randomized order. When a word is presented, participants must respond by indicating whether it is a synonym for ‘true’ or ‘false’ as in Block 1. Participants are also instructed to respond to sentences in the same way as instructed in Block 2 (i.e., respond as if violence is good, positive, and/or pleasant); thus, if a sentence that implies a positive view of violence is presented,

participants should press the d key to select ‘true’ and if a sentence that implies a negative view of violence is presented, participants should press the k key to select ‘false’. Block 3 consists of two consecutive trials of a random selection of the 34 sentences presented once and a random selection of the 10 words presented twice (i.e., 34 sentences + 20 words = 54 stimuli), for a total of 108 trials (i.e., 54 stimuli $\times$ 2 trials).

Blocks 4 and 5 are identical to Blocks 2 and 3 except that participants are instructed to respond to the 34 sentences ‘as if’ doing violence is bad, negative, and/or unpleasant. Therefore, if a sentence that implies a positive view of violence is presented, participants should press the k key to select ‘false’ and if a sentence that implies a negative view of violence is presented, participants should press the d key to select ‘true’. How participants are instructed to respond to the 10 synonym words does not change; they are to press d to select ‘true’ if the word is a synonym for ‘true’ and k to select ‘false’ if the word is a synonym for ‘false’. The order in which participants receive these blocks is counterbalanced such that roughly half of the participants are given Blocks 2 and 3 first and roughly half of the participants are given Blocks 4 and 5 first. Word trials are presented in yellow font on a black background and sentence trials are presented in blue font on a black background. For each trial, a red x appears if an error is made when indicating a response and the stimulus (i.e., word or sentence) remains there until a correct a response is made. The following trial starts 750 ms after a correct response is made. Reaction times were defined as the time in milliseconds from when a stimulus is presented in the middle of the computer screen and a correct response is made. An RRT effect score was created in the same way as the IAT effect, outlined above, created according to the *D* algorithm outlined by Greenwald et al. (2003), with higher scores

indicating more positive implicit evaluative attitudes toward violence. The internal consistency of the VE-RRT was .75 among male undergraduate students and .78 among male community members in the current study.

Explicit Evaluative Attitudes Toward Violence.

Semantic Differential. A series of 7-point semantic differential items were used to assess explicit evaluative attitudes toward violence (VESD; see Appendix Q). Six bipolar scales were used to evaluate the sentence stem of “Doing violence is...”, consisting of *negative* to *positive*, *not fun* to *fun*, *bad* to *good*, *wrong* to *right*, *immoral* to *moral*, and *not enjoyable* to *enjoyable*. Total scores were computed by averaging the items. Thus, total scores ranged from 1 to 7, with higher scores reflecting more positive explicit evaluative attitudes toward violence. Although the specific semantic differential scale I used in the current study has not been validated per se, the use of similar semantic differential scales is a widespread, longstanding, and validated approach to assessing attitudes in social psychological research (see Nunes et al., 2015, for a review). The internal consistency of the VESD was .93 among male undergraduate students and .89 among male community members in the current study.

Evaluation of Violence Questionnaire. The Evaluation of Violence Questionnaire (EVQ) was used to assess participants’ explicit evaluative attitudes toward violence (see Appendix R). Participants are asked to evaluate three types of violent behaviours; hitting, threatening to physically hurt someone, and using a weapon (for example, a baseball bat, knife, or gun), on the following response scales: *very bad*, *a bit bad*, *a bit good*, *very good*; *very unpleasant*, *a bit unpleasant*, *a bit pleasant*, *very pleasant*; *very negative*, *a bit negative*, *a bit positive*, *very positive* (see Appendix G the

pool of items). Nunes, Pedneault, and Hermann (2021) selected 17 items from a much larger pool based on responses from two large samples of men in the community.

Selection of these 17 items was based on the distribution of responses (e.g., retained items with highest medians to avoid floor effects), non-redundancy (e.g., dropped items with correlations of .90 or greater), and factor structure (i.e., retained items that formed a single factor). Total scores were computed by averaging responses to the 17 EVQ items, with higher scores indicating more positive explicit evaluative attitudes toward violence. In a recent study, higher scores on the EVQ were found to significantly and moderately correlate with higher scores on another measure of explicit evaluative attitudes toward violence (i.e., a series of semantic differential scales designed to assess explicit evaluative attitudes toward violence), $r = .59, p < .001$ (Nunes, Pedneault, & Hermann, 2021). The internal consistency of the EVQ was .93 among male undergraduate students and .95 among male community members in the current study.

Violent Behaviour.

Prior Violent Behaviour. The Violent Behaviour Scale (VBS; Nunes, 2015) was administered to assess self-reported prior violent behaviour (see Appendix S).

Participants are asked about how many times since the age of 16 they have engaged in a variety of aggressive acts, such as threatening and fighting. Responses range from 0 (*never*) to 9 (*nine times or more*). Total scores were computed by averaging responses to the eight VBS items, with higher scores indicating greater frequency of prior violent behaviour. Adequate internal consistency has been found in previous research (i.e., $\alpha = .70$, see Maimone & Nunes, 2020). The internal consistency of the VBS was .75 among

male undergraduate students and .88 among male community members in the current study.

Propensity for Violence. The Violence Behaviour Vignette Questionnaire (VBVQ; Nunes et al., 2020) was administered to assess violent propensity (see Appendix T). Specifically, the VBVQ assesses participants' propensity for violence at the time of assessment. Participants respond to 10 hypothetical scenarios involving interpersonal conflict and provocation by selecting from a range of non-violent or violent response options. The response options consist of the following: *report it to someone; talk it out; insult him; joke about it; shove him; hit, punch, kick, or tackle him; threaten to hurt him; ignore it; and leave*. Total scores were computed by first assigning a score of '1' to the violent response options (i.e., *shove him; hit, punch, kick, or tackle him; threaten to hurt him*) and a score of '0' to the non-violent response options (i.e., all other responses). Total scores were then computed by summing and averaging these scores across the 10 vignettes, with higher scores indicating more propensity for violence at the time of assessment. In a recent study conducted by Nunes et al. (2020), violent responses on the VBVQ were found to correspond to independent indicators of violent behaviour and aggressiveness among male students, men in the general community, and incarcerated males. Although the VBVQ (see Appendix T) does include a lot of aggressive stimuli, it has been used with males convicted of violent offences in medium- and maximum-security federal prisons in the past without incident or any noted problems that we are aware of (see Nunes et al., 2020). The internal consistency of the VBVQ was .74 among male undergraduate students and .78 among male community members in the current study.

Likelihood of Violent Behaviour. A likelihood version of the items (see Appendix U) contained in the Evaluation of Violence Questionnaire (EVQ-Likelihood) was created in which participants evaluated, hypothetically, if they were in a particular situation, how likely they would be to engage in the three types of violent behaviours; hitting, threatening to physically hurt someone, and using a weapon (for example, a baseball bat, knife, or gun). Thus, the response scales for this modified version range from *very unlikely* to *very likely*, instead of the above response options (i.e., *very bad* vs. *very good*, *very negative* vs. *very positive*, and *very unpleasant* vs. *very pleasant*). Total scores were computed by averaging responses to the 17 EVQ-Likelihood items, with higher scores indicating greater likelihood of violence. The internal consistency of the EVQ-Likelihood was .92 among male undergraduate students and .93 among male community members in the current study.

Procedure

Data collection for Study 1 took place at Carleton University (Ottawa, ON) and the study was funded through a University Medical Research Fund (UMRF) through the Royal Ottawa Mental Health Care Group (Ottawa, ON). Therefore, ethics approval was received by two different Institutional Review Boards (IRBs); Carleton University's IRB, and the Royal Ottawa's IRB.

For the male undergraduate student sample, potential participants from Carleton University were notified of the study through a recruitment notice posted on Carleton University's online study recruitment site, the SONA system. The recruitment notice (see Appendix J) briefly outlined the inclusion criteria, study objectives, as well as potential risks and benefits to participating. Male undergraduate students were able to sign-up for a

study timeslot to participate. Participation took place in the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University. Participants were first given an informed consent form (see Appendix V) by a member of the research team who was responsible for administering the study to students. The consent form, once again, outlined to students the inclusion criteria, benefits to participating, study objectives and procedures, as well as potential risks and benefits to participating. Students received a 1% increase towards their final grades in eligible classes (i.e., PSYC 1001, 1002, 2001, and 2002). Participants were also notified in the consent form that they may withdraw without penalty at any time if they no longer wish to participate once the study had commenced. Once signed informed consent was received, the member of the research team (e.g., a research assistant) administered the study to students on a PC laptop computer. Students first completed demographic questions (see Appendix M) followed by the violent cognition measures (i.e., measures designed to assess implicit evaluative attitudes toward violence, explicit evaluative toward violence, and self-reported beliefs regarding violence) and the violent behaviour self-report outcome measures (i.e., measures designed to assess self-reported prior violent behaviour, current propensity for violence, and likelihood of violence). Participants completed the study one at a time. Upon completion, they viewed 12 mood stabilizing images (see Appendix W) and were then debriefed (see Appendix X) and given their 1% bonus mark for participation regardless of whether they withdrew or skipped any questions throughout.

A sample of community males were collected for Study 1. This sample consisted of adult (i.e., 18 years of age or older) males from the general community and was recruited through announcements posted on various social media sites consisting of

Craigslist, Kijiji, Facebook, Instagram, Twitter, Reddit, and UsedOttawa. The announcement briefly outlined the inclusion criteria, study objectives, as well as potential risks and benefits to participating. It also contained details regarding where the study would take place, as well as the principal investigator's contact information (see Appendix K). Participation for this sample also took place in the ACBR lab at Carleton University. Male community participants were first given an informed consent form by a member of the research team who was responsible for administering the study. The consent form, once again, outlined to participants the inclusion criteria, study objectives and procedures, as well as potential risks and benefits to participating. Participants received \$20 for their participation in the study (see Appendix Y). This level of compensation took into account the time required to complete the study as well as travel time and any travel-related expenses. Participants were also notified in the consent form that they may withdraw without penalty at any time if they no longer wished to participate once the study had commenced. Once signed informed consent was received, the member of the research team (e.g., a research assistant) administered the study to community participants on a PC lap top computer. They completed the study one at a time. Upon completion, participants viewed the same 12 mood stabilizing images as above (see Appendix W) and were then debriefed (see Appendix Z). All participation was kept confidential and data was anonymous.

Results and Discussion

Descriptive statistics for each measure used in the current study are reported in Table 20 for the male student sample and Table 21 for the in-lab male community sample. Participants included in the analyses were all male, most sexually attracted to

females, 18 years of age or older, understood written English, selected the correct response option for at least three of the five quality control questions included in the survey (see description for these items in the *Participant* section above), and had complete responses (i.e., no missing items) on all measures of interest (i.e., violent cognition and violent behaviour measures). A subsequent participant in the student sample was excluded because he struggled with understanding many items, as well as indicated that he made several errors in his responses while completing the survey. As outlined above, this left a sample of 156 male students and 95 male community members (see Tables 14 and 15 in *Participant* section above, for their demographic details).

For measures designed to assess implicit evaluative attitudes toward violence (i.e., VE-IAT, P-VE-IAT, and VE-RRT), participants who took less than 300 milliseconds on 10% or more of the trials were also excluded from analyses involving these measures. I excluded these participants separately for each implicit measure in an effort to retain power for the subsequent analyses. When analyzing the student sample, an additional 14 participants (out of 156) were excluded due to having response times faster than 300 milliseconds on 10% or more of VE-IAT trials. An additional 12 participants (out of 156) were excluded for the P-VE-IAT and an additional 38 participants (out of 156) were excluded for the VE-RRT. When analyzing the in-lab community sample, an additional 6 participants (out of 95) were excluded due to having response times faster than 300 milliseconds on 10% or more of VE-IAT trials. An additional 6 participants (out of 95) were excluded for the P-VE-IAT and an additional 10 participants (out of 95) were excluded for the VE-RRT.

The final indices for the effects associated with the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT, P-VE-IAT, and VE-RRT) were created in accordance with the improved scoring algorithm suggested by Greenwald et al. (2003), which is also outlined above in the *Measures* section. In addition to the steps associated with the improved scoring algorithm, I also excluded trials on the VE-RRT for which participants took less than 800 milliseconds to correctly respond and advance to the next trial. Greenwald et al. (2003) suggested a similar approach as a way to increase accuracy when creating the scoring algorithm for IAT measures. Specifically, they suggested excluding trials that had corresponding correct latencies of less than 400 milliseconds as an alternative approach when calculating the IAT effect according to their improved IAT-scoring algorithm; however, I decided to double this value for the VE-RRT given that, unlike the VE-IAT and P-VE-IAT, its procedure required participants to read full statements about engaging in a variety of violent acts before identifying and selecting the correct response (i.e., whether the statement was ‘True’ or ‘False’ according to the responding rule given; see *Measures* section above for the full description of the VE-RRT procedure). Further, I estimated that it would likely take more than 800 milliseconds for participants to fully read and respond to the statements. Consequently, excluding these trials likely resulted in a more accurate overall VE-RRT effect. Initially, IAT effect scores were calculated according to the improved scoring algorithm both including and excluding trials for which correct latencies of less than 400 milliseconds were recorded. However, in contrast to what was found when comparing the VE-RRT effects, there were no meaningfully different results reported between these two scoring algorithms for all IAT effects (i.e., those for the VE-IAT and P-VE-IAT); thus, results

involving the VE-IAT and P-VE-IAT are reported for the IAT scoring algorithm for which trials with corresponding correct latencies of less than 400 milliseconds are included in the overall IAT effect.

All variables (i.e., calculated total scores on all measures of interest) were screened for out range values and missing scores. A variable was considered to have a missing score when one or more items contained missing values for a particular participant. Less than 5% of total scores were missing across all variables of interest. Therefore, as mentioned above, missing scores were excluded listwise. All variables were also examined for univariate outliers. In the event that univariate outliers were found, values were reduced accordingly.

Table 20

Descriptive Statistics of Measures of Interest for Male Undergraduate Students in Study 1

Measure	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
VE-IAT	142	-2.06	0.04	-1.09	0.46
P-VE-IAT	144	-2.30	0.17	-1.06	0.50
VE-RRT	118	-1.23	1.60	0.21	0.56
MCAA-R-V	156	10.00	38.00	21.74	5.41
VESD	156	1.00	5.17	2.34	1.05
EVQ	156	1.00	3.30	1.84	0.58
VBS	156	0.00	4.13	0.86	1.02
EVQ-Likelihood	156	1.00	3.24	1.83	0.58
VBVQ	156	0.00	0.90	0.28	0.24

Note. VE-IAT = Violent Evaluation Implicit Association Test. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test. VE-RRT = Violent Evaluation Relational Responding Task. MCAA-R-V = Measures of Criminal Attitudes and Associations – Revised – Violence scale. VESD = Violent Evaluation Semantic Differential scales. EVQ

= Evaluation of Violence Questionnaire. VBS = Violent Behaviour Scale. EVQ-

Likelihood = Evaluation of Violence Questionnaire – Likelihood of Violence version.

VBVQ = Violent Behaviour Vignette Questionnaire.

Table 21

Descriptive Statistics of Measures of Interest for Males from the Community in Study 1

Measure	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
VE-IAT	89	-2.71	0.00	-1.18	0.50
P-VE-IAT	89	-2.41	-0.13	-1.22	0.47
VE-RRT	85	-1.30	1.53	0.18	0.55
MCAA-R-V	95	10.00	33.00	20.27	5.07
VESD	95	1.00	4.33	2.08	0.92
EVQ	95	1.00	3.53	1.70	0.62
VBS	95	0.00	5.25	1.00	1.29
EVQ-Likelihood	95	1.00	3.29	1.72	0.59
VBVQ	95	0.00	0.90	0.21	0.25

Note. VE-IAT = Violent Evaluation Implicit Association Test. P-VE-IAT = Personalized

Violent Evaluation Implicit Association Test. VE-RRT = Violent Evaluation Relational

Responding Task. MCAA-R-V = Measures of Criminal Attitudes and Associations –

Revised – Violence scale. VESD = Violent Evaluation Semantic Differential scales. EVQ

= Evaluation of Violence Questionnaire. VBS = Violent Behaviour Scale. EVQ-

Likelihood = Evaluation of Violence Questionnaire – Likelihood of Violence version.

VBVQ = Violent Behaviour Vignette Questionnaire.

Table 22
Bivariate Correlations Between Measures of Violent Cognition and Violent Behaviour for Male Students in Study 1

Variable	1	2	3	4	5	6	7	8	9
1. VE-IAT	-	.30** <i>n</i> = 117	-.03 <i>n</i> = 117	.26** <i>n</i> = 142	.19* <i>n</i> = 142	.11 <i>n</i> = 142	.04 <i>n</i> = 142	.11 <i>n</i> = 142	.15 <i>n</i> = 142
2. P-VE-IAT	.30** <i>n</i> = 117	-	.10 <i>n</i> = 117	.21* <i>n</i> = 144	.05 <i>n</i> = 144	.06 <i>n</i> = 144	.12 <i>n</i> = 143	.17* <i>n</i> = 144	.11 <i>n</i> = 144
3. VE-RRT	-.07 <i>n</i> = 117	.06 <i>n</i> = 117	-	.07 <i>n</i> = 118	-.05 <i>n</i> = 118	-.05 <i>n</i> = 118	.10 <i>n</i> = 118	-.09 <i>n</i> = 118	-.04 <i>n</i> = 118
4. MCAA-R-V	.24** <i>n</i> = 142	.22** <i>n</i> = 144	.05 <i>n</i> = 118	-	.48*** <i>n</i> = 156	.67*** <i>n</i> = 156	.55*** <i>n</i> = 154	.66*** <i>n</i> = 156	.62*** <i>n</i> = 155
5. VESD	.18* <i>n</i> = 142	-.02 <i>n</i> = 144	-.04 <i>n</i> = 118	.46*** <i>n</i> = 156	-	.59*** <i>n</i> = 156	.40*** <i>n</i> = 156	.49*** <i>n</i> = 156	.47*** <i>n</i> = 156
6. EVQ	.12 <i>n</i> = 142	.06 <i>n</i> = 144	-.06 <i>n</i> = 118	.64*** <i>n</i> = 156	.57*** <i>n</i> = 156	-	.44*** <i>n</i> = 156	.83*** <i>n</i> = 155	.70*** <i>n</i> = 154
7. VBS	.08 <i>n</i> = 142	.12 <i>n</i> = 143	.14 <i>n</i> = 118	.50*** <i>n</i> = 154	.39*** <i>n</i> = 156	.38*** <i>n</i> = 156	-	.39*** <i>n</i> = 156	.40*** <i>n</i> = 156
8. EVQlikelihood	.10 <i>n</i> = 142	.15 <i>n</i> = 144	-.08 <i>n</i> = 118	.66*** <i>n</i> = 156	.49*** <i>n</i> = 156	.84*** <i>n</i> = 155	.35*** <i>n</i> = 156	-	.65*** <i>n</i> = 156
9. VBQV	.11 <i>n</i> = 142	.09 <i>n</i> = 144	.01 <i>n</i> = 118	.62*** <i>n</i> = 155	.48*** <i>n</i> = 156	.70*** <i>n</i> = 154	.39*** <i>n</i> = 156	.65*** <i>n</i> = 156	-

Note. Sample sizes (n) vary because multivariate outliers were excluded per measure pair to retain power. Pearson's r (parametric) correlations above the diagonal and Spearman's rho (non-parametric) correlations below the diagonal. VE-IAT = implicit evaluative attitudes toward violence measured by traditional Implicit Association Test. P-VE-IAT = implicit evaluative attitudes towards violence measured by Personalized IAT. VE-RRT = implicit evaluative attitudes toward violence measured by Relational Responding Task. MCAA-R-V = self-report beliefs regarding violence measured by Measures of Criminal Attitudes and Associates – Revised Violence scale. VESD = explicit evaluative attitudes toward violence measured by Semantic Differential scales. EVQ = explicit evaluative attitudes toward violence measured by Evaluation of Violence Questionnaire. VBS = self-reported prior violence measured by Violent Behaviour Scale. EVQlikelihood = likelihood of violence measured by Evaluation of Violence Questionnaire modified to assess likelihood of being violent. VBVQ = propensity for violence measured by Violent Behaviour Vignette Questionnaire.

$**p < .01$, $*p < .05$, $***p < .001$.

Table 23
Bivariate Correlations Between Measures of Violent Cognition and Violent Behaviour for Male Community Members in Study 1

Variable	1	2	3	4	5	6	7	8	9
1. VE- IAT	-	.26* <i>n</i> = 82	-.14 <i>n</i> = 82	.15 <i>n</i> = 89	.14 <i>n</i> = 89	.10 <i>n</i> = 89	.15 <i>n</i> = 89	.28** <i>n</i> = 89	.17 <i>n</i> = 89
2. P-VE-IAT	.28* <i>n</i> = 82	-	-.12 <i>n</i> = 82	.16 <i>n</i> = 89	.20 ^a <i>n</i> = 89	.07 <i>n</i> = 89	-.11 <i>n</i> = 89	.11 <i>n</i> = 89	.07 <i>n</i> = 88
3. VE-RRT	-.16 <i>n</i> = 82	-.19 <i>n</i> = 82	-	.03 <i>n</i> = 85	-.21 ^f <i>n</i> = 85	-.03 <i>n</i> = 85	-.01 <i>n</i> = 85	-.16 <i>n</i> = 85	-.09 <i>n</i> = 85
4. MCAA-R-V	.19 ^b <i>n</i> = 89	.19 ^d <i>n</i> = 89	.00 <i>n</i> = 85	-	.43*** <i>n</i> = 95	.73*** <i>n</i> = 94	.51*** <i>n</i> = 95	.72*** <i>n</i> = 94	.61*** <i>n</i> = 94
5. VESD	.10 <i>n</i> = 89	.24* <i>n</i> = 89	-.19 ^e <i>n</i> = 85	.42*** <i>n</i> = 95	-	.47*** <i>n</i> = 95	.40*** <i>n</i> = 95	.53*** <i>n</i> = 95	.41*** <i>n</i> = 95
6. EVQ	.14 <i>n</i> = 89	.10 <i>n</i> = 89	-.14 <i>n</i> = 85	.69*** <i>n</i> = 94	.46*** <i>n</i> = 95	-	.45*** <i>n</i> = 95	.78*** <i>n</i> = 95	.66*** <i>n</i> = 95
7. VBS	.10 <i>n</i> = 89	-.03 <i>n</i> = 89	.07 <i>n</i> = 85	.50*** <i>n</i> = 95	.36*** <i>n</i> = 95	.50*** <i>n</i> = 95	-	.45*** <i>n</i> = 95	.50*** <i>n</i> = 95
8. EVQlikelihood	.27* <i>n</i> = 89	.12 <i>n</i> = 89	-.22* <i>n</i> = 85	.68*** <i>n</i> = 94	.51*** <i>n</i> = 95	.74*** <i>n</i> = 95	.49*** <i>n</i> = 95	-	.63*** <i>n</i> = 95
9. VBVQ	.19 ^c <i>n</i> = 89	.14 <i>n</i> = 88	-.11 <i>n</i> = 85	.61*** <i>n</i> = 94	.39*** <i>n</i> = 95	.65*** <i>n</i> = 95	.48*** <i>n</i> = 95	.62*** <i>n</i> = 95	-

Note. Sample sizes (n) vary because multivariate outliers were excluded per measure pair to retain power. Pearson's r (parametric) correlations above the diagonal and Spearman's rho (non-parametric) correlations below the diagonal. VE-IAT = implicit evaluative attitudes toward violence measured by traditional Implicit Association Test. P-VE-IAT = implicit evaluative attitudes towards violence measured by Personalized IAT. VE-RRT = implicit evaluative attitudes toward violence measured by Relational Responding Task. MCAA-R-V = self-report beliefs regarding violence measured by Measures of Criminal Attitudes and Associates – Revised Violence scale. VESD = explicit evaluative attitudes toward violence measured by Semantic Differential scales. EVQ = explicit evaluative attitudes toward violence measured by Evaluation of Violence Questionnaire. VBS = self-reported prior violence measured by Violent Behaviour Scale. EVQlikelihood = likelihood of violence measured by Evaluation of Violence Questionnaire modified to assess likelihood of being violent. VBVQ = propensity for violence measured by Violent Behaviour Vignette Questionnaire.

^amarginally significant at $p = .066$, ^b $p = .079$, ^c $p = .076$, ^d $p = .069$, ^e $p = .077$, ^f $p = .056$.

^{**} $p < .01$, ^{*} $p < .05$, ^{***} $p < .001$.

Relationship Between Violent Cognition Measures

The bivariate relationships between implicit measures of evaluative attitudes toward violence and other explicit/self-report measures of violent cognition (i.e., explicit evaluative attitudes toward violence and self-report beliefs regarding violence), as well as the relationships between measures of violent cognition and self-report measures of violent behaviour, were assessed using Pearson's r correlations. Accordingly, I assessed whether these data met the assumptions underlying this analysis, such as normality, linearity, and homoscedasticity. Assumptions were generally met, with the exception of normality on a few occasions, with the measures assessing self-reported prior violent behaviour and propensity for violence (i.e., VBS and VBVQ) most often violating this assumption (i.e., often significantly, and positively, skewed). Due to these occasional violations, Spearman's rho correlations were also conducted—a non-parametric test of bivariate relationships between two continuous variables—in order to account for any violated assumptions. Multivariate outliers were also examined pairwise. In the event that multivariate outliers existed, they were excluded pairwise (rather than listwise) in order to retain power for the statistical analyses. The bivariate relationships between variables for the samples of male students and in-lab male community members are displayed in Table 22 and Table 23, respectively.

Implicit Evaluative Attitudes Toward Violence and Other Explicit Violent Cognitions. As is shown in Table 22, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly to moderately associated with more positive self-reported beliefs regarding violence, as assessed by scores on the MCAA-R-V ($r = .26$), and weakly associated with more

positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD ($r = .19$), among male students. More positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, among male students ($r = .21$). However, implicit evaluative attitudes toward violence, as assessed by scores on the VE-RRT, were neither significantly associated with beliefs regarding violence, as assessed by scores on the MCAA-R-V, nor explicit evaluative attitudes toward violence, as assessed by scores on the VESD among the male student sample.

As shown in Table 23, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were not significantly associated with any of the other violent cognition measures (with the exception of scores on the P-VE-IAT) among male community members. However, according to the Spearman's rho correlations, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were somewhat marginally associated with beliefs regarding violence, as assessed by scores on the MCAA-R-V ($\rho = .19$). Implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly associated with explicit evaluative attitudes toward violence, as assessed by the VESD among male community members, according to the Spearman's rho correlations ($\rho = .24$). More positive scores on the P-VE-IAT were somewhat marginally associated with more positive scores on the VESD, according to the Pearson's r correlations ($r = .20$), and more positive scores on the MCAA-R-V, according to the Spearman's rho correlations, among the male community sample ($\rho = .19$). As with the student sample,

implicit evaluative attitudes toward violence, as assessed by scores on the VE-RRT, were not significantly associated with any of the other violent cognition measures. However, according to both the Pearson's r and Spearman's rho correlations, more positive scores on the VE-RRT were marginally associated with more negative scores on the VESD ($r = -.21$ and $\rho = -.19$) among the male community sample.

These results suggest that implicit evaluative attitudes toward violence may be related to explicit evaluative attitudes toward violence and self-reported beliefs regarding violence. Generally, the magnitude of the relationship with implicit evaluative attitudes toward violence was higher for beliefs regarding violence, with the exception of scores on the P-VE-IAT for the in-lab male community sample, which were more highly correlated to the VESD (i.e., explicit evaluative attitudes toward violence). One interpretation for this is that implicit evaluative attitudes toward violence tend to be more strongly related to beliefs regarding violence than explicit evaluative attitudes toward violence. This argument is further strengthened by the non-significant correlations between the EVQ—the other measure administered to assess explicit evaluative attitudes toward violence—and implicit measures of evaluative attitudes toward violence in both the student and community samples. These non-significant relationships suggest that there is no relationship between implicit and explicit evaluative attitudes toward violence, which is in contrast to the observed small, but significant, relationships between the VE-IAT and P-VE-IAT with the VESD. These results are somewhat consistent with theory suggesting that implicit and explicit evaluative attitudes toward violence can diverge when there is motivation and opportunity to deliberate on the initially activated implicit evaluative attitude and deliberation, as well as information available in the environment,

deem it invalid (e.g., MODE model; Fazio, 1990). In this case, the resulting explicit evaluative attitude toward violence would be inconsistent with the initially activated implicit evaluative attitude and would likely influence behaviour over the implicit attitude.

Inconsistent results have been reported in the few studies to date that have assessed the relationship between implicit and explicit evaluative attitudes toward violence. For instance, implicit evaluative attitudes toward violence, as assessed by various IAT measures, were unrelated to explicit evaluative attitudes toward violence (e.g., Polaschek et al., 2010; Snowden et al., 2004) and explicit evaluative attitudes toward sexual aggression (e.g., Hermann et al., 2018). However, one subsequent study reported that more positive implicit evaluative attitudes toward sexual aggression were significantly related to more positive explicit evaluative attitudes toward sexual aggression (i.e., Hermann & Nunes, 2018). Generally, prior studies have reported null results regarding the relationship between implicit evaluative attitudes and self-reported beliefs regarding violence. For instance, scores on various IAT measures were unrelated to self-reported beliefs regarding intimate partner violence (e.g., Eckhardt & Crane, 2014; Eckhardt et al., 2012; Robertson & Murachver, 2007; Sanchez-Prada et al., 2018; Sprunger & Eckhardt, 2017), violence (e.g., Maimone & Nunes, 2020; Polaschek et al., 2010), and sexual aggression (e.g., Hermann et al., 2018). A limitation of previous studies is that most of them focus on outcomes such as intimate partner violence and aggression, rather than general violence.

A second consideration is that the VESD and/or the EVQ may not accurately reflect and/or reliably assess the construct of explicit evaluative attitudes toward violence.

As outlined previously, items in the VESD (i.e., explicit evaluative attitudes toward violence) were found to form a separate factor from items from measures of beliefs regarding violence (i.e., MCAA-R-V and CAVS) and the VESD was significantly and positively related to these measures, suggesting that it is capturing an intercorrelated but distinct construct from beliefs regarding violence (see Nunes et al., 2015; Nunes, Pedneault, Hermann, & Fraser, 2021). Additionally, items in the EVQ (i.e., designed to assess explicit evaluative attitudes toward violence) were found to cluster together with items from the MCAA-R-V but were found to form a distinct factor from items in the CAVS (Nunes Pedneault, Hermann, & Fraser, 2021). Further, items in the EVQ also formed a distinct factor from the VESD items (i.e., both designed to assess explicit evaluative attitudes toward violence; Nunes, Pedneault, Hermann, & Fraser, 2021). Combined, these results suggest that the EVQ may be assessing, at least, a similar construct to that of the MCAA-R-V and thus, the construct assessed by this measure may be more similar to beliefs regarding violence than explicit evaluative attitudes toward violence. Strong relationships were also found between the EVQ and MCAA-R-V ($r = .75$), CAVS ($r = .75$), and VESD ($r = .59$; Nunes, Pedneault, Hermann, & Fraser, 2021). Considering the VESD item structure and observing its procedure, it seems likely that it is capturing a similar construct to evaluation of violence; however, there seems to be less clarity in what construct is being captured by the EVQ. This may speak to the lack of sizable effects found between the measures designed to assess implicit evaluative attitudes toward violence and the EVQ; however, if the EVQ is assessing a similar construct to that of the MCAA-R-V, it is unclear why scores on the VE-IAT and P-VE-IAT (measures used to assess implicit evaluative attitudes toward violence) were

unrelated to scores on the EVQ, but small to moderate correlations were observed between scores on these implicit measures and scores on the MCAA-R-V and VESD.

Explicit Evaluative Attitudes Toward Violence and Beliefs Regarding

Violence. As shown in Table 22, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were moderately to strongly associated with more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD ($r = .48$) and EVQ ($r = .67$), among male students. Among men from the community, more violence-supportive beliefs were also moderately to strongly associated with more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD ($r = .43$) and EVQ ($r = .73$), as shown in Table 23. In addition, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were moderately to strongly associated with more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ ($r = .59$), among male students. This relationship was also observed among men from the community; however, the magnitude of the relationship approximated more moderate in strength; more positive explicit evaluative attitudes toward violence, as assessed by scores in the VESD, were moderately associated with more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ ($r = .47$).

Few studies have assessed the relationship between beliefs regarding violence and explicit evaluative attitudes toward violence, but there is some evidence that they are related constructs. For instance, in a previous study conducted by my colleagues and I, also outlined above, more violence-supportive beliefs, as assessed by scores on the MCAA-V, were moderately associated with more positive explicit evaluative attitudes

toward violence, as assessed by scores on the VESD, among male students ($r = .49, p < .001$; Nunes et al., 2015). As outlined above, Nunes, Pedneault, Hermann, and Fraser (2021) recently found that more positive explicit evaluative attitudes toward violence when assessed by scores on the EVQ were strongly associated with more positive explicit evaluative attitudes toward violence when assessed by scores on the VESD ($r = .59, p < .001$) and more violence-supportive beliefs when assessed by scores on the MCAA-R-V ($r = .75, p < .001$) and CAVS ($r = .75, p < .001$) among an online male sample. Explicit evaluative attitudes toward violence when assessed by scores on the VESD were also strongly associated with more violence-supportive beliefs when assessed by scores on the MCAA-R-V ($r = .61, p < .001$) and CAVS ($r = .62, p < .001$; Nunes, Pedneault, Hermann, & Fraser, 2021) among this same sample. These results are consistent with those found in the current study among male students and an in-lab sample of men from the community, suggesting that self-reported beliefs regarding violence and explicit evaluative attitudes toward violence are intercorrelated constructs. As also mentioned above, both of these previous studies also observed that items within the VESD, designed to assess explicit evaluative attitudes towards violence, formed a distinct factor from items within measures of beliefs regarding violence (i.e., MCAA-R-V and CAVS), and in one of these studies, items within the EVQ, designed to assess explicit evaluative attitudes toward violence, did not form a distinct factor from one of these measures of beliefs regarding violence (i.e., MCAA-R-V). These results suggest that the EVQ may be assessing a similar construct to that of measures designed to assess beliefs regarding violence. This argument is further strengthened by the stronger magnitude of effect observed between the EVQ and the measure of beliefs regarding violence (i.e., MCAA-R-V) in comparison

to the effect observed for the relationship between the EVQ and the VESD, assessing explicit evaluative attitudes in the current study for both male students and community members. These results replicate the magnitude of effects found in Nunes, Pedneault, Hermann, and Fraser's (2021) study involving online male participants.

Relationship Between Violent Cognition Measures and Indicators of Violent Behaviour

Implicit Evaluative Attitudes Toward Violence and Violent Behaviour. As shown in Table 22, more positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly associated with likelihood of violence, as assessed by scores on the EVQ-Likelihood, among male undergraduate students ($r = .17$). This is the only relationship between measures designed to assess implicit evaluative attitudes toward violence and measures of violent behaviour that approached significance in the student sample. As shown in Table 23, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly to moderately associated with more likelihood of violent behaviour, as assessed by scores on the EVQ-likelihood, among community men ($r = .28$). More positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were marginally significantly and weakly related to propensity for violence at the time of assessment (i.e., the VBVQ), when examining this relationship using a Spearman's rho correlation ($\rho = .19$). Unexpectedly, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-RRT, were significantly and weakly associated with less likelihood of violence as assessed by scores on the EVQ-

Likelihood, when examining this relationship using a Spearman's rho correlation ($\rho = -.22$).

The above results suggest that implicit evaluative attitudes toward violence appear to be most consistently related to likelihood of violence because more positive scores on the P-VE-IAT, corresponding to more positive implicit evaluative attitudes toward violence, were related to more positive scores on the EVQ-Likelihood, corresponding to greater likelihood of violence, among male students. In addition, more positive scores on the VE-IAT, corresponding to more positive implicit evaluative attitudes toward violence, were related to more positive scores on the EVQ-likelihood among men from the community. More positive scores on the VE-IAT, corresponding to more positive implicit evaluative attitudes toward violence, were marginally related to more positive scores on the VBVQ, corresponding to more propensity for violence at the time of assessment, among men from the community, when examining the Spearman's rho correlations. The VBVQ was found to be consistently, and significantly, positively skewed among these two samples. Therefore, this may account for the lack of significant relationship observed between the VE-IAT and VBVQ when examining this relationship using Pearson's r correlation, among community men. Following from these results it seems that implicit evaluative attitudes toward violence are most important for understanding future behaviours and may be important for predicting whether someone would behave violently in the future. This is an important outcome from a correctional/rehabilitative perspective given that targeting constructs related to future re-offending is most effective at reducing the probability that one would re-offend. Thus, targeting risk relevant constructs is one of the standards of the modern rehabilitative

framework that has been adopted worldwide (i.e., Risk-Need-Responsivity [RNR] model; Andrews & Bonta, 2010). Given that implicit evaluative attitudes toward violence were most consistently related to likelihood of violent behaviour, this is a first step in establishing this link; however, future research needs to assess the relationship between implicit evaluative attitudes toward violence and risk, as well as actual re-offending behaviour, to confirm whether scores on implicit measures of evaluative attitudes toward violence predict violent behaviour in the future.

The consistent positive and significant relationship found between scores on the IAT measures (i.e., VE-IAT and P-VE-IAT) and likelihood of violence is somewhat consistent with theories from the social psychology literature explaining the link between evaluative attitudes and behaviour (i.e., see MODE model, Fazio 1990; APE model, Gawronski & Bodenhausen, 2006; MCM model, Petty et al., 2007). These theories suggest that there is a link between implicit evaluative attitudes and behaviour such that, in some circumstances, implicit evaluative attitudes determine whether a behaviour is engaged in. For instance, the author of the MODE model proposed that implicit evaluative attitudes are immediately activated in the presence of an attitude object and, if cues in the environment validate its accuracy or if there is lack of opportunity to potentially invalidate it, it will influence the resulting behaviour that is performed (Fazio, 1990). According to these theories, the relationship between implicit evaluative attitudes and prior behaviour is less clear. For example, if one holds implicit evaluative attitudes that are positive toward violence then he/she will be more likely to behave violently in a given situation when these attitudes are activated from one's semantic network; however, engaging in prior violence does not necessarily mean that someone holds positive implicit

evaluative attitudes toward violence given that situational cues available in the environment can lead one to behaving violently even if their implicit evaluative attitudes do not promote engaging in such behaviours. From this, I would expect that those who have more positive implicit evaluative attitudes toward violence, as indicated by their scores on the reaction time measures designed to assess this construct, would be more likely to behave violently in future situations, but this does not mean that they have behaved violently in the past.

A further consideration that may explain why implicit evaluative attitudes toward violence were found to be unrelated to prior violence (i.e., VBS) and, generally, unrelated to propensity for violence at the time of assessment (i.e., VBVQ), is that the outcome measures administered to assess these indicators have not been extensively validated in prior research. Therefore, perhaps scores on these measures do not reflect the intended constructs. As such, these results need to be further replicated among a broader range of samples and future research should make use of validated measures of prior violence, propensity for violence, and likelihood of violence.

The results of the current study are somewhat consistent with the sparse research thus far using IAT measures to assess the relationship between implicit evaluative attitudes toward violence and violent behaviour. For instance, some research has found that more positive implicit evaluative attitudes toward violence is predictive of future violence. Specifically, more positive implicit evaluative attitudes toward violence, as assessed by scores on similar IAT measures, was associated with greater likelihood of intimate partner violence among undergraduate students (i.e., Sprunger & Eckhardt, 2017) and more intimate partner violent recidivism among males on probation for

intimate partner violence (i.e., Eckhardt & Crane, 2014). Some research on sexual aggression has also found similar results, with significant, positive relationships reported between implicit evaluative attitudes toward rape and likelihood of sexual aggression, such that more positive implicit evaluative attitudes toward rape were significantly associated with more likelihood of sexual aggression among male undergraduate students (i.e., Nunes et al., 2013) and greater commission of sexually aggressive behaviour at a second administration among a male online panel (i.e., Hermann & Nunes, 2018). Group differences on IAT measures designed to assess implicit evaluative attitudes toward violence between violent and non-violent individuals have been assessed in prior research with some success. For instance, significant group differences have been reported in relation to intimate partner violence with men who have been charged and/or convicted of intimate partner violence showing more positive implicit evaluative attitudes toward violence than non-violent men (i.e., Eckhardt et al., 2012; Robertson & Murachver, 2007). Implicit evaluative attitudes toward violence were also significantly more positive among adolescents who had committed one or more violent school acts in comparison to non-violent adolescents (i.e., Jeon et al., 2019). Also, significant relationships have been reported between more positive implicit evaluative attitudes toward violence and greater self-reported physical aggression among students and community members (i.e., Bluemke & Zumbach, 2012). In contrast, prior research using an IAT measure similar to the traditional VE-IAT used in the current study to assess implicit evaluative attitudes toward violence did not find a relationship between scores on this measure and prior violent behaviour (assessed by scores on the VBS) or likelihood of violence among male students (Maimone & Nunes, 2020) nor was there a relationship found with self-reported

risk of violent behaviour among males incarcerated in a provincial correctional facility (see Maimone & Nunes, 2020). As evidenced from this review of prior research, most studies to date using IAT measures to assess implicit evaluative attitudes toward violence have assessed the link to indicators of violence among more violent samples (e.g., males convicted of intimate partner violence and currently incarcerated males). Consequently, indicators of violence have mostly focussed on actual incidences of violence (e.g., prior violent charges and convictions), rather than self-reported violent behaviour, among these samples. This could also account for the lack of significance found in the relationship between implicit evaluative attitudes toward violence and prior violent behaviour among the samples in the current study. In order to directly replicate and extend prior studies using similar IAT measures, the relationship between implicit evaluative attitudes toward violence and violent behaviour should be assessed among a more violent sample of men. Therefore, Study 2 focusses on assessing these relationships among a sample of males convicted of violent offences.

A somewhat surprising result in the current study is that scores on the VE-RRT measure were not significantly related to scores on the measures of violent behaviour, among students, suggesting that implicit evaluative attitudes toward violence, when assessed by this measure, are not related to indicators of violence. In addition, a weak and significant correlation was found between scores on the VE-RRT and scores on the EVQ-Likelihood among community men, such that more positive implicit evaluative attitudes toward violence were significantly associated with less likelihood of violence, when examining Spearman's rho correlations only, which is inconsistent with initial hypotheses regarding these variables. There are a few interpretations that can be gleaned from these

results. First, the VE-RRT may have failed to capture participants' implicit evaluative attitudes toward violence. The RRT has a similar procedure to the IAT in that stimuli presented in the middle of the screen are sorted into categories; however, the RRT also requires participants to identify whether a statement presented is true or false according to a responding rule that is presented before each block. In the RRT, statements, instead of words, are presented in the middle of the computer screen and participants are required to sort them into *True* and *False* categories in the top left- and right- hand corners of the computer screen. In the current study, I modified the original RRT procedure to include the 17 items from the EVQ as the statements presented, outlining different acts of violence, and I further modified these statements to include synonyms for *good* and *bad* (e.g., "It is not negative for you to hit a guy who hurts someone you care about", "You hitting a guy who steals from you is positive", "You threatening to physically hurt a guy who disrespects you is unpleasant", and "It is bad for you to threaten to physically hurt a guy who owes you money"; see Measures section and Appendix P). Therefore, each block contained 68 trials (i.e., 17 EVQ statements presented once with synonyms of *good* included and once with synonyms of *bad* included). This slightly somewhat lengthened the original procedure. Therefore, the VE-RRT in the current study consisted of a lengthy procedure that could have resulted in cognitive fatigue among participants. This could have, in turn, increased the likelihood that participants relied on short cuts while completing the VE-RRT sorting tasks, such as not fully reading the instructions or the statements. In addition to not fully reading the statements, participants could have solely identified the synonyms within the statements while sorting them into categories of *Ture* and *False*. Further, the synonyms of *good* appear more semantically similar to the

category *True* than the synonyms of *False*. Therefore, if participants did not fully read the violent statements and solely looked for the synonyms within them it may have been easier to sort the statements when instructed to respond according to the rule that “Doing violence is good, positive, and/or pleasant”, than when instructed to respond as if “Doing violence is bad, negative, and/or unpleasant”, regardless of whether those responding actually hold more positive implicit evaluative attitudes toward violence. This could account for the weak, but significant, Spearman’s rho correlation found between higher scores on the VE-RRT, corresponding to more positive implicit evaluative attitudes toward violence, and lower scores on the EVQ-Likelihood, corresponding to less likelihood of violence. This could possibly also account for the general lack of sizeable effects between scores on the VE-RRT and outcome measures of violent behaviour.

Second, perhaps the RRT procedure cannot be adequately adapted to assess implicit evaluative attitudes toward violence. As mentioned above, the RRT has not yet been adapted to assess implicit evaluative attitudes toward violence; therefore, this is the first modification that has been made to this procedure in an attempt to capture this construct. However, prior research has had some success with adapting this procedure in other areas of psychology (e.g., self-esteem). In fact, some prior research suggests that the RRT procedure may be more sensitive to differences in respondents’ implicit evaluative attitudes (De Houwer et al., 2015; Remue et al., 2013; 2014). As noted above, De Houwer et al. (2015) proposed the RRT as an alternative measure to the more popular IAT. They argued that the IAT procedure is likely to activate different implicit associations for different participants because it does not address *how* two concept categories (e.g., *violence* and *good*) are related to one another. They argue that this could,

in turn, add error to the resulting IAT effect score, which may dilute its relationship to outcomes of interest. Whereas the resulting RRT effect score would be more sensitive to differences in how participants associate concepts of interest (e.g., *violence* and *good*). This may be important for constructs outside the realm of violence such as self-esteem, but perhaps it is less important for implicit evaluative attitudes toward violence. For example, distinguishing between the statements of “violence is good” and “me doing violence is good” may not be important for validly and reliably capturing participants’ implicit evaluative attitudes toward violence. Although these propositions are different, their relationship to violent behaviour may not vary in any meaningful way. In other words, whether one believes violence, in general, is *good* or whether one believes that engaging in violence themselves is *good* may not matter for distinguishing whether they have positive implicit evaluative attitudes toward violence or not. Beliefs regarding these two propositions could be equally related to violence, in which case, distinguishing between them is not necessary to identify whether one holds positive implicit evaluative attitudes toward violence and whether one would be violent in the future. Whereas, distinguishing between the propositional statements of “I am good” and “I want to be good” may be important for distinguishing between whether someone has high or low implicit self-esteem and is therefore, clinically depressed or not. Further, perhaps administering a more involved procedure, as is the case with the RRT, may introduce noise in the resulting scores and abate any possible effects that may exist between implicit evaluative attitudes toward violence and violent behaviour.

Third, given that this was the first time the RRT has been modified to assess implicit evaluative attitudes toward violence, perhaps the stimuli and categories used in

the current study effected whether the VE-RRT could validly and reliably assess this construct. Future studies should pilot test several potential stimuli before modifying the RRT to assess implicit evaluative attitudes toward violence, as was done with the two IAT measures used in the current study. Given the overall lack of sizeable relationships found between scores on the VE-RRT and the outcome measures of violent behaviour, Studies 2 and 3 did not include the VE-RRT in an attempt to further streamline the questionnaire administered and reduce potential cognitive fatigue among participants.

Last, another somewhat surprising result is that scores on the P-VE-IAT (i.e., the personalized IAT version) were positively, significantly, related to likelihood of violence among male students, whereas scores on the VE-IAT were positively, significantly, related to the same outcome among community men. Olson and Fazio (2004) proposed the personalized version of the traditional IAT as a way to ensure that participants are attune to their own implicit evaluative attitudes while completing the IAT procedure, rather than general, or societal, beliefs about the construct of interest. As articulated elsewhere, in the personalized IAT, the attribute categories of *positive* and *negative* are replaced with the categories of *I like* and *I dislike*. This suggests that different IAT versions may more accurately capture implicit evaluative attitudes toward violence among different populations (e.g., different demographic characteristics). The P-VE-IAT was subsequently administered along with the VE-IAT in Study 2 among males convicted of violent offences and in Study 3 among an online sample of men.

Explicit Evaluative Attitudes Toward Violence and Violent Behaviour. As seen in Table 22, more positive explicit evaluative attitudes toward violence, as assessed by scores on the semantic differential scales (VESD), were significantly and moderately

to strongly associated with more self-reported prior violence (i.e., as assessed by scores on the VBS), likelihood of violence (i.e., as assessed by scores on the EVQ-Likelihood), and propensity for violence at the time of assessment (i.e., as assessed by scores on the VBVQ), among male students (i.e., correlations ranged from $r = .40$ to $r = .49$). In addition, more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were significantly and moderately associated with more prior violent behaviour, as assessed by scores on the VBS (i.e., $r = .44$); whereas very large, positive associations were found between scores on the EVQ and EVQ-Likelihood, as well as VBVQ, such that more positive explicit evaluation attitudes toward violence, as assessed by scores on the EVQ were significantly and strongly associated with more likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .83$), as well as more propensity for violence at the time of assessment, as assessed by scores on the VBVQ ($r = .70$), among male students.

As seen in Table 23, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were significantly and moderately to strongly associated with more prior violent behaviour (i.e., assessed by scores on the VBS), likelihood of violence (i.e., assessed by scores on the EVQ-Likelihood), and propensity for violence at the time of assessment (i.e., as assessed by scores on the VBVQ), among community men (i.e., correlations ranged from $r = .40$ to $r = .53$). These relationships were all consistent with the relationships found among male students. Also consistent with the student sample, more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were significantly and moderately associated with more prior violent behaviour, as assessed by scores on the VBS ($r = .45$), among community

men. In addition, more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were significantly and strongly associated with more likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .78$), as well as more propensity for violence at the time of assessment, as assessed by scores on the VBVQ ($r = .66$), among community men, which is also consistent with the results found among male students.

Consistent results were found regarding the relationship between explicit evaluative attitudes toward violence and violent behaviour (past, likelihood, and propensity) among male undergraduate students and males from the community in the current study, with effects sizes ranging from moderate to large reported in both samples. Of note, the relationship between explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, and likelihood of violence, as assessed by scores on the EVQ-Likelihood, was fairly large in nature (i.e., $r = .83$ for male students and $r = .78$ for community men). This is not surprising given that the EVQ-Likelihood items were created out of items from the EVQ (see Appendix R and U). These sizeable effects might suggest that the EVQ and EVQ-Likelihood are assessing similar constructs; however, research assessing the underlying factor structure of these measures would need to be conducted to determine whether this is the case. Regardless, the results observed in the current study, reported above, are consistent with prior research using similar measures to assess explicit evaluative attitudes toward violence. For instance, prior research using similar semantic differential scales to assess this construct have reported significant, positive, relationships between explicit evaluative attitudes toward violence and more prior violent behaviour (see Nunes et al., 2015), as well as greater likelihood of violence

(see Maimone & Nunes, 2020) among male undergraduate students. Although not significant, one prior study also reported more positive explicit evaluative attitudes toward violence, following exposure to simulated violence, among male undergraduate students, and these differences were moderate to large in size (see Maimone & Nunes, 2020). Similar significant, positive, relationships have been reported among community men (recruited from an online panel), such that more positive explicit evaluative attitudes toward violence were associated with more prior violent behaviour and greater propensity for violence at the time of assessment (see Nunes, Pedneault, Hermann, & Fraser, 2021). Prior research using the EVQ to assess explicit evaluative attitudes toward violence has also reported significant, positive, relationships with more prior violent behaviour and propensity for violence at the time of assessment among community men recruited online (see Nunes, Pedneault, Hermann, & Fraser, 2021).

Prior research using semantic differential scales to assess explicit evaluative attitudes toward rape have reported comparable results. For instance, significant, positive, relationships were found between explicit evaluative attitudes toward rape, as assessed by semantic differential scales, and more prior sexually coercion and aggression, greater likelihood of sexual aggression, as well as greater proclivity to engage in sexual aggression among male undergraduate students (see Hermann et al., 2018; Nunes et al., 2018). One prior study also reported significantly more positive explicit evaluative attitudes toward rape, as assessed by scores on semantic differential scales, for those who reported the most past sexually aggressive behaviour in comparison to those who reported no past sexually aggressive behaviour (see Nunes et al., 2013). Last, similar relationships have been observed in prior research using semantic differential scales to

assess explicit evaluative attitudes toward rape among community men. Specifically, more positive explicit evaluative attitudes toward rape were significantly associated with more proclivity to engage in sexually aggressive behaviour and greater likelihood to rape (see Hermann et al., 2018) among community men recruited online. Scores on semantic differential scales assessing explicit evaluative attitudes toward rape were also predictive of future sexually aggressive behaviour, such that more positive explicit evaluative attitudes toward rape at a first administration were significantly associated with more sexually aggressive behaviour at a second administration, while controlling for sexually aggressive behaviour at the first administration (see Hermann & Nunes, 2018). In contrast to these results, a few studies have reported inconsistent results to those observed in the current study. For instance, Snowden et al. (2004) found significantly more negative explicit evaluative attitudes toward violence among a sample of murderers in comparison to men who had not been convicted of murder (but who were convicted of other violent offences). Jeon et al. (2019) found no significant differences in explicit evaluative attitudes toward general aggression, as well as retaliated aggression, between adolescents who had committed at least one prior act of school violence and adolescents who had not. These last two studies, reporting inconsistent results, were the only studies involving non-student or community male samples. Therefore, in order to confirm the stability of the results observed in the current study among male undergraduate students and community members these results must be replicated among a more violent male sample (e.g., males convicted of violent offences). As such, Study 2 examines these relationships among men who have been convicted of violent offences and who are currently residing in a provincial correctional and treatment centre.

Beliefs Regarding Violence and Violent Behaviour. As seen in Table 22, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and strongly associated with more prior violent behaviour, as assessed by scores on the VBS ($r = .55$), more likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .66$), and more propensity for violence at the time of assessment, as assessed by scores on the VBVQ ($r = .62$), among male students. As seen in Table 23, more positive explicit evaluative attitudes toward violence, as assessed by scores on the MCAA-R-V, were significantly and strongly associated with more prior violent behaviour, as assessed by scores on the VBS ($r = .51$), more likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .72$), and more propensity for violence at the time of assessment, as assessed by scores on the VBVQ ($r = .61$).

These results are consistent with prior research using the MCAA Violence scale to assess beliefs regarding violence. For instance, higher scores on the MCAA Violence scale (original and revised), corresponding to more violence-supportive beliefs, were associated with greater self-reported risk of violent recidivism ($r = .60$; Maimone & Nunes, 2020), and more incidences of violent recidivism ($r = .19$; Mills et al., 2004) in samples of men incarcerated in provincial and federal correctional institutions. Higher scores on the MCAA Violence scale (original and revised), corresponding to more violence-supportive beliefs, were associated with more self-reported prior violent behaviour in samples of male undergraduate students ($r = .37$ in Nunes et al., 2015 and $r = .31$ in Maimone & Nunes, 2020).

Variance Accounted for by Implicit Evaluative Attitudes Toward Violence

Hierarchical multiple linear regressions were conducted to assess whether implicit evaluative attitudes toward violence accounted for significantly more variance in violent behaviour over and above explicit evaluative attitudes toward violence or self-report beliefs regarding violence. These regressions were conducted such that explicit measures of evaluative attitudes toward violence (i.e., VESD or EVQ) or the self-report measure of beliefs regarding violence (i.e., MCAA-R-V) were added in the first step of the regression and implicit measures of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) were entered in the second step of the regression, with self-report measures of violent behaviour entered as the outcome variable (i.e., measures of prior violent behaviour [VBS], likelihood of violence [EVQ-Likelihood], or current propensity for violence [VBVQ]). Accordingly, these data were examined to determine whether they conformed to the assumptions underlying hierarchical multiple linear regression. Specifically, these data were screened for the following assumptions: multicollinearity between predictors in the model, homoscedasticity of variances, linearity of association between the set of predictors and the outcome, and normality, homoscedasticity, and independence of residuals. For the most part, these assumptions were upheld. Multivariate outliers were also examined for each regression model separately. In the event that multivariate outliers were found, they were excluded per analysis in an attempt to maximize power. Altogether, eighteen hierarchical linear regressions were conducted to examine whether implicit measures of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) accounted for significantly more variance in measures of violent

behaviour over and above explicit/self-report measures of violent cognition. Only those analyses that approached significance are reported.

When analyzing these relationships among male undergraduate students, only the personalized violent evaluation IAT (i.e., P-VE-IAT), for which categories of *I like* and *I dislike* replaced the traditional evaluative attribute categories often used (i.e., *positive* and *negative*), significantly added incremental variance over and above explicit/self-report measures of violent cognition in explaining violent behaviour; therefore, only the analyses involving this measure are reported here. As seen in Table 24, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, accounted for significantly more variance (i.e., $R^2 = .25$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .23$, $\Delta R^2 = .02$, $p < .05$), among male undergraduate students. As seen in Table 25, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, also accounted for significantly more variance (i.e., $R^2 = .70$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood), over and above explicit evaluative attitudes toward violence, as assessed by scores on the EVQ (i.e., $R^2 = .69$, $\Delta R^2 = .01$, $p < .05$), among this same sample.

Table 24

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Male Undergraduate Students in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.18***		.10	[0.98, 1.39]		1.37***		.14	[1.09, 1.64]	
VESD	0.27***	.48	.04	[0.18, 0.35]	.23	0.26***	.47	.04	[0.18, 0.34]	.22
P-VE-IAT						0.17*	.15	.08	[0.00, 0.33]	.02
<i>F</i>	41.58***					23.25***				
<i>R</i> ²	.23					.25				
ΔR^2						.02*				

Note. *N* = 144. I examined the variance accounted for by implicit (i.e., P-VE-IAT) and explicit (i.e., VESD) evaluative attitudes in likelihood of violence (i.e., EVQ Likelihood). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, **p* < .001.

Table 25

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Male Undergraduate Students in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.25**		.09	[0.74, 0.43]		0.41***		.11	[0.20, 0.63]	
EVQ	0.85***	.83	.05	[0.75, 0.94]	.69	0.84***	.82	.05	[0.75, 0.94]	.67
P-VE-IAT						0.14*	.12	.05	[0.03, 0.24]	.01
<i>F</i>	312.73***					166.12***				
<i>R</i> ²	.69					.70				
ΔR^2						.01*				

Note. *N* = 144. I examined the variance accounted for by implicit (i.e., P-VE-IAT) and explicit (i.e., EVQ) evaluative attitudes on likelihood in violence (i.e., EVQ Likelihood). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, *p* < .01, ****p* < .001.

When analyzing these relationships among community men, the violent evaluation IAT (i.e., VE-IAT), for which the traditional evaluative attribute categories of *positive* and *negative* were used, seemed to more consistently account for additional variance in self-report measures of violent behaviour; however, the P-VE-IAT did account for marginally significant additional variance on one occasion. As seen in Table 26, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, accounted for significant variance (i.e., $R^2 = .51$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above self-report beliefs regarding violence, as assessed by scores on the MCAA-R-V (i.e., $R^2 = .48$, $\Delta R^2 = .03$, $p < .05$), among community men. As seen in Table 27, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, also accounted for significant variance (i.e., $R^2 = .31$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .26$, $\Delta R^2 = .04$, $p < .05$), among community men. In addition, as seen in Table 28, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, accounted for significant variance (i.e., $R^2 = .62$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above explicit evaluative attitudes toward violence, as assessed by scores on the EVQ (i.e., $R^2 = .58$, $\Delta R^2 = .04$, $p < .01$). Last, as seen in Table 29, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, accounted for marginally significant variance (i.e., $R^2 = .22$) in prior violent behaviour, as assessed by scores on the VBS, over and above self-report beliefs regarding violence, as assessed by scores on the MCAA-R-V (i.e., $R^2 = .19$, $\Delta R^2 = .03$, $p = .06$), among community men.

Table 26

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Self-Reported Beliefs Regarding Violence Among Males from the Community in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.14		.18	[-0.22, 0.50]		0.44 ^a		.22	[0.00, 0.88]	
MCAA-R-V	0.08***	.69	.01	[0.06, 0.10]	.47	0.08***	.66	.01	[0.06, 0.09]	.43
VE-IAT						0.20*	.18	.09	[0.03, 0.38]	.03
<i>F</i>	78.76***					43.86***				
<i>R</i> ²	.48					.51				
ΔR^2						.03*				

Note. *N* = 89. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and self-reported beliefs regarding violence (i.e., MCAA-R Violence scale) in likelihood of violence (i.e., EVQ Likelihood). In Model 1, I entered self-reported beliefs regarding violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

^amarginally significant at *p* = .05.

p* < .05, **p* < .001.

Table 27

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.03***		.13	[0.77, 1.30]		1.35***		.19	[0.97, 1.73]	
VESD	0.33***	.51	.06	[0.21, 0.45]	.26	0.31***	.49	.06	[0.20, 0.43]	.23
VE-IAT						0.24*	.21	.11	[0.03, 0.45]	.04
<i>F</i>	31.19***					18.97***				
<i>R</i> ²	.26					.31				
ΔR^2						.04*				

Note. *N* = 89. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in likelihood of violence (i.e., EVQ Likelihood). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, **p* < .001.

Table 28

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.51***		.12	[0.28, 0.74]		0.82***		.15	[0.52, 1.11]	
EVQ	0.70***	.76	.06	[0.58, 0.84]	.58	0.69***	.74	.06	[0.57, 0.81]	.55
VE-IAT						0.23**	.20	.08	[0.08, 0.38]	.04
<i>F</i>	121.66***					70.96***				
<i>R</i> ²	.58					.62				
ΔR^2						.04**				

Note. *N* = 89. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and explicit evaluative attitudes toward violence (i.e., EVQ) in likelihood of violence (i.e., EVQ Likelihood). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .01, *p* < .001.

Table 29

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Prior Violent Behaviour Above Self-Reported Beliefs Regarding Violence Among Males from the Community in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	-0.98*		.42	[-1.82, -0.14]		-1.60**		.53	[-2.65, -0.55]	
MCAA-R-V	0.09***	.43	.02	[0.05, 0.13]	.19	0.10***	.46	.02	[0.06, 0.14]	.09
P-VE-IAT						-0.40 ^a	-.18	.21	[-0.83, 0.02]	.03
<i>F</i>	20.00***					12.11***				
<i>R</i> ²	.19					.22				
ΔR^2						.03 ^a				

Note. *N* = 89. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., P-VE-IAT) and self-reported beliefs regarding violence (i.e., MCAA-R Violence scale) in prior violent behaviour (i.e., VBS [Violent Behaviour Scale]). In Model 1, I entered self-reported beliefs regarding violence to predict prior violent behaviour. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

^amarginally significant at *p* = .06.

p* < .05, *p* < .01, ****p* < .001.

Not surprising, in the male student sample implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, added significant incremental variance when explaining likelihood of violence over and above both measures of explicit evaluative attitudes toward violence (i.e., the VESD and EVQ). These relationships are consistent with the bivariate relationships observed among this sample in regard to scores on the P-VE-IAT. Specifically, scores on the P-VE-IAT were significantly, positively, related to scores on the EVQ-Likelihood, assessing likelihood of violence, such that more positive implicit evaluative attitudes toward violence were related to greater likelihood of violence. From these results it appears that together implicit and explicit measures of evaluative attitudes toward violence better account for variance in likelihood of violence.

Among men from the community, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, added significant incremental variance when explaining likelihood of violence over and above explicit evaluative attitudes toward violence, as assessed by scores on both the EVQ and VESD. These results replicate those found among male students in the current study and are also in line with the bivariate associations observed among this sample. Specifically, scores on the VE-IAT were significantly, positively, related to scores on the EVQ-Likelihood, such that more positive implicit evaluative attitudes toward violence were related to greater likelihood of violence among the community male sample. These results, along with those outlined above, suggest that together implicit and explicit measures of evaluative attitudes toward violence may better predict whether someone will behave violently or not in the future. However, future research must utilize more sophisticated research designs (e.g., longitudinal designs) in order to confirm this assertion.

In addition to the above results, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, added significant incremental variance when explaining likelihood of violence over and above beliefs regarding violence (i.e., MCAA-R-V) among the male community sample. Last, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, added significant incremental variance when explaining prior violent behaviour (i.e., VBS) over and above beliefs regarding violence among this same sample. These results suggest that beliefs regarding violence better explain violent outcomes (e.g., prior violence and likelihood of violence) when coupled with implicit measures of evaluative attitudes toward violence than when alone.

The results of the hierarchical multiple linear regressions are important because they provide evidence that implicit evaluative attitudes toward violence are functionally different constructs to explicit evaluative attitudes toward violence, as they account for different variance in violent outcomes. This suggests that implicit measures of evaluative attitudes toward violence may be important to consider in addition to explicit/self-report measures of violent cognition to better understand the offence cycle of violence, and in particular, when estimating the likelihood that someone will behave violently. These results contrast the sparse literature conducted thus far assessing these effects. For instance, Sprunger and Eckhardt (2017) reported that implicit evaluative attitudes toward violence did not account for incremental variance in likelihood of physical aggression over and above beliefs regarding violence, among 106 undergraduate students. Therefore, due to the very sparse and inconsistent research to date, these results must be further replicated among similar, as well as more violent, samples.

Moderation of Implicit Evaluative Attitudes Toward Violence

The goal in this section was to explore the potential moderating role of implicit evaluative attitudes toward violence in the association between explicit/self-report violent cognitions and indicators of violent behaviour. A series of hierarchical multiple linear regressions were conducted to assess whether implicit evaluative attitudes toward violence significantly moderated the relationship between explicit/self-report violent cognitions and violent behaviour. This effect was quantified by assessing the significance of the interaction between implicit and explicit/self-report measures of violent cognition on measures of violent behaviour. Specifically, the implicit measure of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) and explicit/self-report measure of violent cognition (i.e., explicit measures of evaluative attitudes toward violence [VESD or EVQ] or the self-report measure of beliefs regarding violence [MCAA-R-V]) were added in the first step of the regression and the interaction between the implicit measure of evaluative attitudes toward violence and the explicit/self-report measure of violent cognition was added in the second step of the regression (i.e., $VE-IAT \times VESD$, $VE-IAT \times EVQ$, $VE-IAT \times MCAA-R-V$, $P-VE-IAT \times VESD$, $P-VE-IAT \times EVQ$, or $P-VE-IAT \times MCAA-R-V$) with a self-report measure of violent behaviour as the outcome variable (i.e., VBS, EVQ-Likelihood, or VBVQ). Preacher's online calculator (Preacher et al., 2006) was then used to assess the significance of the simple slopes, or in other words, to identify where the differences lie in the relationship between explicit/self-report measures of violent cognition and self-report measures of violent behaviour at different levels of the implicit measure of evaluative attitudes toward violence (i.e., the moderator). As stated above, these data were examined to determine whether they conformed to the

assumptions underlying hierarchical multiple linear regression. Specifically, these data were screened for the following assumptions: multicollinearity between predictors in the model, homoscedasticity of variances, linearity of association between the set of predictors and the outcome, and normality, homoscedasticity, and independence of residuals. For the most part, these assumptions were upheld. As in the analyses above, multivariate outliers were also examined for each regression model separately. In the event that multivariate outliers were found, they were excluded per analysis in an attempt to maximize power. Altogether, eighteen hierarchical linear regressions were conducted to examine whether implicit measures of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) moderated the relationships between explicit/self-report measures of violent cognition and self-report measures of violent behaviour. Only those analyses that approached significance are reported. Understandably, analysis of the simple slopes using Preacher's calculator was only conducted for significant interactions.

Before conducting the regression analyses, implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT), explicit evaluative attitudes toward violence (i.e., VESD and EVQ), and self-report beliefs regarding violence (i.e., MCAA-R-V) were mean centered. Interaction terms between implicit and explicit/self-report violent cognitions were then created out of the centered terms (see above). As stated above, after controlling for implicit and explicit/self-report violent cognitions at Step 1 of the regression, the multiplicative interaction term of (centered) implicit evaluative attitudes toward violence by (centered) explicit evaluative attitudes toward violence/beliefs regarding violence was entered in the equation (at Step 2).

When analyzing all eighteen moderated regressions among male undergraduate students, implicit evaluative attitudes toward violence, as measured by scores on the P-VE-IAT, significantly moderated some of the relationships between explicit evaluative attitudes toward violence and violent behaviour. A summary of the results of the regression equation predicting likelihood of violence, assessed by scores on the EVQ-Likelihood, from explicit evaluative attitudes toward violence, assessed by scores on the EVQ, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction, is displayed in Table 30. Explicit evaluative attitudes toward violence, as a main effect, significantly predicted likelihood of violence such that more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were associated with greater likelihood of violence ($b = 0.84$, $SE = .05$, $\beta = .82$, $t[141] = 17.85$, $p < .001$, 95% CI = [0.75, 0.94], $sr^2 = .67$). Implicit evaluative attitudes toward violence, as a main effect, also significantly predicted likelihood of violence such that more positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were associated with greater likelihood of violence ($b = 0.14$, $SE = .05$, $\beta = .12$, $t[141] = 2.60$, $p = .01$, 95% CI = [0.03, 0.24], $sr^2 = .01$). A marginally significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., EVQ $\times$ P-VE-IAT), $b = 0.17$, $SE = .09$, $\beta = .09$, $t(140) = 1.90$, $p = .06$, 95% CI = [-0.01, 0.34], $sr^2 = .01$, and explained an additional 1% of the variance, $F_{\text{change}}(140) = 3.60$, $p = .06$. Results from follow-up simple slopes analyses are illustrated in Figure 5 and suggest that the relationship between explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, and likelihood of violence, as assessed by scores on the EVQ-

Likelihood, was not substantially different at different levels of implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT. Specifically, more positive explicit evaluative attitudes toward violence were significantly associated with greater likelihood of violence at low levels (i.e., or more negative [-1 SD]), $b = 0.76$, $SE = .06$, $t(140) = 12.17$, $p < .001$, moderate levels (i.e., or more neutral [0]), $b = 0.84$, $SE = .04$, $t(140) = 18.85$, $p < .001$, and high levels (i.e., or more positive [+1 SD]), $b = 0.93$, $SE = .06$, $t(140) = 14.52$, $p < .001$, of implicit evaluative attitudes toward violence. The increase in likelihood of violence when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was most pronounced at high (or more positive) implicit evaluative attitudes toward violence and least pronounced at low (or more negative) implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (see Figure 5).

Table 30

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Likelihood of Violence Among Male Students in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.80***		.03	[1.75, 1.85]		1.80***		.03	[1.74, 1.85]	
EVQ	0.84***	.82	.05	[0.75, 0.94]	.67	0.84***	.82	.05	[0.75, 0.94]	.68
P-VE-IAT	0.14*	.12	.05	[0.03, 0.24]	.01	0.12*	.12	.05	[0.02, 0.23]	.01
EVQ $\times$ P-VE-IAT						0.17 ^a	.09	.09	[-0.01, 0.34]	.01
<i>F</i>	166.12***					113.98***				
<i>R</i> ²	.70					.71				
ΔR^2						.01 ^a				

Note. *N* = 144. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and likelihood of violence (i.e., EVQ Likelihood) by examining the significance of the EVQ by P-VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict likelihood of violence. In Model 2, I entered the EVQ by P-VE-IAT interaction as the predictor.

^amarginally significant at *p* = .06.

p* < .05, *p* < .01, ****p* < .001.

Figure 5

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Likelihood of Violence Among Male Undergraduate Students in Study 1

Note. $N = 144$ male undergraduate students. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting likelihood of violence from the EVQ, P-VE-IAT, and EVQ by P-VE-IAT interaction. Evaluation of Violence Questionnaire – Likelihood of violence version (EVQ-Likelihood) was entered as the outcome to assess likelihood of violence. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. EVQ = Evaluation of Violence Questionnaire, used to assess explicit evaluative attitudes toward violence.

A summary of the results of the regression equation predicting prior violent behaviour, assessed by scores on the VBS, from explicit evaluative attitudes toward violence, assessed by scores on the VESD, and implicit evaluative attitudes toward

violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction, is displayed in Table 31. Explicit evaluative attitudes toward violence, as a main effect, significantly predicted prior violent behaviour such that more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were associated with more prior violent behaviour ($b = 0.35$, $SE = .07$, $\beta = .38$, $t[141] = 4.85$, $p < .001$, 95% CI = [0.21, 0.49], $sr^2 = .14$). Implicit evaluative attitudes toward violence (i.e., scores on the P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of prior violent behaviour over and above explicit evaluative attitudes toward violence ($b = 0.07$, $SE = .15$, $\beta = .04$, $t[141] = 0.45$, $p = .65$, 95% CI = [-0.23, 0.36], $sr^2 = .00$). A significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., VESD $\times$ P-VE-IAT), $b = -0.29$, $SE = .14$, $\beta = -.16$, $t(140) = -2.06$, $p = .04$, 95% CI = [-0.57, -0.01], $sr^2 = .03$, and explained an additional 3% of the variance, $F_{\text{change}}(140) = 4.25$, $p = .04$. Results from follow-up simple slopes analyses are illustrated in Figure 6. Results show that more positive explicit evaluative attitudes toward violence were significantly associated with more prior violent behaviour at low levels (i.e., or more negative [-1 SD]), $b = 0.52$, $SE = .11$, $t(140) = 4.73$, $p < .001$, moderate levels (i.e., or more neutral [0]), $b = 0.37$, $SE = .07$, $t(140) = 5.28$, $p < .001$, and high levels (i.e., or more positive [+1 SD]), $b = 0.23$, $SE = .09$, $t(140) = 2.57$, $p = .001$, of implicit evaluative attitudes toward violence. In contrast to the above results, the increase in prior violent behaviour when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was most pronounced at low (or more negative) implicit evaluative attitudes toward violence and least pronounced at high (or more positive)

implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (see Figure 6).

Table 31

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Prior Violence Among Male Undergraduate Students in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.81***		.07	[0.67, 0.96]		0.82***		.07	[0.67, 0.96]	
VESD	0.35***	.38	.07	[0.21, 0.49]	.14	0.37***	.40	.07	[0.23, 0.52]	.16
P-VE-IAT	0.07	.04	.15	[-0.23, 0.36]	.00	0.12	.06	.15	[-0.17, 0.42]	.00
VESD × P-VE-IAT						-0.29*	-.16	.14	[-0.57, -0.01]	.03
<i>F</i>	12.01***					9.61***				
<i>R</i> ²	.15					.17				
ΔR^2						.03*				

Note. *N* = 144. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and prior violent behaviour (i.e., VBS) by examining the significance of the VESD by P-VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict prior violent behaviour. In Model 2, I entered the VESD by P-VE-IAT interaction as the predictor.

p* < .05, *p* < .01, ****p* < .001.

Figure 6

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Prior Violent Behaviour Among Male Undergraduate Students in Study 1

Note. $N = 144$ male undergraduate students. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting prior violent behaviour from the VESD, P-VE-IAT, and VESD by P-VE-IAT interaction. Violent Behaviour Scale (VBS) was entered as the outcome to assess self-reported prior violent behaviour. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. VESD = Evaluation of Violence Semantic Differential scales, used to assess explicit evaluative attitudes toward violence.

When analyzing all eighteen moderated regressions among men from the community, implicit evaluative attitudes toward violence, as measured by both scores on the VE-IAT and P-VE-IAT, significantly moderated some of the relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and violent

behaviour. A summary of the results of the regression equation predicting prior violent behaviour, assessed by scores on the VBS, from beliefs regarding violence, assessed by scores on the MCAA-R-V, and implicit evaluative attitudes, assessed by scores on the VE-IAT, as well as their multiplicative interaction, is displayed in Table 32. Beliefs regarding violence, as a main effect, significantly predicted prior violent behaviour such that more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were associated with more prior violent behaviour ($b = 0.12$, $SE = .02$, $\beta = .49$, $t[141] = 5.14$, $p < .001$, $95\% \text{ CI} = [0.07, 0.16]$, $sr^2 = .23$). Implicit evaluative attitudes toward violence (i.e., VE-IAT), as a main effect, did not add significant incremental variance in the prediction of prior violent behaviour over and above beliefs regarding violence ($b = 0.17$, $SE = .23$, $\beta = .07$, $t[141] = 0.71$, $p = .46$, $95\% \text{ CI} = [-0.29, 0.64]$, $sr^2 = .00$). A significant interaction was observed between beliefs regarding violence and implicit evaluative attitudes toward violence (i.e., MCAA-R-V $\times$ VE-IAT), $b = 0.14$, $SE = .04$, $\beta = .29$, $t(140) = 3.30$, $p = .001$, $95\% \text{ CI} = [0.05, 0.22]$, $sr^2 = .09$, and explained an additional 9% of the variance, $F_{\text{change}}(140) = 10.89$, $p = .001$. Results from follow-up simple slopes analyses are illustrated in Figure 7. Results show that beliefs regarding violence were not significantly associated with prior violent behaviour at low levels (i.e., or more negative [-1 SD]) of implicit evaluative attitudes toward violence, $b = 0.05$, $SE = .03$, $t(140) = 1.49$, $p = .14$, but more violence-supportive beliefs were significantly associated with more prior violent behaviour at moderate levels (i.e., or more neutral [0]), $b = 0.11$, $SE = .02$, $t(140) = 5.23$, $p < .001$, and high levels (i.e., or more positive [+1 SD]), $b = 0.18$, $SE = .03$, $t(140) = 6.24$, $p < .001$, of implicit evaluative attitudes toward violence. A comparable magnitude in the increase in prior violent behaviour when going from low (or

more negative) beliefs regarding violence to high (or more positive) beliefs regarding violence was found at moderate (or more neutral) and high (or more positive) levels of implicit evaluative attitudes towards violence, but no relationship was found between beliefs regarding violence and prior violent behaviour at low (or more negative) levels of implicit evaluative attitudes toward violence (see Figure 7).

Table 32

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Beliefs Regarding Violence and Prior Violence Among Males from the Community in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.96***		.11	[0.74, 1.19]		0.91***		.11	[0.69, 1.13]	
MCAA-R-V	0.12***	.49	.02	[0.07, 0.16]	.23	0.11***	.47	.02	[0.07, 0.16]	.22
VE-IAT	0.17	.07	.23	[-0.29, 0.64]	.00	0.14	.06	.22	[-0.30, 0.58]	.00
MCAA-R-V $\times$ VE-IAT						0.14**	.29	.04	[0.05, 0.22]	.09
<i>F</i>	14.42***					14.34***				
<i>R</i> ²	.25					.34				
ΔR^2						.09**				

Note. *N* = 89. I examined whether implicit evaluative attitudes toward violence (i.e., VE-IAT) significantly moderate the relationship between beliefs regarding violence (i.e., MCAA-R-V) and prior violent behaviour (i.e., VBS) by examining the significance of the MCAA-R-V by VE-IAT interaction. In Model 1, I entered beliefs regarding violence (centered) and implicit evaluative attitudes toward violence (centered) to predict prior violent behaviour. In Model 2, I entered the MCAA-R-V by VE-IAT interaction as the predictor.

p* < .05, *p* < .01, ****p* < .001.

Figure 7

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Prior Violent Behaviour Among Males from the Community in Study 1

Note. $N = 89$ males from the community. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting prior violent behaviour from the MCAA-R-V, VE-IAT, and MCAA-R-V by VE-IAT interaction. Violent Behaviour Scale (VBS) was entered as the outcome to assess self-reported prior violent behaviour. VE-IAT = Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. MCAA-R-V = Measures of Criminal Attitudes and Associates – Revised – Violence scale, used to assess self-report beliefs regarding violence.

A summary of the results of the regression equation predicting prior violent behaviour, as assessed by scores on the VBS, from explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, and implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, as well as their multiplicative interaction,

is displayed in Table 33. Explicit evaluative attitudes toward violence, as a main effect, significantly predicted prior violent behaviour such that more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were associated with more prior violent behaviour ($b = 0.87$, $SE = .19$, $\beta = .44$, $t[141] = 4.55$, $p < .001$, 95% CI = [0.49, 1.24], $sr^2 = .19$). Implicit evaluative attitudes toward violence (i.e., VE-IAT), as a main effect, did not add significant incremental variance in the prediction of prior violent behaviour over and above explicit evaluative attitudes toward violence ($b = 0.25$, $SE = .24$, $\beta = .10$, $t[141] = 1.04$, $p = .30$, 95% CI = [-0.22, 0.72], $sr^2 = .01$). A marginally significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., $EVQ \times VE-IAT$), $b = 0.65$, $SE = .37$, $\beta = .17$, $t(140) = 1.75$, $p = .08$, 95% CI = [-0.09, 1.39], $sr^2 = .03$, and explained an additional 3% of the variance, $F_{\text{change}}(140) = 3.05$, $p = .08$. Results from follow-up simple slopes analyses are illustrated in Figure 8. Results show that, although marginally significant, explicit evaluative attitudes toward violence were not associated with prior violent behaviour at low levels (i.e., or more negative [-1 SD]) of implicit evaluative attitudes toward violence, $b = 0.49$, $SE = .29$, $t(140) = 1.70$, $p = .09$, but more positive explicit evaluative attitudes toward violence were significantly associated with more prior violent behaviour at moderate levels (i.e., or more neutral [0]), $b = 0.81$, $SE = .19$, $t(140) = 4.29$, $p < .001$, and high levels (i.e., or more positive [+1 SD]), $b = 1.14$, $SE = .24$, $t(140) = 4.66$, $p < .001$, of implicit evaluative attitudes toward violence. The increase in prior violent behaviour when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was most pronounced at high (or more positive) implicit evaluative attitudes

toward violence followed by moderate (or more neutral) implicit evaluative attitudes toward violence and least pronounced at low (or more negative) implicit evaluative attitudes toward violence, although this relationship was not significant (see Figure 8).

Table 33

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Prior Violence Among Males from the Community in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.96***		.12	[0.73, 1.20]		0.94***		.12	[0.71, 1.17]	
EVQ	0.87***	.44	.19	[0.49, 1.24]	.19	0.81***	.41	.19	[0.44, 1.19]	.16
VE-IAT	0.25	.10	.24	[-0.22, 0.72]	.01	0.19	.08	.24	[-0.29, 0.66]	.01
EVQ $\times$ VE-IAT						0.65 ^a	.17	.37	[-0.09, 1.39]	.03
<i>F</i>	11.48***					8.86***				
<i>R</i> ²	.21					.24				
ΔR ²						.03 ^a				

Note. *N* = 89. I examined whether implicit evaluative attitudes toward violence (i.e., VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and prior violent behaviour (i.e., VBS) by examining the significance of the EVQ by VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict prior violent behaviour. In Model 2, I entered the EVQ by VE-IAT interaction as the predictor.

p* < .05, *p* < .01, ****p* < .001. ^amarginally significant at *p* = .084.

Figure 8

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Prior Violent Behaviour Among Males from the Community in Study 1

Note. $N = 89$ males from the community. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting prior violent behaviour from the EVQ, VE-IAT, and EVQ by VE-IAT interaction. Violent Behaviour Scale (VBS) was entered as the outcome to assess self-reported prior violent behaviour among males from the community. VE-IAT = Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. EVQ = Evaluation of Violence Questionnaire, used to assess explicit evaluative attitudes toward violence.

A summary of the results of the regression equation predicting likelihood of violence, assessed by scores on the EVQ-Likelihood, from explicit evaluative attitudes toward violence, assessed by scores on the VESD, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction, is displayed in Table 34. Explicit evaluative attitudes toward violence, as a

main effect, significantly predicted likelihood of violence such that more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were associated with greater likelihood of violence ($b = 0.32$, $SE = .06$, $\beta = .51$, $t[141] = 5.326$, $p < .001$, 95% CI = [0.20, 0.44], $sr^2 = .25$). Implicit evaluative attitudes toward violence (i.e., P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of likelihood of violence over and above explicit evaluative attitudes toward violence ($b = 0.01$, $SE = .11$, $\beta = .01$, $t[141] = 0.11$, $p = .91$, 95% CI = [-0.21, 0.23], $sr^2 = .00$). A significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., VESD $\times$ P-VE-IAT), $b = -0.33$, $SE = .15$, $\beta = -.20$, $t(140) = -2.15$, $p = .04$, 95% CI = [-0.64, -0.02], $sr^2 = .04$, and explained an additional 4% of the variance, $F_{\text{change}}(140) = 4.61$, $p = .04$. Results from the follow-up simple slopes analyses are illustrated in Figure 9. Results show that more positive explicit evaluative attitudes toward violence were significantly associated with greater likelihood of violence at low levels (i.e., or more negative [- 1SD]), $b = 0.49$, $SE = .10$, $t(140) = 4.87$, $p < .001$, moderate levels (i.e., or more neutral [0]), $b = 0.34$, $SE = .06$, $t(140) = 5.34$, $p < .001$, and high levels (i.e., or more positive [+ 1SD]), $b = 0.18$, $SE = .09$, $t(140) = 2.00$, $p = .05$, of implicit evaluative attitudes toward violence. The increase in likelihood of violence when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was most pronounced at low (or more negative) implicit evaluative attitudes toward violence and least pronounced at high (or more positive) implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (Figure 9).

Table 34

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Likelihood of Violence Among Males from the Community in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.67***		.05	[1.57, 1.78]		1.70***		.05	[1.60, 1.80]	
VESD	0.32***	.51	.06	[0.20, 0.44]	.25	0.34***	.54	.06	[0.22, 0.46]	.27
P-VE-IAT	0.01	.01	.11	[-0.21, 0.23]	.00	-0.04	-.04	.11	[-0.26, 0.18]	.00
VESD × P-VE-IAT						-0.33*	-.20	.15	[-0.64, -0.02]	.04
<i>F</i>	14.88***					11.87***				
<i>R</i> ²	.26					.30				
ΔR^2						.04*				

Note. *N* = 89. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and likelihood of violence (i.e., EVQ-Likelihood) by examining the significance of the VESD by P-VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict prior violent behaviour. In Model 2, I entered the VESD by P-VE-IAT interaction as the predictor.

p* < .05, *p* < .01, ****p* < .001.

Figure 9

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Likelihood of Violence Among Males from the Community in Study 1

Note. $N = 89$ males from the community. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting likelihood of violence from the VESD, P-VE-IAT, and VESD by P-VE-IAT interaction. Evaluation of Violence Questionnaire – Likelihood of violence version (EVQ-Likelihood) was entered as the outcome to assess self-reported likelihood of violence among males from the community. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. VESD = Violence Evaluation Semantic Differential scales, used to assess explicit evaluative attitudes toward violence.

A summary of the results of the regression equation predicting propensity for violence at the time of assessment, assessed by scores on the VBVQ, from explicit evaluative attitudes toward violence, assessed by scores on the EVQ, and implicit

evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction, is displayed in Table 35. Explicit evaluative attitudes toward violence, as a main effect, significantly predicted propensity for violence at the time of assessment such that more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were associated with more propensity for violence ($b = 0.24$, $SE = .04$, $\beta = .59$, $t[141] = 6.79$, $p < .001$, 95% CI = [0.17, 0.32], $sr^2 = .35$). Implicit evaluative attitudes toward violence (i.e., P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of propensity for violence over and above explicit evaluative attitudes toward violence ($b = -0.03$, $SE = .04$, $\beta = -.06$, $t[141] = -.63$, $p = .53$, 95% CI = [-0.12, 0.06], $sr^2 = .00$). A marginally significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., $EVQ \times P-VE-IAT$), $b = -0.16$, $SE = .09$, $\beta = -.15$, $t(140) = -1.75$, $p = .09$, 95% CI = [-0.34, 0.02], $sr^2 = .02$, and explained an additional 2% of the variance, $F_{\text{change}}(140) = 3.05$, $p = .09$. Results from follow-up simple slopes analyses are illustrated in Figure 10. Results show that more positive explicit evaluative attitudes toward violence were significantly associated with more propensity for violence at the time of assessment at low levels (i.e., more negative [-1 SD]), $b = 0.32$, $SE = .05$, $t(140) = 5.89$, $p < .001$, moderate levels (i.e., or more neutral [0]), $b = 0.25$, $SE = .03$, $t(140) = 7.84$, $p < .001$, and high levels (i.e., or more positive [+1 SD]), $b = 0.17$, $SE = .05$, $t(140) = 3.45$, $p = .001$, of implicit evaluative attitudes toward violence. The increase in propensity for violent at the time of assessment when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was most pronounced at low (or more negative) implicit

evaluative attitudes toward violence and least pronounced at high (or more positive) implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (see Figure 10).

Table 35

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Violence Propensity Among Males from the Community in Study 1

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.19***		.02	[0.15, 0.23]		0.20***		.02	[0.16, 0.24]	
EVQ	0.24***	.59	.04	[0.17, 0.32]	.35	0.25***	.60	.04	[0.18, 0.32]	.36
P-VE-IAT	-0.03	-.06	.04	[-0.12, 0.06]	.00	-0.04	-.08	.04	[-0.13, 0.05]	.01
EVQ $\times$ P-VE-IAT						-0.16 ^a	-.15	.09	[-0.34, 0.02]	.02
<i>F</i>	23.10***					16.78***				
<i>R</i> ²	.35					.37				
ΔR ²						.02 ^a				

Note. *N* = 89. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and propensity for violence at the time of assessment (i.e., VBVQ) by examining the significance of the EVQ by P-VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict prior violent behaviour. In Model 2, I entered the EVQ by P-VE-IAT interaction as the predictor.

p* < .05, *p* < .01, ****p* < .001. ^amarginally significant at *p* = .085.

Figure 10

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Propensity for Violence at the Time of Assessment Among Males from the Community in Study 1

Note. $N = 89$ males from the community. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting propensity for violence at the time of assessment from the EVQ, P-VE-IAT, and EVQ by P-VE-IAT interaction. Violent Propensity Vignette Questionnaire (VBVQ) was entered as the outcome to assess self-reported propensity for violence at the time of assessment among males from the community. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. EVQ = Evaluation of Violence Questionnaire, used to assess explicit evaluative attitudes toward violence.

As stated previously, it was hypothesized that implicit evaluative attitudes toward violence would moderate the relationships between explicit/self-report violent cognitions

and violent behaviour. According to theories from the social psychology literature (e.g., MODE; Fazio, 1990), evaluative attitudes are activated through a dual-processing mental framework. These theories propose that implicit evaluative attitudes toward violence are activated immediately in the presence of an attitude object (e.g., violence) through an automatic processing mode and are believed to lack deliberative thought. Response latency measures, such as the VE-IAT and P-VE-IAT, are thought to activate the automatic processing mode because they limit the opportunity to deliberate on the initially activated evaluative attitude. Explicit evaluative attitudes are activated through a deliberative processing mode and involve conscious deliberative thought about the initial implicit evaluative attitude. Self-report measures are thought to activate the deliberative processing mode because they allow for opportunity to deliberate on initially activated evaluative attitudes. There are certain factors that determine whether implicit or explicit evaluative attitudes are more likely to influence the behaviour engaged in. Specifically, implicit evaluative attitudes may be changed/not relied on to influence behaviour under the following circumstances: if there is motivation/opportunity to deliberate on the initial implicit evaluative attitude and it is deemed invalid, if the initial implicit evaluative attitude is weak, or if there is no existing implicit evaluative attitude towards the object already stored in one's mental network. When a strong implicit evaluative attitude towards an object exists and is activated, this limits the motivation to deliberate on its validity. In this case, the explicit evaluative attitude will likely be consistent with the initial implicit evaluative attitude and will be more likely to influence behaviour. If no implicit evaluative attitude exists, an explicit evaluative attitude is constructed from information available at the time of activation. In this case, the explicit evaluative attitude

that is constructed may be less reliable and weakly related (or unrelated) to behaviour (e.g., prior violence, propensity for violence, and likelihood of violence). Accordingly, implicit evaluative attitudes toward violence were proposed to moderate the relationship between explicit evaluative attitudes toward violence and violent behaviour. Specifically, it was proposed that the strength of one's implicit evaluative attitude towards violence (i.e., whether it is more positive or more negative) will affect the strength of relationship between one's explicit evaluative attitude towards violence and violent behaviour. More specifically, it was expected that a weaker relationship between explicit evaluative attitudes toward violence and self-reported violent behaviour would be observed at more neutral implicit evaluative attitudes toward violence, in comparison to when implicit evaluative attitudes toward violence are high (or more positive) or low (more negative).

This hypothesis was somewhat supported among the current samples given that implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderated the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and prior violent behaviour, as well as marginally significantly moderated the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and likelihood of violence among male students. For the moderated regression predicting prior violent behaviour, the strongest relationship between explicit evaluative attitudes toward violence and prior violent behaviour was found at low levels of (or more negative) implicit evaluative attitudes toward violence, followed by moderate, and then high levels of (or more positive) implicit evaluative attitudes toward violence. These results suggest that those who hold more negative implicit evaluative attitudes toward violence have the strongest relationship between their explicit evaluative attitudes toward violence and prior violent

behaviour, followed by those who hold more neutral implicit evaluative attitudes, and last, those who hold more positive implicit evaluative attitudes. For the moderated regression predicting likelihood of violence, the strongest relationship between explicit evaluative attitudes toward violence and likelihood of violence was found at high levels of (or more positive) implicit evaluative attitudes toward violence, followed by moderate, and then low levels of (or more negative) implicit evaluative attitudes toward violence. These results suggest that those who hold more positive implicit evaluative attitudes toward violence have the strongest relationship between their explicit evaluative attitudes toward violence and likelihood of violence, follow by those who hold more neutral implicit evaluative attitudes, and last, those who hold more negative implicit evaluative attitudes.

Among males from the community, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, significantly moderated the relationship between beliefs regarding violence (i.e., MCAA-R-V) and prior violent behaviour, as well as marginally significantly moderated the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and prior violent behaviour. Follow-up simple slopes analyses found that the strongest relationship between explicit/self-report violent cognitions and violent behaviour was found at high levels of (or more positive) implicit evaluative attitudes toward violence, followed by moderate, and then low levels of (or more negative) implicit evaluative attitudes toward violence, at which level there was a non-significant relationship found between explicit/self-report violent cognitions and violent behaviour. These results suggest that those who hold more positive implicit evaluative attitudes toward violence have the strongest relationship between their

explicit/self-report violent cognitions and prior violence, followed by those who hold more neutral implicit evaluative attitudes, with those who hold more negative implicit evaluative attitudes showing no relationship. These results are in line with Agnew's (1994) study in which it was hypothesized that the relationship between neutralizations, such as justifications, and violent behaviour would vary depending on one's level of general approval of violence (i.e., a construct similar to evaluative attitudes toward violence). Specifically, Agnew (1994) found a stronger positive relationship between neutralizations of violence and violent behaviour when there was more general approval of violence, in comparison to when there was more general disapproval of violence, among a sample of 1,626 youths (aged 11 to 17 years), when these relationships were observed cross-sectionally. Of note, when Agnew (1994) assessed this effect longitudinally (i.e., the outcome was violent behaviour engaged in a year later), a stronger positive relationship between neutralizations of violence and violent behaviour (engaged in a year later) was found when there was more general disapproval of violence, in comparison to when there was more general approval of violence, among this same sample of youths.

In addition, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, significantly moderated the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and likelihood of violence, as well as marginally significantly moderated the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and propensity for violence at the time of assessment among community men in the current study. Follow-up simple slopes analyses revealed that the strongest relationship between explicit evaluative attitudes toward violence and violent

behaviour was found at low levels of (or more negative) implicit evaluative attitudes toward violence, followed by moderate, and then high levels of (or more positive) implicit evaluative attitudes toward violence. These results suggest that those who hold more negative implicit evaluative attitudes toward violence have the strongest relationship between their explicit evaluative attitudes toward violence and likelihood of violence, as well as propensity for violence, followed by those who hold more neutral implicit evaluative attitudes, and last, those who hold more positive implicit evaluative attitudes. The results of the current study, combined with those observed in Agnew's (1994) study noted above, suggest that the moderating role of implicit evaluative attitudes toward violence on the relationship between explicit/self-report violent cognitions (e.g., explicit evaluative attitudes toward violence and beliefs regarding violence) and violent behaviour may vary depending on the violent outcome considered/assessed.

Given that it was initially hypothesized that the strongest relationships between explicit/self-report violent cognitions and violent behaviour would be found at high (or positive) and low (or negative) implicit evaluative attitudes toward violence and moderate (or neutral) implicit evaluative attitudes toward violence would show the weakest relationship between explicit/self-report violent cognitions and violent behaviour, the simple slopes do not support this assertion in their entirety. However, in general the strongest relationships were found at high (positive) or low (negative) levels of implicit evaluative attitudes toward violence depending on the measures used to assess the constructs of interest. Weakest relationships, however, were not observed at moderate (or more neutral) levels of implicit evaluative attitudes toward violence. In conclusion, it appears that the relationship between explicit/self-report violent cognitions and violent

behaviour may differ depending on the level (or strength) of implicit evaluative attitudes toward violence, but the nature of these differences is somewhat unclear, and these differences appear to be inconsistent between the samples and measures used in the current study. Regardless, these results suggest that the relationships between implicit and explicit measures of evaluative attitudes toward violence are not independent in their relationship to violent outcomes and understanding how these constructs interact may aid in identifying who is more prone to violence. Study 2 was conducted to replicate and extend the relationships found in Study 1 among a sample of males convicted of violent offences. Establishing stability in these results among a broad range of male samples is important to establish a clear understanding of these relationships and how these constructs relate to different violent outcomes.

**Study 2: Examining Implicit Evaluative Attitudes Toward Violence and Other
Explicit/Self-report Violent Cognitive Constructs Among Males Convicted of
Violent Offences**

Study 2 was conducted in an attempt to replicate results found in Study 1 with a more violent sample of males convicted of violent offences from a provincial mental health correctional facility, The Secure Treatment Unit (STU), located in Brockville, ON, Canada. It was hypothesized that more positive implicit evaluative attitudes toward violence would be associated with more positive explicit evaluative attitudes toward violence and more violence-supportive beliefs. As in Study 1, it was also hypothesized that more positive explicit evaluative attitudes toward violence would be associated with more violence-supportive beliefs. In addition, it was hypothesized that more positive implicit evaluative attitudes toward violence, more positive explicit evaluative attitudes toward violence, and more violence-supportive beliefs would be associated with more prior violence, greater propensity for violence, and greater likelihood of violence. Implicit evaluative attitudes toward violence were also hypothesized to account for additional variance in violent behaviour over and above explicit evaluative attitudes toward violence/beliefs regarding violence.

It was also hypothesized that implicit evaluative attitudes toward violence would significantly moderate the relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and violent behaviour. In other words, the relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and violent behaviour would depend on one's implicit evaluative attitudes toward violence. This was hypothesized because, according to the MODE model (Fazio,

1990), evaluative attitudes toward violence are activated either through an automatic processing mode or a deliberative processing mode. During automatic processing, the evaluative attitudes that are activated are immediate and spontaneous, as well as void of deliberative thought. The evaluative attitudes activated through this process are thought to mirror those activated by response latency measures, such as the IAT. During deliberative processing, the immediately activated (implicit) evaluative attitude is either acted upon or changed. The (explicit) evaluative attitude resulting from deliberative processing is thought to mirror those reported during self-report procedures. Importantly, the more one encounters a particular attitude object (e.g., violence), the stronger one's implicit evaluative attitude towards the object (e.g., violence) will become and the more likely such attitudes will be to (a) influence behaviour and (b) remain consistent with one's explicit evaluative attitude towards the object. If one does not have an existing implicit evaluative attitude towards the object, then an (explicit) evaluative attitude is constructed from whatever information is available in the environment at the time of deliberative processing. In this case, the link between the resulting explicit evaluative attitude and behaviour is likely weaker. Following from this, the strength of one's implicit evaluative attitude, as well as the presence of motivation and/or opportunity for deliberation, is likely to determine the strength of relationship between one's explicit evaluative attitude and behaviour. Therefore, in the current study it was hypothesized that the strength of relationship between participants' explicit evaluative attitudes toward violence (or beliefs regarding violence, to be inclusive and comprehensive) and responses on indicators of violent behaviour was expected to depend on the strength of participants' implicit evaluative attitudes toward violence (i.e., whether they are more positive, neutral,

or more negative). In other words, it was hypothesized here, as in Study 1, that implicit evaluative attitudes toward violence would moderate the relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and violent behaviour.

Methods

Participants

Adult males convicted of violent offences were recruited from the Secure Treatment Unit (STU), in Brockville, ON, Canada. The STU is a 100-bed provincial jail that treats males convicted of violent, non-violent, and sexual offences actively dealing with mental health issues while incarcerated. Therefore, males in the current study that were convicted of violent offences were referred either from their home institutions, or when sentenced for their current index offences, to be transferred to the STU on account of an active mental illness. They then served either a portion of their sentence at the STU and were transferred back to their home institution after treatment was completed or served the remainder of their sentence at the STU if their warrant expiry date occurred while they were at this institution, in which case they were discharged to the community. As in Study 1, it was required that all participants be male, heterosexual, and 18 years of age or older, as well as understand written English. In addition, those currently convicted of a sexual offence, or who had been previously charged and/or convicted of such an offence, were not eligible to participate in the current study. These criteria were clearly communicated to participants both verbally, as well as written in the recruitment notice and (see Appendix AA) consent form, before participation took place.

Initially, 42 males convicted of violent offences were recruited at the STU to participate in the current study. Of the initial sample of 42 participants, all were male and

18 years of age or older, and all self-reported that they understood written English. However, three participants out of the initial 42, self-reported that they were most sexually attracted to males and were thus excluded in order to keep the samples consistent with one another across studies (see *Participant* section from Study 1 for rationale regarding the exclusion of non-heterosexual males) and reduce the likelihood of introducing error. This left a sample of 39 participants. An additional three participants did not correctly answer three or more of the quality control questions that were randomly interspersed among the items in the survey. Four quality control questions were included in the survey to make sure participants were attending to the questions being asked (see Appendix AB). As in Study 1, these questions required participants to select a particular response and thus, just follow the instructions provided in the question (e.g., Please select 'Agree'.) To be consistent with the analyses in Study 1, I decided to include those who correctly answered at least three of the four quality control questions. After excluding the three participants who did not correctly answer three or more of these questions, this left a sample of 36 participants. An additional participant was excluded because he did not fully complete the administered survey and thus, had one or more missing score(s) on the main measures of interest. Because less than 5% missing data was observed (i.e., only one participant had missing data after excluding participants based on screening criteria), missing values analysis was not conducted and the participant with missing scores was excluded listwise (i.e., across all *main* measures of interest). This left a sample of 35 participants. As noted above, participants who had been charged and/or convicted of any sexual offences were not eligible to participate in the current study in an effort to reduce error variance and increase reliability of the results. Of the sample of 35

participants, none self-reported to currently serving a sentence for a sexual offence(s) and none self-reported having any prior charges and/or convictions for a sexual offence(s).

However, when coding participants' official file information, one participant had a previous charge for a sexual offence and an additional participant had an index charge for a sexual offence. Therefore, these two participants were excluded from analyses, leaving a final sample of 33 males, convicted of violent offences, in the current study. Displayed in Table 36 are the self-reported demographic details regarding this sample.

Subsequently, Tables 37 and 38 display the demographics for the current sample based on information coded from participants' official institutional files.

Table 36*Self-reported Demographic Variables for Males Convicted of Violent Offences in Study 2*

Demographic Variables	Frequency	%	<i>N</i>
What is your biological sex?			33
Male	33	100.0	
Female	0	0.0	
Other	0	0.0	
What is your ethnicity?			33
White	22	66.7	
Black	2	6.1	
Indigenous	3	9.1	
Asian	0	0.0	
East Indian	0	0.0	
Hispanic/Latino	0	0.0	
Arab	2	6.1	
Other	4	12.1	
Who are you most sexually attracted to?			33
Women	33	100.0	
Men	0	0.0	
Both women and men equally	0	0.0	
Other	0	0.0	
What is the highest level of education you have completed?			33
Did not complete high school	11	33.3	
High school (or equivalent)	15	45.5	
Community college	5	15.2	
Undergraduate degree	2	6.1	
Master's degree	0	0.0	
Doctoral degree	0	0.0	

Other	0	0.0	
Before being convicted of your most recent offence(s), what was your employment status?			33
Full-time employed	6	18.2	
Part-time employed	4	12.1	
Not employed (Includes homemaker, unable to work, etc.)	17	51.5	
Military	0	0.0	
Full-time student	0	0.0	
Part-time students	0	0.0	
Retired	1	3.0	
Other	5	15.2	
What is your current relationship status?			33
Single	25	75.8	
In a romantic relationship	1	3.0	
Living with a romantic partner	6	18.2	
Married	0	0.0	
Separated/divorced/widowed	1	3.0	
Do you speak English fluently?			33
No	1	3.0	
Yes	32	97.0	
Do you understand written English?			33
No	0	0.0	
Yes	33	100.0	
Do you understand spoken English?			33
No	0	0.0	
Yes	33	100.0	
Have you ever taken any treatment programs for violent offending since your most recent offence?			33
None	21	63.6	

1 program	8	24.2	
2 programs	1	3.0	
3 programs	1	3.0	
4 programs	2	6.1	
5 programs	0	0.0	
6 programs	0	0.0	
7 programs	0	0.0	
8 programs	0	0.0	
9 programs	0	0.0	
Were you ever diagnosed with a learning disability?			33
No	12	36.4	
Yes	21	63.6	
Are you currently serving your sentence for any sexual offences?			33
None	33	100.0	
1	0	0.0	
2	0	0.0	
3	0	0.0	
4	0	0.0	
5-9	0	0.0	
10-14	0	0.0	
15-19	0	0.0	
20-29	0	0.0	
30 or more	0	0.0	
How many violent (non-sexual) offences (for example, assault, robbery, making threats) are you currently serving a sentence for?			33
None	6	18.2	
1	9	27.3	
2	5	15.2	
3	4	12.1	
4	4	12.1	

5-9	4	12.1	
10-14	0	0.0	
15-19	0	0.0	
20-29	1	3.0	
30 or more			
How many non-violent (non-sexual) offences (for example, theft, break and enter, drug possession) are you currently serving a sentence for?			33
None	15	45.5	
1	7	21.2	
2	3	9.1	
3	2	6.1	
4	3	9.1	
5-9	2	6.1	
10-14	1	3.0	
15-19	0	0.0	
20-29	0	0.0	
30 or more	0	0.0	
Not counting the offence(s) that you're in jail for now, have you ever been charged for and/or convicted of any sexual offences?			33
None	33	100.0	
1	0	0.0	
2	0	0.0	
3	0	0.0	
4	0	0.0	
5-9	0	0.0	
10-14	0	0.0	
15-19	0	0.0	
20-29	0	0.0	
30 or more	0	0.0	

Not counting the offence(s) that you're in jail for now, how many violent (non-sexual) offences (for example, assault, robbery, making threats) have you been charged for and/or convicted of?			33
None	4	12.1	
1	3	9.1	
2	5	15.2	
3	4	12.1	
4	4	12.1	
5-9	7	21.2	
10-14	2	6.1	
15-19	1	3.0	
20-29	1	3.0	
30 or more	2	6.1	
Not counting the offence(s) that you're in jail for now, how many non-violent (non-sexual) offences (for example, theft, break and enter, drug possession) have you been charged for and/or convicted of?			33
None	8	24.2	
1	3	9.1	
2	5	15.2	
3	1	3.0	
4	3	9.1	
5-9	5	15.2	
10-14	6	18.2	
15-19	0	0.0	
20-29	1	3.0	
30 or more	1	3.0	

Note. $N = 33$ males convicted of violent offences. None were missing any values on the demographic items.

Table 37

File Coded Categorical Demographic Variables for Males Convicted of Violent Offences in Study 2

Demographic Variables	Frequency	%	<i>N</i>
Employed at time of index?			33
No	22	66.7	
Yes	11	33.3	
Home language			33
English	31	93.9	
Other (specified below)	2	6.1	
Arab			
French			
Preferred language			33
English	32	97.0	
Other (specified below)	1	3.0	
French			
Any evidence of a learning disability?			33
No	19	57.6	
Yes	9	27.3	
Maybe	5	15.2	
Did participant complete high school or equivalent?			33
No	18	54.5	
Yes	15	45.5	
Did participant take college courses?			33
No	23	69.7	
Yes	10	30.3	
Did participant complete college?			33
No	29	87.9	
Yes	4	12.1	
Did participant take undergraduate university courses?			33
No	31	93.9	
Yes	2	6.1	
Did participant complete undergraduate university courses?			33
No	32	97.0	
Yes	1	3.0	
Did participant take graduate (MA, PhD) courses?			33
No	32	97.0	
Yes	1	3.0	

Did participant complete graduate degree?			33
No	33	100.0	
Yes	0	0.0	
Participants' marital status on date of index offence			33
Single (i.e., not living with a romantic partner for at least 1 year)	22	66.7	
Common-law relationship (living together at least 1 year)	5	15.2	
Married	1	3.0	
Separated/divorced from wife	2	6.1	
Separated from common-law wife	2	6.1	
Widower	1	3.0	
Any symptoms of ADHD?			33
No	11	33.3	
Yes	22	66.7	
Any trauma symptoms?			33
No	9	27.3	
Yes	24	72.7	

Note. $N = 33$ males convicted of violent offences. None were missing any values on the demographic items.

Table 38

File Coded Continuous Demographic Variables for Males Convicted of Violent Offences in Study 2

Demographic Variables	Min.	Max.	Mean	Std. Dev.	N
Participants' age at time that file was coded	23	63	35.45	9.11	33
Participants' height (in cm)	168	193	177.58	5.80	33
Length of participants' aggregate sentence for index offence(s) (in days)	153	730	476.33	181.80	33
Highest grade participant completed (used at least number)	8	13	10.91	1.38	33

Note. $N = 33$ males convicted of violent offences. None were missing any values on the demographic items.

Measures

Demographic Questions. Participants were first asked a series of demographic questions. Specifically, they were asked to report on their biological sex, ethnicity, sexual orientation, age, education, employment status at the time of their index offence(s), current relationship status, as well as their relationship status at the time of their index offence(s), English proficiency, what level of high school education they received, and their current employment status. Additionally, participants reported whether they had a learning disability, as well as whether they ever received treatment for their violent offending. They were also asked to report on various violent risk-relevant variables (e.g., drug/alcohol abuse history, victim characteristics, personality disorders, etc.), as well as variables regarding their criminal history and index offence(s) characteristics (see Appendix AC).

Violent Cognition Measures. Measures were the same as those in Study 1 described above, except that the Relational Responding Task (VE-RRT) was not administered to this sample. As evidenced above, the VE-RRT was not found to be related to any of the other violent cognition measures including the P-VE-IAT and the VE-IAT, designed to assess implicit evaluative attitudes toward violence, the SD and EVQ, designed to assess explicit evaluative attitudes toward violence, nor was it related to any of the violent outcome measures (i.e., the VBS, designed to assess past violent behaviour, the VBVQ, designed to assess current propensity for violence, and the EVQ-Likelihood, designed to assess likelihood for violence) in Study 1. The following internal consistencies were found for the measures of violent cognition in the current study: $\alpha =$

.77 for the VE-IAT, $\alpha = .58$ for the P-VE-IAT, $\alpha = .72$ for the MCAA-R-V, $\alpha = .89$ for the VESD, and $\alpha = .96$ for the EVQ.

Violent Behaviour Measures. All self-report measures designed to assess violent behaviour, as outlined in Study 1, were administered to the current sample except for the VBS. The VBS was not administered to this sample because it is not permitted under the Ministry of Community Safety and Correctional Services (MCSCS) to ask people currently serving time at a correctional institution to report on their past criminal behaviours that may or may not have come to the attention of the criminal justice system without disclosing this information to the appropriate authorities. Therefore, STU residents' prior criminal behaviour was coded from their official files contained at the STU. Specifically, I coded the number and nature of their prior charges, convictions, and institutional misconducts (see coding form in Appendix A), along with information about their risk of reoffending (violent and general). Additionally, the measure of likelihood of violence (i.e., EVQ-Likelihood) was slightly modified to conform to what is permitted under the MSCSC (see Appendix AD). Details about the risk measures that were coded are provided below. The following internal consistencies were found for the self-report measures of violent behaviour administered in the current study: $\alpha = .93$ for the EVQ-Likelihood and $\alpha = .84$ for the VBVQ.

File Coded Information.

Violent Occurrence Information. Violent occurrences were coded from charges and convictions contained in the Canadian Police Information Centre (CPIC; see coding form in Appendix A). The nature of the charges and convictions were subsequently confirmed from information contained in other official documents such as police reports

and other institutional reports available that contained information on index charges and/or convictions, as well as criminal history (e.g., psychological admission and discharge reports). A composite score was created by summing violent index charges and convictions with all prior violent charges and convictions. This composite score is referred to throughout as '*All Violent Occurrences*' (or All Viol. Occ.). A subsequent index for prior violent occurrences was created by summing all prior violent charges and convictions, which is referred to throughout as '*Prior Violent Occurrences*' (or Prior Viol. Occ.). An offence was coded as violent if there was obvious intent to inflict harm on another individual (e.g., uttering threats, assault, robbery with violence, attempted murder, etc.) and if it was regarded as a violent offence according to the legal definition (e.g., simple robbery, arson, criminal harassment, etc.). These latter offences were considered violent occurrences because often they were a part of a violent cluster of offences and/or the resulting conviction was a result of a lessened initially more violent charge. Additionally, it was often hard to determine which simple robberies initially contained violence due to missing police reports. Therefore, in an attempt to ensure that no violent charges/convictions were missed, coding erred on the side of inclusivity. A list of offences coded as violent occurrences can be found in Appendix A, which contains the coding form used.

Risk of Reoffending.

Level of Service Inventory: Ontario Revision. The LSI-OR (Andrews et al., 1995) is a risk/needs assessment tool used to identify the criminogenic needs of an individual who has been convicted of a crime and estimate risk of recidivism. It contains 43 items that assess General Risk/Needs factors, 14 items that assess personal problems with

criminogenic potential, and nine items that assess history of perpetration. The General Risk/Needs factors section contains eight subscales that correspond to the Central Eight risk factors for criminal behaviour (Andrews & Bonta, 2010). These include (a) Criminal History (eight items), (b) problems in Education/Employment (e.g., frequently unemployed; nine items), (c) problematic Family/Marital (e.g., dissatisfaction in marital relationships; four items), (d) problematic use of Leisure/Recreation time (two items), (e) Procriminal Companions (e.g., having criminal friends; four items), (f) Procriminal Attitude/Orientation (e.g., having attitudes supportive of crime; four items), (g) Substance Abuse (eight items), and (h) demonstrating an Antisocial Pattern (e.g., early and diverse engagement in antisocial behaviour; four items). Each of these 43 items are scored dichotomously (i.e., 1 = present, 0 = absent) and are summed to create a total General Risk/Needs factor score and eight subscale scores, which is referred to in the current study as *LSI-OR*. The total LSI-OR score can range from 0 to 43, with scores corresponding to one of five ordinal risk categories: Very Low (0-4), Low (5-10), Medium (11-19), High (20-29), and Very High (30+) risk of recidivism. The category score created out of LSI-OR total scores is referred to as *LSI-OR Cat.* in the current study. The LSI-OR total score and category score (i.e., LSR-OR Cat.), along with the subscale scores, were coded from participants' institutional files (see Appendix A for coding form). An offender receiving a higher score on the LSI-OR indicates a greater likelihood of engaging in criminal (or inappropriate) behaviour (i.e., greater likelihood of general criminal recidivism). This can include institutional offences, reoffence, and breach of community supervision. To date, the LSI tools have demonstrated moderate levels of interrater reliability; some research has found lower levels of interrater

reliability (e.g., LSI-R Total Score intraclass correlation [ICC] = .65, Substance Abuse subscale ICC = .33; Rocque & Plummer-Beale, 2014), whereas other research has found high levels of interrater reliability (LSI-R Total Score ICC = .98; Stewart & Wormith, 2011 as cited in Wormith & Bonta, 2018). The LSI-OR Total Score has also significantly predicted any recidivism (hazards ratio [HR] = 1.06, 95% CI = [1.05, 1.08], $p < .001$), nonviolent recidivism (HR = 1.06, 95% CI = [1.05, 1.08], $p < .001$), violent recidivism (HR = 1.07, 95% CI = [1.04, 1.09], $p < .001$), and substance related recidivism (HR = 1.08, 95% CI = [1.05, 1.11], $p < .001$) after controlling for age, race, and gender (Davis et al., 2020).

Violence Risk Appraisal Guide. The VRAG is an actuarial tool designed to assess risk of future violent re-offending (Harris et al., 1993). It consists of 12 items consisting of static risk factors, that reflect the following categories: childhood history, adult adjustment, offence characteristics, and psychological assessment information (Quinsey et al., 1998). The specific items include information pertaining to the assessee's score on a psychopathy measure (i.e., the Hare Psychopathy Checklist-Revised [PCL-R]; Hare, 2003), elementary school maladjustment, any personality disorder diagnosis, age at the time of the index offence, separation from biological parents prior to age 16, failure on prior conditional release, number of prior nonviolent offences, marital status at the time of the index offence, any diagnosis of schizophrenia, severity of injury inflicted on the victim, history of problems with alcohol, and whether the victim was a female (Harris et al., 1993). The item pertaining to number of prior convictions and charges for nonviolent offences is scored according to the Cormier Lang Scale (Quinsey et al., 1998). Items were coded from official file information, such as, but not limited to, criminal charges

and convictions contained in the Canadian Police Information Centre (CPIC), information contained in police reports, and any other institutional reports available that contained information on psychosocial history, criminal history, and clinical records (e.g., psychological admission and discharge reports; see coding form in Appendix A).

Each item is scored according to separate criteria (e.g., “Lived with both biological parents to age 16”, *Yes* = -2, *No* = +3) (see Appendix A) and the items are summed to create a total score, which is referred to as *VRAG* in the current study. Total scores can range from -26 to +38, with higher scores reflecting greater risk of violent reoffending (or recidivism). Total scores can be placed into nine risk categories ranging from 1 (*low risk*) to 9 (*high risk*). The risk category score created out of total scores on the VRAG is referred to as *VRAG Cat.* in the current study. Accompanying each risk category are the predicted proportion of those in each category that are expected to violently recidivate within a 7- or 10-year follow-up period after release. For instance, for category 1 (VRAG scores of ≤ -22), 0% are expected to violently recidivate within 7 years following release and 8% are expected to recidivate within 10 years following release. In contrast, for category 9 (VRAG scores of $\geq +28$), 100% are expected to recidivate within the 7- and 10-year follow-up periods (see Appendix A). In the current study, item 12, pertaining to total scores the PCL-R (Hare, 2003) was not included because PCL-R scoring was not available in the institutional files used to code participants’ criminal histories and score items on the risk measures. In addition, scoring PCL-R items requires extensive clinical and forensic training and thus, this was not feasible for the current study. Therefore, item 12 was scored as missing and total scores were prorated accordingly.

Good inter-rater reliability for the VRAG has been demonstrated in prior research. For instance, Harris et al. (1993) found a correlation coefficient of .90 when comparing the total scores calculated by two trained coders for 20 randomly selected males convicted of criminal offences. Kroner and Mills (2001) found an intraclass correlation coefficient of .95 when comparing total scores between two coders for 10 males convicted of violent offences. High internal consistency for VRAG total scores has also been demonstrated with intraclass correlations equaling or exceeding .90 (see Rice & Harris, 1997; Rice et al., 1990; Rice et al., 1991). Good predictive validity has also been demonstrated in past research on the VRAG with large AUC's ranging from .70 to .80 reported for predicting violent recidivism across several studies (see Gray et al., 2007; Grann et al., 2000; Harris et al., 2002; Hastings et al., 2011; Kroner et al., 2007; Rice & Harris, 1995; Rice & Harris, 1997). Most studies were solely, or mostly male and follow-up periods ranged from 1 year to 10 years.

Violence Risk Appraisal Guide – Revised. The VRAG-R (Rice et al., 2013) is a 12-item actuarial tool that was modified from the original VRAG to assess risk of future violent recidivism and contains much of the same items. Hard-to-score and time-consuming VRAG items, as well as items that relied on difficult-to-access and obsolete diagnostic systems (e.g., *DSM-III* diagnosis of personality disorder, *DSM-III* diagnosis of schizophrenia) and those that had been shown in previous research to work differently among different subgroups of offenders (i.e., sex offenders vs. general samples of offenders and mentally disordered offenders) (e.g., Victim injury, Any female victim; see Rice & Harris, in press) were replaced in the VRAG-R (Rice et al., 2013). In addition, based on user feedback, Rice et al. (2013) changed the item pertaining to a history of

alcohol problems to include information pertaining to problems with both alcohol and drugs, as well as simplified the scoring of this item. Also, in the VRAG-R, only Facet 4 (i.e., Antisociality) of the PCL-R (Hare, 2003) is used instead of the total PCL-R score because it was found to be equally, or more, predictive of violent recidivism than the total score (e.g., Leistico et al., 2008; Wormith et al., 2007). Last, both violent and non-violent prior charges and convictions are coded in the VRAG-R according to the Cormier Lang Scales for violent (Quinsey et al., 1998) and non-violent (Quinsey et al., 1998) offences. Therefore, the VRAG-R consists of the following 12 items: Lived with both parents until age 16, Elementary school maladjustment, Substance abuse, Marital status, Non-violent criminal history, Failure on conditional release, Age at index offense, Violent criminal history, Sex offending, Number of prior admissions to correctional institutions, Conduct disorder score, and Antisociality (derived from PCL-R Facet 4).

As with the VRAG, items on the VRAG-R are scored according to separate criteria (e.g., “Marital status at the time of index offence”, *Ever married* = -1, *Never married* = +1) (Appendix A) and are summed to create a total score, which is referred to as *VRAG-R* in the current study. Total scores can range from -34 to +46, with higher scores reflecting greater risk of violent reoffending. As with the VRAG, total scores on the VRAG-R can be placed into nine risk categories ranging from 1 (*low risk*) to 9 (*high risk*). The risk category created out of total scores on the VRAG-R is referred to as *VRAG-R Cat.* in the current study. Accompanying each risk category are the predicted proportion of those in each category that are expected to violently recidivate within a 5- or 12-year follow-up period after release. For instance, for category 1 (VRAG-R scores of < -34 to -24), 9% are expected to violently recidivate within 5 years following release

and 15% are expected to recidivate within 12 years following release. In contrast, for category 9 (VRAG-R scores of +27 to +46), 76% are expected to violently recidivate within 5 years following release and 87% are expected to recidivate within 12 years following release (see Appendix A). Items were coded from the same official file information as was used for coding the VRAG items (see above).

Good inter-rater reliability was found for the VRAG-R total score with an intraclass correlation of .99 found when comparing independently scored VRAG-R total scores between two experienced raters for 10 men convicted of criminal offences (Rice et al., 2013). In addition, Glover et al. (2017) found ICCs for consistency and absolute agreement of .83 (95% CI [.68, .92]) and .84 (95% CI [.68, .92]), respectively, when comparing VRAG-R total scores between two independent raters for 30 randomly selected cases of men convicted of criminal offences. VRAG-R total scores demonstrated similar predictive validity to VRAG total scores when predicting violent recidivism among 957 men convicted of criminal offences (Rice et al., 2013). For instance, an AUC (i.e., Area Under the Receiver Operating Characteristic Curve) of .76 (95% CI of .731–.791) was found for the VRAG-R, compared to an AUC of .75 (95% CI of .717–.779) for the VRAG, when predicting a dichotomous violent recidivism outcome. In a subsequent validation sample of 300 men convicted of criminal offences, comparable results were found, with AUCs of .75 for the VRAG-R (95% CI of .694 –.804) and VRAG ($n = 296$, 95% CI of .697–.807) when predicting a dichotomous violent recidivism outcome over a follow-up period of 49 years (Rice et al., 2013). In addition, Glover et al. (2017) found a statistically significant and moderate AUC of .66 for VRAG-R total

scores when predicting violent recidivism among 120 men convicted of criminal offences.

In the current study, item 12, pertaining to Antisociality as scored by Facet 4 of the PCL-R (Hare, 2003) was not included because PCL-R scoring was not available in the institutional files used to code participants' criminal histories and score items on the risk measures. As noted above, scoring PCL-R items requires extensive clinical and forensic training and thus, this was not feasible for the current study. Therefore, once again, item 12 was scored as missing and total scores were prorated accordingly. In the development study, Rice et al. (2013) assessed the predictive validity of the VRAG-R to predict violent recidivism while excluding item 12 (i.e., Antisociality, as scored by Facet 4 of the PCL-R) and prorating to calculate total scores. Comparable predictive validity was found with a reported AUC of .75 (95% CI of .725–.780; Rice et al., 2013) for 1,261 men convicted of criminal offences. Glover et al. (2017) replicated these results by also examining the predictive validity of the VRAG-R when item 12 (i.e., Antisociality, as scored by Facet 4 of the PCL-R) was removed and total scores were prorated accordingly. They found a significant and moderate AUC of .66 for violent recidivism among the same sample of 120 men convicted of criminal offences for this modified scoring. Further, no significant difference in the predictive accuracy of the complete VRAG-R and VRAG-R total scores with the Antisociality item removed was found when predicting violent recidivism ($z = 0.06, p = .954$). These results suggest that there are no adverse effects on the ability of the VRAG-R to predict violent recidivism when this item is removed.

Procedure

Data collection for Study 2 took place at the Secure Treatment Unit (STU) in Brockville, Ontario, Canada and this study was also funded through a University Medical Research Fund (UMRF) through the Royal Ottawa Mental Health Care Group (Ottawa, ON). Therefore, ethics approval was received from three different Institutional Review Boards (IRBs); Carleton University's IRB, the Royal Ottawa's IRB, and the Ministry of Community Safety and Correctional Services' (MCSCS) IRB.

Study 2 consisted of male residents from the STU, who have all been diagnosed with mental illness and convicted of violent, excluding sexual, offences. Residents from the STU were invited to participate by a member of the research team (e.g., an RA). Interested residents then signed a sheet posted in each unit. Those that met the study inclusion criteria were selected and an RA then approached them to ask when they would be available to participate. Before participating in the study, the member of the research team provided the resident with an informed consent form outlining the objectives and procedures, as well as potential risks and benefits to participating (see Appendix AE). The consent form also notified the participants that they may withdraw at any point throughout the study if they decided they no longer wished to participate. All participants were asked to sign the consent form prior to participating. Only participants who voluntarily decided to participate in the study, who were capable of consenting, and were able to participate in English were included. Once signed informed consent was given, the research member (i.e., RA) was responsible for administering the study to participants. The participants completed the study in a separate room, one at a time, on a PC laptop computer. Following completion, participants viewed the same mood

stabilizing images as in Study 1 (see Appendix W) and were then debriefed (see Appendix AF). STU residents were given a packet of coffee and a cookie (approved through the MCSCS IRB) for their participation in the study.

Results and Discussion

Descriptive statistics for each continuous variable used in the current study are reported in Table 39. Additionally, descriptive statistics for each categorical variable used in the current study are reported in Table 40. As in Study 1 above, participants included in the analyses were all male, most sexually attracted to females, 18 years of age or older, understood written English, selected the correct response options for at least three of the five quality control questions included in the survey (see description for these items in the *Participant* section above), and had complete responses (i.e., no missing items) on all measures and variables of interest. In addition, participants in the current sample were not included in the analyses if they self-reported to having any charges and/or convictions for a sexual offence(s), as well as if there was evidence of any current or prior charges and convictions for sexual offences contained in their official file information. As outlined above, this left a sample of 33 adult males who had been convicted of at least one violent offence (see Table 36 in *Participant* section above, for their demographic details).

As in Study 1, participants who took less than 300 milliseconds on 10% or more of the VE-IAT and P-VE-IAT (i.e., measures designed to assess implicit evaluative attitudes toward violence) trials were excluded from analyses involving these measures. Once again, I excluded these participants separately for each implicit measure in an effort to retain power for the subsequent analyses. An additional three participants (out of 33) were excluded from analyses involving the VE-IAT due to receiving response times

faster than 300 milliseconds on 10% or more of VE-IAT trials. An additional five participants (out of 33) were excluded for analyses involving the P-VE-IAT due to receiving response times faster than 300 milliseconds on 10% or more of the P-VE-IAT trials.

The final indices for the effects associated with the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) were created in accordance with the improved scoring algorithm suggested by Greenwald et al. (2003), which is also outlined above in the *Measures* section of Study 1. As in Study 1, all variables (i.e., calculated total scores on all measures of interest) were screened for out-of-range values and missing scores. There was only one participant who did not complete the full procedure and thus had missing values on the variables of interest. Therefore, less than 5% was missing on the main measures of interest and thus, the one participant with missing scores was excluded listwise. All variables were also examined for univariate outliers. In the event that univariate outliers were found, values were reduced accordingly.

Table 39

Descriptive Statistics of Continuous Measures of Interest for Males Convicted of Violent Offences in Study 2

Measure	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
VE-IAT	30	-2.74	0.01	-1.18	0.63
P-VE-IAT	28	-2.32	-0.15	-1.07	0.54
MCAA-R-V	33	17.00	37.00	26.24	5.39
VESD	33	1.00	4.33	2.09	0.98
EVQ	33	1.00	3.59	1.98	0.69
EVQ-Likelihood	33	1.12	3.47	2.22	0.63
VBVQ	33	0.00	1.00	0.44	0.34
VRAG	33	0.00	38.00	20.00	10.55
VRAG-R	33	-17.00	38.00	20.97	14.30
LSI-OR	33	8.00	39.00	27.82	7.69
All Viol. Occ.	33	1.00	30.00	9.58	7.39
Prior Viol. Occ.	33	0.00	27.00	7.55	7.33

Note. VE-IAT = Violent Evaluation Implicit Association Test. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test. MCAA-R-V = Measures of Criminal Attitudes and Associations – Revised – Violence scale. VESD = Violent Evaluation Semantic Differential scales. EVQ = Evaluation of Violence Questionnaire. VBVQ = Violent Behaviour Vignette Questionnaire. VRAG = file coded risk of violent recidivism measured by the Violence Risk Appraisal Guide. VRAG Cat. = file coded categorization of violent risk measures by the Violence Risk Appraisal Guide Category score. VRAG-R = file coded risk of violent recidivism measured by the Violence Risk of Appraisal Guide – Revised. VRAG-R Cat. = file coded categorization of violent risk measured by Violence Risk Appraisal Guide – Revised Category score. LSI-OR = file coded risk of criminal recidivism measured by Level of Service Inventory – Ontario Revision. LSI-OR

Cat. = file coded categorization of criminal risk measured by Level of Service Inventory – Ontario Revision Category score. All Viol. Occ. = past and current violent charges and convictions measured by summing all violent index charges and convictions, as well as all prior violent charges and convictions from official file information. Prior Viol. Occ. = prior violent charges and convictions measured by summing only prior violent charges and convictions from official file information.

Table 40

Descriptive Statistics of File Coded Violence Risk Measures for Males Convicted of Violent Offences in Study 2

Risk Variable	Scores	Recidivism Info.		Frequency	%	N	Minimum	Maximum	Median
VRAG Cat.		% 7 yr	% 10 yr			33	5.00	9.00	8.00
1	≤ -22	0.00	0.08	0.00	0.00				
2	-21 to -15	0.08	0.10	0.00	0.00				
3	-14 to -8	0.12	0.24	0.00	0.00				
4	-7 to -1	0.17	0.31	0.00	0.00				
5	+0 to +6	0.35	0.48	5.00	15.20				
6	+7 to +13	0.44	0.58	5.00	15.20				
7	+14 to +20	0.55	0.64	6.00	18.20				
8	+21 to +27	0.76	0.82	8.00	24.20				
9	≥ +28	1.00	1.00	9.00	27.30				
VRAG-R Cat.		% 5 yr	% 12 yr			33	2.00	9.00	8.00
1	<-34 to -24	0.09	0.15	0.00	0.00				
2	-23 to -17	0.12	0.24	1.00	3.00				
3	-16 to -11	0.16	0.33	1.00	3.00				
4	-10 to -4	0.20	0.42	1.00	3.00				
5	-3 to +3	0.26	0.51	1.00	3.00				
6	+4 to +11	0.34	0.60	3.00	9.10				
7	+12 to +17	0.45	0.69	5.00	15.20				
8	+18 to +26	0.58	0.78	6.00	18.20				
9	+27 to +46	0.76	0.87	15.00	45.50				
LSI-OR Cat.		Risk Level				33	2.00	5.00	5.00

1	0 to 4	very low risk	0.00	0.00
2	5 to 10	low risk	1.00	3.00
3	11 to 19	medium risk	5.00	15.20
4	20 to 29	high risk	9.00	27.30
5	30 to 43	very high risk	18.00	54.50

Note. VRAG Cat. = file coded categorization of violent risk measures by the Violence Risk Appraisal Guide Category score. VRAG-R Cat. = file coded categorization of violent risk measured by Violence Risk Appraisal Guide – Revised Category score. LSI-OR Cat. = file coded categorization of criminal risk measured by Level of Service Inventory – Ontario Revision Category score.

Table 41

Bivariate Correlations Between Measures of Violent Cognition and Self-Report Measures of Violent Behaviour for Males Convicted of Violent Offences in Study 2

Variable	1	2	3	4	5	6	7
1. VE-IAT	-	.62** <i>n</i> = 27	.09 <i>n</i> = 30	.01 <i>n</i> = 30	.10 <i>n</i> = 30	-.06 <i>n</i> = 30	.19 <i>n</i> = 30
2. P-VE-IAT	.62** <i>n</i> = 27	-	.04 <i>n</i> = 28	-.04 <i>n</i> = 28	-.08 <i>n</i> = 28	-.24 <i>n</i> = 28	.11 <i>n</i> = 28
3. MCAA-R-V	.07 <i>n</i> = 30	.03 <i>n</i> = 28	-	.55** <i>n</i> = 33	.75*** <i>n</i> = 33	.57** <i>n</i> = 33	.70*** <i>n</i> = 33
4. VESD	-.02 <i>n</i> = 30	-.10 <i>n</i> = 28	.58*** <i>n</i> = 33	-	.62*** <i>n</i> = 33	.52** <i>n</i> = 33	.27 <i>n</i> = 33
5. EVQ	.03 <i>n</i> = 28	-.14 <i>n</i> = 28	.73*** <i>n</i> = 33	.69*** <i>n</i> = 33	-	.66*** <i>n</i> = 33	.57** <i>n</i> = 33
6. EVQlikelihood	-.15 <i>n</i> = 30	-.29 <i>n</i> = 28	.53** <i>n</i> = 33	.57** <i>n</i> = 33	.58*** <i>n</i> = 33	-	.41* <i>n</i> = 33
7. VBVQ	.10 <i>n</i> = 30	.05 <i>n</i> = 28	.68*** <i>n</i> = 33	.37* <i>n</i> = 33	.57** <i>n</i> = 33	.40* <i>n</i> = 33	-

Note. Sample sizes (*n*) vary because multivariate outliers were excluded per measure pair to retain power. Pearson's *r* (parametric) correlations above the diagonal and Spearman's rho (non-parametric) correlations below the diagonal. VE-IAT = implicit evaluative

attitudes toward violence measured by traditional Implicit Association Test. P-VE-IAT = implicit evaluative attitudes towards violence measured by Personalized IAT. MCAA-R-V = self-report beliefs regarding violence measured by Measures of Criminal Attitudes and Associates – Revised Violence scale. VESD = explicit evaluative attitudes toward violence measured by Semantic Differential scales. EVQ = explicit evaluative attitudes toward violence measured by Evaluation of Violence Questionnaire. EVQlikelihood = likelihood of violence measured by Evaluation of Violence Questionnaire modified to assess likelihood of being violent. VBVQ = propensity for violence measured by Violent Behaviour Vignette Questionnaire.

$*p < .05$, $**p < .01$, $***p < .001$

Table 42

Bivariate Correlations Between Measures of Violent Cognition and File Coded Measures of Violent Behaviour for Males Convicted of Violent Offences in Study 2

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1. VE-IAT	-	.62** <i>n</i> = 27	.09 <i>n</i> = 30	.01 <i>n</i> = 30	.10 <i>n</i> = 30	.04 <i>n</i> = 30	.03 <i>n</i> = 30	.15 <i>n</i> = 30	.14 <i>n</i> = 30	.04 <i>n</i> = 30	-.00 <i>n</i> = 30	-.38* <i>n</i> = 30	-.38* <i>n</i> = 30
2. P-VE-IAT	.62** <i>n</i> = 27	-	.04 <i>n</i> = 28	-.04 <i>n</i> = 28	-.08 <i>n</i> = 28	-.01 <i>n</i> = 28	-.02 <i>n</i> = 28	-.05 <i>n</i> = 28	-.03 <i>n</i> = 28	-.06 <i>n</i> = 28	.06 <i>n</i> = 28	-.30 <i>n</i> = 28	-.33 [†] <i>n</i> = 28
3. MCAA-R-V	.07 <i>n</i> = 30	.03 <i>n</i> = 28	-	.55** <i>n</i> = 33	.75*** <i>n</i> = 33	.26 <i>n</i> = 33	.31 [†] <i>n</i> = 33	.38* <i>n</i> = 33	.41* <i>n</i> = 33	.33 [†] <i>n</i> = 33	.41* <i>n</i> = 33	.26 <i>n</i> = 33	.19 <i>n</i> = 33
4. VESD	-.02 <i>n</i> = 30	-.10 <i>n</i> = 28	.58*** <i>n</i> = 33	-	.62*** <i>n</i> = 33	.06 <i>n</i> = 33	.16 <i>n</i> = 33	.14 <i>n</i> = 33	.19 <i>n</i> = 33	.19 <i>n</i> = 33	.30 [†] <i>n</i> = 33	.11 <i>n</i> = 33	.01 <i>n</i> = 33
5. EVQ	.03 <i>n</i> = 28	-.14 <i>n</i> = 28	.73*** <i>n</i> = 33	.69*** <i>n</i> = 33	-	.37* <i>n</i> = 33	.41* <i>n</i> = 33	.31 [†] <i>n</i> = 33	.32 [†] <i>n</i> = 33	.13 <i>n</i> = 33	.19 <i>n</i> = 33	.04 <i>n</i> = 33	.01 <i>n</i> = 33
6. VRAG	.03 <i>n</i> = 30	-.02 <i>n</i> = 28	.27 <i>n</i> = 33	.11 <i>n</i> = 33	.38* <i>n</i> = 33	-	.98*** <i>n</i> = 33	.69*** <i>n</i> = 33	.65*** <i>n</i> = 33	.34* <i>n</i> = 33	.28 <i>n</i> = 33	.29 <i>n</i> = 33	.29 <i>n</i> = 33
7. VRAG Cat.	.03 <i>n</i> = 30	-.02 <i>n</i> = 28	.32 [†] <i>n</i> = 33	.23 <i>n</i> = 33	.44* <i>n</i> = 33	.98*** <i>n</i> = 33	-	.72*** <i>n</i> = 33	.70*** <i>n</i> = 33	.40* <i>n</i> = 33	.34 [†] <i>n</i> = 33	.33 [†] <i>n</i> = 33	.33 [†] <i>n</i> = 33
8. VRAG-R	.22 <i>n</i> = 30	.03 <i>n</i> = 28	.31 [†] <i>n</i> = 33	.12 <i>n</i> = 33	.32 [†] <i>n</i> = 33	.81*** <i>n</i> = 33	.81*** <i>n</i> = 33	-	.98*** <i>n</i> = 33	.75*** <i>n</i> = 33	.64*** <i>n</i> = 33	.37* <i>n</i> = 33	.42* <i>n</i> = 33

9. VRAG-R Cat.	.19 <i>n</i> = 30	.08 <i>n</i> = 28	.35* <i>n</i> = 33	.20 <i>n</i> = 33	.36* <i>n</i> = 33	.81*** <i>n</i> = 33	.83*** <i>n</i> = 33	.95*** <i>n</i> = 33	-	.71*** <i>n</i> = 33	.62*** <i>n</i> = 33	.35* <i>n</i> = 33	.38* <i>n</i> = 33
10. LSI-OR	.13 <i>n</i> = 30	.02 <i>n</i> = 28	.30[†] <i>n</i> = 33	.20 <i>n</i> = 33	.13 <i>n</i> = 33	.34* <i>n</i> = 33	.41* <i>n</i> = 33	.67*** <i>n</i> = 33	.61*** <i>n</i> = 33	-	.93*** <i>n</i> = 33	.39* <i>n</i> = 33	.43* <i>n</i> = 33
11. LSI-OR Cat.	.11 <i>n</i> = 30	.17 <i>n</i> = 28	.43* <i>n</i> = 33	.32[†] <i>n</i> = 33	.19 <i>n</i> = 33	.27 <i>n</i> = 33	.34[†] <i>n</i> = 33	.52** <i>n</i> = 33	.51** <i>n</i> = 33	.90*** <i>n</i> = 33	-	.38* <i>n</i> = 33	.41* <i>n</i> = 33
12. All Viol. Occ.	-.36* <i>n</i> = 30	-.35[†] <i>n</i> = 28	.25 <i>n</i> = 33	.06 <i>n</i> = 33	.13 <i>n</i> = 33	.33[†] <i>n</i> = 33	.36* <i>n</i> = 33	.37* <i>n</i> = 33	.37* <i>n</i> = 33	.42* <i>n</i> = 33	.37* <i>n</i> = 33	-	.97*** <i>n</i> = 33
13. Prior Viol. Occ.	-.33[†] <i>n</i> = 30	-.39* <i>n</i> = 28	.19 <i>n</i> = 33	-.03 <i>n</i> = 33	.09 <i>n</i> = 33	.33[†] <i>n</i> = 33	.35* <i>n</i> = 33	.48** <i>n</i> = 33	.44* <i>n</i> = 33	.48** <i>n</i> = 33	.39* <i>n</i> = 33	.92*** <i>n</i> = 33	-

Note. Sample sizes (*n*) vary because multivariate outliers were excluded per measure pair to retain power. Pearson's *r* (parametric) correlations above the diagonal and Spearman's rho (non-parametric) correlations below the diagonal. VE-IAT = implicit evaluative attitudes toward violence measured by traditional Implicit Association Test. P-VE-IAT = implicit evaluative attitudes towards violence measured by Personalized IAT. MCAA-R-V = self-report beliefs regarding violence measured by Measures of Criminal Attitudes and Associates – Revised Violence scale. VESD = explicit evaluative attitudes toward violence measured by Semantic Differential scales. EVQ = explicit evaluative attitudes toward violence measured by Evaluation of Violence Questionnaire. VRAG = file coded risk of violent recidivism measured by the Violence Risk Appraisal Guide. VRAG Cat. = file coded categorization of violent risk measures by the Violence Risk Appraisal Guide Category score. VRAG-R = file coded risk of violent recidivism

measured by the Violence Risk of Appraisal Guide – Revised. VRAG-R Cat. = file coded categorization of violent risk measured by Violence Risk Appraisal Guide – Revised Category score. LSI-OR = file coded risk of criminal recidivism measured by Level of Service Inventory – Ontario Revision. LSI-OR Cat. = file coded categorization of criminal risk measured by Level of Service Inventory – Ontario Revision Category score. All Viol. Occ. = past and current violent charges and convictions measured by summing all violent index charges and convictions, as well as all prior violent charges and convictions from official file information. Prior Viol. Occ. = prior violent charges and convictions measured by summing only prior violent charges and convictions from official file information.

* $p < .05$, ** $p < .01$, *** $p < .001$

†significant at $p < .10$

Table 43

Bivariate Correlations Between Self-Report and File Coded Measures of Violent Behaviour for Males Convicted of Violent Offences in Study 2

Variable	1	2	3	4	5	6	7	8	9	10
1. EVQlikelihood	-	.41* <i>n</i> = 33	.07 <i>n</i> = 33	.14 <i>n</i> = 33	.14 <i>n</i> = 33	.15 <i>n</i> = 33	.20 <i>n</i> = 33	.30 [†] <i>n</i> = 33	.12 <i>n</i> = 33	.06 <i>n</i> = 33
2. VBVQ	.40* <i>n</i> = 33	-	.18 <i>n</i> = 33	.20 <i>n</i> = 33	.39* <i>n</i> = 33	.39* <i>n</i> = 33	.32 [†] <i>n</i> = 33	.33 [†] <i>n</i> = 33	.05 <i>n</i> = 33	.01 <i>n</i> = 33
3. VRAG	.05 <i>n</i> = 33	.22 <i>n</i> = 33	-	.98*** <i>n</i> = 33	.67*** <i>n</i> = 33	.65*** <i>n</i> = 33	.34* <i>n</i> = 33	.28 <i>n</i> = 33	.29 <i>n</i> = 33	.29 <i>n</i> = 33
4. VRAG Cat.	.14 <i>n</i> = 33	.24 <i>n</i> = 33	.98*** <i>n</i> = 33	-	.72*** <i>n</i> = 33	.70*** <i>n</i> = 33	.40* <i>n</i> = 33	.34 [†] <i>n</i> = 33	.33 [†] <i>n</i> = 33	.33 [†] <i>n</i> = 33
5. VRAG-R	.06 <i>n</i> = 33	.37* <i>n</i> = 33	.81*** <i>n</i> = 33	.81*** <i>n</i> = 33	-	.98*** <i>n</i> = 33	.75*** <i>n</i> = 33	.64*** <i>n</i> = 33	.37* <i>n</i> = 33	.42* <i>n</i> = 33
6. VRAG-R Cat.	.10 <i>n</i> = 33	.36* <i>n</i> = 33	.81*** <i>n</i> = 33	.83*** <i>n</i> = 33	.95*** <i>n</i> = 33	-	.71*** <i>n</i> = 33	.62*** <i>n</i> = 33	.35* <i>n</i> = 33	.38* <i>n</i> = 33
7. LSI-OR	.13 <i>n</i> = 33	.30 [†] <i>n</i> = 33	.34* <i>n</i> = 33	.41* <i>n</i> = 33	.67*** <i>n</i> = 33	.61*** <i>n</i> = 33	-	.93*** <i>n</i> = 33	.39* <i>n</i> = 33	.43* <i>n</i> = 33
8. LSI-OR Cat.	.29 <i>n</i> = 33	.36* <i>n</i> = 33	.27 <i>n</i> = 33	.34 [†] <i>n</i> = 33	.52** <i>n</i> = 33	.51** <i>n</i> = 33	.90*** <i>n</i> = 33	-	.38* <i>n</i> = 33	.41* <i>n</i> = 33

9. All Viol. Occ.	.12 <i>n</i> = 33	.09 <i>n</i> = 33	.33 [†] <i>n</i> = 33	.36* <i>n</i> = 33	.37* <i>n</i> = 33	.37* <i>n</i> = 33	.42* <i>n</i> = 33	.37* <i>n</i> = 33	-	.97* <i>n</i> = 33
10. Prior Viol. Occ.	.03 <i>n</i> = 33	.03 <i>n</i> = 33	.33 [†] <i>n</i> = 33	.35* <i>n</i> = 33	.48** <i>n</i> = 33	.44* <i>n</i> = 33	.49** <i>n</i> = 33	.39* <i>n</i> = 33	.92*** <i>n</i> = 33	-

Note. Sample sizes (*n*) vary because multivariate outliers were excluded per measure pair to retain power. Pearson's *r* (parametric) correlations above the diagonal and Spearman's rho (non-parametric) correlations below the diagonal. EVQlikelihood = likelihood of violence measured by Evaluation of Violence Questionnaire modified to assess likelihood of being violent. VBVQ = propensity for violence measured by Violent Behaviour Vignette Questionnaire. VRAG = file coded risk of violent recidivism measured by the Violence Risk Appraisal Guide. VRAG Cat. = file coded categorization of violent risk measures by the Violence Risk Appraisal Guide Category score. VRAG-R = file coded risk of violent recidivism measured by the Violence Risk of Appraisal Guide – Revised. VRAG-R Cat. = file coded categorization of violent risk measured by Violence Risk Appraisal Guide – Revised Category score. LSI-OR = file coded risk of criminal recidivism measured by Level of Service Inventory – Ontario Revision. LSI-OR Cat. = file coded categorization of criminal risk measured by Level of Service Inventory – Ontario Revision Category score. All Viol. Occ. = past and current violent charges and convictions measured by summing all violent index charges and convictions, as well as all prior violent charges and convictions from official file information. Prior Viol. Occ. = prior violent charges and convictions measured by summing only prior violent charges and convictions from official file information.

p* < .05, *p* < .01, ****p* < .001. [†]significant at *p* < .10

Relationship Between Violent Cognition Measures

The bivariate relationships between implicit measures of evaluative attitudes toward violence and other explicit/self-report measures of violent cognition (i.e., explicit evaluative attitudes toward violence and self-report beliefs regarding violence), as well as the relationships between measures of violent cognition and indicators (i.e., self-report and file coded) of violent behaviour, were assessed using Pearson's r correlations. Accordingly, these data were assessed to determine whether they met assumptions underlying this analysis, such as normality, linearity, and homoscedasticity. In general, these data conformed to these assumptions, with the exception of normality on a few occasions, with file coded violent charges and convictions (i.e., All Viol. Occ. and Prior Viol. Occ.) most often violating this assumption (i.e., was often significantly, and positively, skewed). Due to this occasional violation, Spearman's rho correlations were also conducted—a non-parametric test of bivariate relationships between two continuous variables—in order to account for any violated assumptions. Multivariate outliers were also examined pairwise. In the event that multivariate outliers existed, they were excluded pairwise in order to retain power for the statistical analyses. The bivariate relationships between variables examining violent cognitions are displayed in Table 41.

Implicit Evaluative Attitudes Toward Violence and Other Explicit Violent Cognitions. As shown in Table 41, no significant relationships were observed between implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, and beliefs regarding violence, as assessed by scores on the MCAA-R-V, when considering the Pearson's r or Spearman's rho correlations. Consistently, no significant relationships were observed between implicit evaluative attitudes toward violence, as assessed by

scores on the VE-IAT, and explicit evaluative attitudes toward violence, as assessed by scores on the VESD and EVQ, when considering the Pearson's r and Spearman's rho correlations. Importantly, these relationships were all very small in magnitude.

When examining scores on the P-VE-IAT, no significant relationships were observed between implicit evaluative attitudes toward violence and beliefs regarding violence, as assessed by scores on the MCAA-R-V, when considering the Pearson's r and Spearman's rho correlations. Last, no significant relationships were observed between implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, and explicit evaluative attitudes toward violence, as assessed by scores on the VESD and EVQ, when considering the Pearson's r and Spearman's rho correlations. Although somewhat larger than the relationships involving the VE-IAT for the most part, these relationships were also all fairly small in magnitude.

These results suggest that implicit evaluative attitudes toward violence are not related to beliefs regarding violence nor explicit evaluative attitudes toward violence among males convicted of violent offences. These results are somewhat consistent with those observed in Study 1 among male community members, in which implicit evaluative attitudes toward violence were generally not related to beliefs regarding violence nor explicit evaluative attitudes toward violence. One exception was the relationship observed between scores on the P-VE-IAT and VESD when considering the Spearman's rho correlations for which more positive implicit evaluative attitudes toward violence were significantly and weakly to moderately related to more positive explicit evaluative attitudes toward violence. In contrast, the results of the current study are generally, inconsistent with those observed in Study 1 among male students; more positive implicit

evaluative attitudes toward violence were overall significantly and weakly to moderately related to more violence-supportive beliefs and high (more positive) scores on the VE-IAT were significantly and weakly related to more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD. Of note, the magnitude of relationships between implicit evaluative attitudes toward violence and beliefs regarding violence, as assessed by scores on the MCAA-R-V, were generally larger in Study 1, as were those observed between implicit evaluative attitudes toward violence and explicit evaluative attitudes toward violence, as assessed by scores on the VESD. However, the magnitude of relationships between implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) and explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were generally consistent with those observed in the current study, especially when considering the Pearson's r correlation between scores on the VE-IAT and EVQ.

As outlined above, theories from the social psychology literature state that implicit and explicit evaluative attitudes toward violence often diverge when there is motivation and opportunity to deliberate on the initially activated implicit evaluative attitude and deliberation, as well as information available in the environment, deem it invalid (e.g., MODE model; Fazio, 1990). This would result in an explicit evaluative attitude toward violence that is inconsistent with, and likely more socially desirable than, the initially activated implicit evaluative attitude. Although this assertion is somewhat controversial within the literature, previous theory has proposed the use of indirect measures, such as the IAT, instead of self-report measures when the construct under investigation is sensitive in nature as a way to protect against socially desirable

responding (Gawronski et al., 2007; Greenwald et al., 2009). This is due to the fact that self-report measures provide opportunity for thoughtful deliberation when responding, whereas implicit measures, such as the IAT, do not. Accordingly, the current sample completed the procedure while residing in a provincial correctional institution which may have resulted in more pressure to conceal their beliefs regarding violence and/or explicit evaluative attitudes toward violence on the self-report measures of violent cognitions (i.e., MCAA-R-V, VESD, and EVQ) for fear of potential legal repercussions (e.g., decisions regarding release, parole, case management recommendations, treatment/psychiatric reports, etc.). The literature further proposes that because the IAT procedure measures an evaluative attitude at an indirect level, this procedure is not as likely to be polluted by external influences in the environment and/or thoughtful deliberation, and is thus, more resilient to socially desirable responding. In this case, IAT scores observed in the current study may be more accurate than scores on the self-report measures of violent cognition, resulting in non-significant and weak relationships between scores on the implicit and explicit/self-report measures of violent cognitions.

Regardless, the results observed in the current study regarding the relationship between implicit evaluative attitudes toward violence and other explicit/self-report violent cognitions is somewhat consistent with prior research assessing these relationships among correctional samples. For instance, implicit evaluative attitudes toward violence, as assessed by various IAT measures, were unrelated to explicit evaluative attitudes toward violence (e.g., Maimone & Nunes, 2020; Polaschek et al., 2010; Snowden et al., 2004). In addition, prior studies have generally reported null results regarding the relationship between implicit evaluative attitudes and self-reported beliefs

regarding violence. For instance, scores on various IAT measures were unrelated to self-reported beliefs regarding intimate partner violence (e.g., Eckhardt & Crane, 2014; Eckhardt et al., 2012; Robertson & Murachver, 2007; Sanchez-Prada et al., 2018; Sprunger & Eckhardt, 2017), violence (e.g., Maimone & Nunes, 2020; Polaschek et al., 2010), and sexual aggression (e.g., Hermann et al., 2018). Considering the results of the current study in combination with those reported in previous empirical research, implicit evaluative attitudes toward violence may not be related to explicit/self-report violent cognitions among correctional samples.

Explicit Evaluative Attitudes Toward Violence and Beliefs Regarding

Violence. As shown in Table 41, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and strongly associated with more explicit evaluative attitudes toward violence, as assessed by scores on the VESD ($r = .55$). More violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and strongly associated with more explicit evaluative attitudes toward violence, as assessed by scores on the EVQ ($r = .75$). In addition, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were significantly and strongly associated with more explicit evaluative attitudes toward violence, as assessed by scores on the EVQ ($r = .62$).

These results are somewhat consistent with those observed in Study 1 among male students and community men. As in Study 1, beliefs regarding violence were more strongly associated with explicit evaluative attitudes toward violence when assessed by scores on the EVQ in comparison to when assessed by scores on the VESD. In addition, the relationship between scores on the MCAA-R-V and EVQ was stronger in magnitude

than the relationship between scores on the EVQ and VESD—the two explicit measures of evaluative attitudes toward violence. As outlined above, these results were previously replicated among a sample of online community males (see Nunes, Pedneault, Hermann, & Fraser, 2021). This suggests that the underlying construct assessed by the EVQ may be more similar to beliefs regarding violence than explicit evaluative attitudes toward violence. In addition, Nunes, Pedneault, Hermann, and Fraser (2021) found further evidence for this possibility by factor analyzing the underlying constructs assessed by the MCAA-R-V, EVQ, and VESD. As stated above, items contained in the EVQ formed a correlated, but distinct factor from items contained in the VESD, but clustered together with items from the MCAA-R-V, suggesting that the MCAA-R-V and EVQ assess a similar, or the same, underlying cognitive construct regarding violence.

Relationship Between Violent Cognition Measures and Indicators of Violent Behaviour

Implicit Evaluative Attitudes Toward Violence and Violent Behaviour. Table 41 displays the Pearson's r and Spearman's rho correlations for the relationships between implicit evaluative attitudes toward violence and self-reported violent behaviour (i.e., likelihood and propensity). As shown in Table 41, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were not significantly associated with likelihood of violence, as assessed by scores on the EVQ-Likelihood, nor propensity for violence at the time of assessment, as assessed by scores on the VBVQ. Although implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were not significantly associated with likelihood of violence, as assessed by scores on the EVQ-Likelihood, nor propensity for violence, as assessed by scores on the VBVQ, the

relationship between scores on the P-VE-IAT and the EVQ-Likelihood was somewhat moderate in magnitude, especially when considering the Spearman's rho correlation ($r = -.29$). However, the nature of this relationship was unexpected given that more positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were associated with lower likelihood of violence. The relationships between scores on the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) and the measure of likelihood of violence (EVQ-Likelihood) are inconsistent with those reported in Study 1 among male students and community members. For instance, small to moderate, significant, positive effects were observed for the relationships between scores on either the VE-IAT or P-VE-IAT and scores on the EVQ-Likelihood among male students and community members in Study 1, suggesting that more positive implicit evaluative attitudes toward violence are associated with greater likelihood of violence. These relationships were not observed in the current study. For instance, small and insignificant, negative effects were observed for the relationship between implicit evaluative attitudes toward violence, as assessed by the VE-IAT, and likelihood of violence, among participants in the current study. In addition, somewhat moderate, negative, effects were observed between implicit evaluative attitudes toward violence, as assessed by the P-VE-IAT, and likelihood of violence, although these effects were not significant. In contrast, the relationships between scores on the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) and propensity for violence at the time of assessment (i.e., VBVQ) are generally consistent with those observed in Study 1 among male students and community members. Overall, small and non-significant, positive effects were observed for the relationships between scores on the

measures of implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) and scores on the VBVQ among male students and community members in Study 1, as well as males convicted of violent offences in the current study. These results suggest that more positive implicit evaluative attitudes toward violence may be related to greater likelihood of violence among male students and community members, but not among males convicted of violent offences. Consistent with this interpretation, implicit evaluative attitudes toward violence may be able to distinguish who is more likely to behave violently in the future, but are no longer related, or negatively related, to likelihood of violence once one has engaged in extensive violence, as was the case for the majority of participants in the current study. However, it is not possible to confirm whether the results observed are reflective of the true effects that exist between implicit evaluative attitudes toward violence and likelihood of, as well as propensity for, violent behaviour, among males convicted of violent offences, because of the small sample size that likely underpowered the analyses conducted in the current study.

Observing the descriptive statistics for measures of implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT), as well as measures of likelihood of violence (i.e., EVQ-Likelihood) and propensity for violence (i.e., VBVQ), across males convicted of violent offences and males from the community, it is evident that participants across these samples responded very similarly on the VE-IAT (i.e., identical means across samples) and EVQ-Likelihood (i.e., mean about .50 higher for convicted males). However, convicted males had a higher average score on the P-VE-IAT, signifying more positive implicit evaluative attitudes toward violence, and much higher scores on the VBVQ, signifying greater propensity for violence, in comparison to

community men. Given that one would expect men convicted of violent offences to have greater likelihood of violence in comparison to men from the community, this could suggest that scores on the EVQ-Likelihood among the current sample may have been influenced by socially desirable responding. This would not explain the virtually identical mean scores across samples on the VE-IAT, given that IAT measures are believed to be more resilient to socially desirable responding. However, indirect measures, such as the IAT, are theorized to be more stable and resistant to change across time and in the presence of different external/situational cues, in comparison to explicit/self-report measures, because they do not rely on deliberative thought processes (Fazio, 1990; Gawronski & Bodenhausen, 2006). Given that the VE-IAT is thought to be resistant to the influence of external cues, we might expect a similar distribution of scores across community men and those who have been convicted of violent offences. Thus, the similarity in scores on the VE-IAT across both samples may provide evidence of the resilience of this measure to socially desirable responding. In contrast, similarity in responses across the self-report measures designed to assess violent behaviour may provide evidence of socially desirable responding given that these measures require conscious thought during completion and also one would expect those who have engaged in more violence to obtain higher scores on such measures. Last, the more violent nature of the current sample was reflected in scores on the VBVQ, but not the EVQ-Likelihood. Given that the VBVQ is vignette based and several items are quite provocative in nature, it may be more resilient to deceptive responding in comparison to traditional self-report measures. Taken together, the negative relationships observed between implicit evaluative attitudes toward violence and likelihood of violence may be due to

deceptive/socially desirable responding on the measure designed to assess likelihood of violence, rather than due to the measures of implicit evaluative attitudes toward violence failing to capture the construct of implicit evaluative attitudes. In addition, the higher mean on the P-VE-IAT among participants in the current study may be reflective of the more violent nature of the current sample and provide further evidence suggesting that the self-report measure of likelihood of violence failed to accurately assess the intended construct. However, given the complexity of IAT measures, it is difficult to ascertain the reason for the observed effects, or lack thereof, in the current study, concerning the relationship between implicit evaluative attitudes toward violence and self-reported violent behaviour due to the small sample size and likely underpowered analyses. Last, as noted in the *Discussion* section of Study 1, the EVQ-Likelihood was created out of the original EVQ that was designed to assess explicit evaluative attitudes toward violence. The 17 items contained in the EVQ were modified to assess likelihood of violence, rather than evaluative attitudes toward violence. Further, this is the first research project that has administered the EVQ-Likelihood to assess likelihood of violence; therefore, the psychometric properties of the EVQ-Likelihood and whether it actually assesses its intended construct are unknown. Given all points noted above, more research is needed, with larger samples of males convicted of violent offences, to confirm that implicit evaluative attitudes toward violence do not account for variance in likelihood of, or propensity for, violence.

Table 42 displays the Pearson's r and Spearman's rho correlations for the relationships between implicit evaluative attitudes toward violence and file coded indicators of violent behaviour (i.e., risk of violent recidivism, risk of criminal

recidivism, and number of violent charges and convictions). As shown in Table 42, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were not significantly associated with risk of violent recidivism (assessed by scores on the VRAG, VRAG Cat., VRAG-R, and VRAG-R Cat.) or risk of general criminal recidivism (assessed by scores on the LSI-OR and LSI-OR Cat.). However, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and moderately associated with less violent charges and convictions, when violent index charges and convictions were (i.e., All Viol. Occ., $r = -.38$) and were not considered (i.e., Prior Viol. Occ., $r = -.38$). These results are inconsistent to what was expected given that the initial hypothesis was that more positive implicit evaluative attitudes toward violence would be associated with more violent behaviour. However, it is important to note that the number of violent charges and convictions were coded exclusively from federal charges and convictions contained in the Canadian Police Information Centre (CPIC). Therefore, it is likely that at least some violent occurrence information was excluded when coding all violent charges and convictions (i.e., All Viol. Occ.), as well as prior violent charges and convictions (i.e., Prior Viol. Occ.), from solely the CPIC. It is thus, likely that these variables are missing important violent history information due to insufficient information contained in the official files (e.g., missing police reports, missing provincial records, etc.). In addition, it was not possible to code whether institutional misconducts were violent in nature due to missing detailed information regarding these occurrences. As a result, violent misconducts were not included in the two indices quantifying number of violent charges and convictions (i.e., All Viol. Occ. and Prior Viol. Occ.). Given that there is likely important violent

occurrence information missing from the number of violent charges and convictions coded from CPICs, this could have created the unexpected relationship seen between scores on the VE-IAT and number of violent charges and convictions by reducing variance in the indices used to quantify violent histories among STU residents. Moreover, somewhat sizeable effects were observed between scores on the VE-IAT and risk of violent recidivism, as assessed by the VRAG-R ($r = .15$) and VRAG-R risk category ($r = .14$), with these effects in the expected direction—more positive implicit evaluative attitudes toward violence were non-significantly associated with greater risk of violent recidivism. Interestingly, the relationships between implicit evaluative attitudes toward violence and prior violent occurrence information coded from official institutional files found in the current study are somewhat consistent with a finding reported by Blumenthal et al. (2019). Specifically, Blumenthal et al. (2019) observed a similar non-significant negative relationship between scores on a similar IAT measure designed to assess implicit evaluative attitudes toward violence and prior violent convictions ($r = -.14$) among a sample of 108 males convicted of violent and non-violent offences. Blumenthal et al. (2019) also proposed that this negative, non-significant, relationship may have been due to missing violent occurrence information in official records that were coded to obtain the number of prior violent convictions among their sample.

Consistently, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were not significantly associated with risk of violent recidivism (i.e., VRAG, VRAG Cat., VRAG-R, and VRAG-R Cat.) or risk of general criminal recidivism (i.e., LSI-OR and LSI-OR Cat.). Scores on the P-VE-IAT were not significantly related to violent charges and convictions when considering the Pearson's r correlations, but

moderate effect sizes were found for these relationships, with more positive implicit evaluative attitudes toward violence (assessed by the P-VE-IAT) non-significantly related to less violence on the variable quantifying all violent index and prior charges and convictions (i.e., $r = -.30$) and the variable quantifying solely prior violent charges and convictions ($r = -.33$). When examining these relationships using Spearman's rho correlations, more positive implicit evaluative attitudes toward violence were significantly and moderately associated with less prior violent charges and convictions solely ($\rho = -.39$). A moderate and negative effect size was also found between scores on the P-VE-IAT and all violent charges and convictions, but this effect was not significant ($\rho = -.35$). Again here, violent charges and convictions were coded solely from CPICs and thus, could have left out important violent occurrence information. Therefore, these variables could be poor indicators of participants' violent occurrence histories and could underestimate the extent of their prior involvement in violent behaviour. As a result, these unexpected negative relationships could be an artificial effect due to the potential inaccuracy of these indices.

An alternative interpretation is that implicit evaluative attitudes toward violence are negatively related to violent behaviour and, in particular, prior violence. Moreover, the negative relationships observed between implicit evaluative attitudes toward violence and prior violence (i.e., prior/all violent charges and convictions) may be the product of a confounding variable, such as *age* of the males convicted of violent offences, that is intervening in this relationship. To illustrate, younger males would presumably have less prior violent occurrence information given that they have had less opportunity to violently offend in comparison to older males. When considering the widely ubiquitous

age-crime curve (e.g., Hirschi & Gottfredson, 1983), according to which there is a sharp decrease in violent offending (as well as other crimes) as one ages, one may expect younger males to have more positive implicit evaluative attitudes toward violence, given their higher likelihood of violence, in comparison to older males. Therefore, the younger males in the current sample may have displayed more positive implicit evaluative attitudes toward violence but may have had less extensive violent occurrence information contained in their official files because of less opportunity to violently offend.

Conversely, the older males in the current sample may be expected to display more negative implicit evaluative attitudes toward violence but have longer histories of violence by virtue of greater opportunity to violently offend. Consequently, the negative relationship between implicit evaluative attitudes toward violence and prior violence among males in the current study, who have been convicted of violent offences, may be an artificial effect produced by the confounding/intervening effect of age (or amount of opportunity to violently offend) on this relationship. Prior empirical research assessing the relationship between implicit evaluative attitudes toward violence and violent behaviour among correctional samples is sparse and inconsistent, but studies have found some evidence that more positive implicit evaluative attitudes toward violence may be related to greater violent behaviour among correctional and forensic samples. For instance, more positive implicit evaluative attitudes toward violence were associated with more psychopathy among murderers (e.g., Snowden et al., 2004) and greater intimate partner violence (e.g., Eckhardt & Crane, 2014; Eckhardt et al., 2012; Robertson & Murachver, 2007) among correctional and forensic samples. In contrast, other studies have reported no relationship between implicit evaluative attitudes toward violence and

risk of violence among samples of convicted males (e.g., Maimone & Nunes, 2020; Polaschek et al., 2010). These published studies seemingly provide greater evidence that implicit evaluative attitudes toward violence explain at least some of the variance in violent outcomes among forensic samples; however, this may be the product of a publication bias among this research. Regardless, there is still evidence of discrepancy and inconsistency regarding the nature of these relationships when considering the few published studies to date on this topic.

In conclusion, several interpretations can be gleaned from these results. First, implicit evaluative attitudes toward violence may be negatively related to self-reported likelihood of violence and prior violence among males convicted of violent offences, suggesting that more positive implicit evaluative attitudes toward violence are related to lower likelihood of violence and less prior violent charges and convictions. Second, this negative relationship may be the product of *age* as a confounding/intervening variable. Third, another interpretation is that the self-report measure of likelihood of violence produced inaccurate scores due to deceptive/socially desirable responding and the indices created to quantify violent histories were incomplete producing inaccurate effects for the relationships between implicit evaluative attitudes toward violence and likelihood of violence, as well as number of prior violent charges and convictions. Fourth, a final interpretation is that the IATs were not able to accurately assess participants' implicit evaluative attitudes toward violence among the current sample either due to lack of understanding of the procedure on the part of the participants or an ineffective procedure regarding the IATs themselves.

Explicit Evaluative Attitudes Toward Violence and Violent Behaviour. Table 41 displays the Pearson's r correlations and Spearman's rho correlations between explicit evaluative attitudes toward violence (i.e., VESD and EVQ) and self-reported violent behaviour (i.e., likelihood and propensity). As shown in Table 41, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were significantly and strongly associated with more likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .52$). Explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were not significantly associated with propensity of violence at the time of assessment, as assessed by scores on the VBVQ, when considering the Pearson's r correlations, but more positive explicit evaluative attitudes toward violence (on the VESD) were significantly and moderately associated with greater propensity for violence, as assessed by scores on the VBVQ, when considering the Spearman's rho correlations ($\rho = .37$). More positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were significantly and strongly associated with greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .66$), and greater propensity for violence, as assessed by scores on the VBVQ ($r = .57$).

Given that, overall, significant and moderate to large, positive, associations were observed between explicit evaluative attitudes toward violence and self-reported violent behaviour (i.e., likelihood of violence and propensity for violence) among males convicted of violent offences, the results of the current study are, generally, consistent with those reported in Study 1 among male students and community men. An exception to this is the relationship between scores on the VESD, assessing explicit evaluative attitudes toward violence, and scores on the VBVQ, assessing propensity for violence,

which was non-significant and substantially smaller among the current sample (i.e., .27, n.s.) in comparison to the moderate and significant effects reported in Study 1 among male students (i.e., $r = .49, p < .001$) and community members ($r = .41, p < .001$). When comparing the specific effects for these relationships between samples, a few did vary slightly in magnitude. For instance, the effect reported for the relationship between scores on the EVQ, assessing explicit evaluative attitudes toward violence, and scores on the EVQ-Likelihood, assessing likelihood of violence, was slightly smaller in the current study (i.e., $r = .66$) in comparison to those reported in Study 1 among male students (i.e., $r = .83$) and community members (i.e., $r = .78$). Similarly, the effect reported for the relationship between scores on the EVQ and scores on the VBVQ, assessing propensity for violence, was also slightly smaller in the current study (i.e., $r = .57$) in comparison to those reported in Study 1 among male students (i.e., $r = .70$) and community members (i.e., $r = .66$). However, the effects quantifying these relationships were all consistently large in size. These diminished effects might be expected given that descriptive statistics for the measures designed to assess explicit evaluative attitudes toward violence (i.e., VESD and EVQ) are very similar across samples in Study 1 and Study 2, especially when comparing mean scores on the VESD and EVQ for community men and men convicted of violent offences (i.e., the current sample); however, mean scores for participants in the current sample were much higher on the VBVQ and slightly higher on the EVQ-Likelihood in comparison to the mean scores on these measures for participants in Study 1. The largest discrepancy was observed for the relationship between scores on the VESD and VBVQ which might have resulted due to the much higher average scores on the VBVQ among those in the current sample. As stated above, this might suggest that the

VBVQ better captured the more violent nature of the current sample. However, it is unclear why the distribution of participants' scores were very similar for other self-report measures (i.e., VESD, EVQ, and EVQ-Likelihood). Again, as noted above, this could be due to socially desirable responding on these measures or perhaps such evaluative attitudes are consistent across male participants sampled from these different populations (i.e., students, community members, and incarcerated). In addition, Table 43 displays the relationships between self-report and file coded violent behaviour variables. As evidenced in this Table, scores on the EVQ-Likelihood, designed to assess likelihood of violence, were not significantly related to violence risk measures (i.e., r ranged from .07 to .15) coded from file information (other than a marginally significant effect reported between scores on the EVQ-Likelihood and the variable quantifying categorization of general criminal risk; $r = .30$); however, scores on the VBVQ, designed to assess propensity for violence, were significantly and moderately associated with risk of violent recidivism, such that greater self-reported propensity for violence was significantly associated with higher risk of violent recidivism (i.e., on the VRAG-R; $r = .39$), as well as higher categorization of violence risk (i.e., on the VRAG-R Cat.; $r = .39$). This may provide further support for scores on the EVQ-Likelihood having been influenced by socially desirable/deceptive responding, and/or this measure not accurately capturing its intended construct among the current sample. Of note, participants in the current sample were actively engaged in several treatment programs during administration of this study; therefore, the comparable distribution of scores on the measures of explicit evaluative attitudes toward violence (as well as measures of implicit evaluative attitudes toward violence as discussed above) across studies and samples might reflect effective treatment

targeting evaluative attitudes toward violence. Last, the effect reported for the relationship between scores on the VESD, assessing explicit evaluative attitudes toward violence, and scores on the EVQ-Likelihood were almost identical in the current study (i.e., $r = .52$) in comparison to those reported in Study 1 among male students (i.e., $r = .49$) and community members (i.e., $r = .53$), which may be expected given that mean scores on these measures were fairly similar across samples in Studies 1 and 2 (i.e., the mean score was slightly higher on the EVQ-Likelihood, but almost identical on the VESD). Regardless, explicit evaluative attitudes toward violence do seem to be accounting for significant variance in these self-reported violent outcomes and the reported effects are in the expected direction to what was initially hypothesized. In addition, the results reported in the current study regarding these relationships are generally consistent with prior research (e.g., Hermann et al., 2018; Hermann & Nunes, 2018; Maimone & Nunes, 2020; Nunes et al., 2013; Nunes et al., 2015; Nunes, Pedneault, Hermann, & Fraser, 2021).

Table 42 displays the Pearson's r correlations and Spearman's rho correlations between explicit evaluative attitudes toward violence (i.e., VESD and EVQ) and file coded indicators of violent behaviour (i.e., risk of violent recidivism, risk of criminal recidivism, and number of violent charges and convictions). As shown in Table 42, explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were not significantly associated with any file coded indicators of violent behaviour, however, a moderate, positive relationship between scores on the VESD and LSI-OR categorization of criminal risk (i.e., LSI-OR Cat.) was found such that more positive explicit evaluative attitudes toward violence were marginally associated with higher risk

of general criminal recidivism ($r = .30$). Explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were significantly and moderately associated with higher risk of violent recidivism, as assessed by scores on the VRAG ($r = .37$) and VRAG Cat. ($r = .41$), as well as marginally associated with higher risk of violent recidivism, as assessed by scores on the VRAG-R ($r = .31$) and VRAG-R Cat. ($r = .32$). However, a significant, positive correlation was observed between scores on the EVQ and categorization of violence risk (i.e., VRAG-R Cat.), such that more positive explicit evaluative attitudes toward violence were significantly associated with higher risk of violent recidivism ($r = .36$). Explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were not significantly associated with risk of criminal recidivism (i.e., LSI-OR and LSI-OR Cat.) or number of violent charges and convictions (i.e., All Viol. Occ. and Prior Viol. Occ.).

These results suggest that explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, are more related to file coded violent outcomes in comparison to explicit evaluative attitudes toward violence, as assessed by scores on the VESD. However, neither explicit measure of evaluative attitudes toward violence was significantly associated with the indices quantifying number of violent charges and convictions (i.e., *All Viol. Occ.* that quantifies the number of prior violent charges and convictions, including violent index charges and convictions, and *Prior Viol. Occ.* that quantifies only prior violent charges and convictions, excluding index charges and convictions). As noted above, these indices were coded exclusively from CPIC information contained in participants' official institutional files; therefore, it is likely that they are missing important violent occurrence information (e.g., police occurrences,

provincial charges and convictions, institutional misconducts, etc.). Given this, it is likely that these indices do not fully capture the extent of participants' violent histories and this may account for the small and non-significant effects observed for the relationships involving these variables. Regardless, these results provide some evidence that explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, may be related to risk relevant variables.

Beliefs Regarding Violence and Violent Behaviour. Table 41 displays the Pearson's r correlations and Spearman's rho correlations between beliefs regarding violence (i.e., MCAA-R-V) and self-reported violent behaviour (i.e., likelihood and propensity). As shown in Table 41, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and strongly associated with greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .57$), and greater propensity for violence at the time of assessment, as assessed by scores on the VBVQ ($r = .70$). Given that significant and strong, positive, correlations were observed between beliefs regarding violence, as assessed by scores on the MCAA-R-V, and self-reported violent behaviour (i.e., likelihood of violence and propensity for violence) among participants in the current study, these results are, generally, consistent with those observed in Study 1 among male students and community members. As with the correlations involving other cognitive constructs, outlined above, the specific effects quantifying these relationships vary a little in magnitude between studies. For instance, the effect quantifying the relationship between scores on the MCAA-R-V, assessing beliefs regarding violence, and scores on the EVQ-Likelihood, designed to assess likelihood of violence, was smaller among the current sample (i.e., $r = .57$) in comparison

to the effects observed in Study 1 among male students (i.e., $r = .66$) and male community members (i.e., $r = .72$). However, the effect quantifying the relationship between scores on the MCAA-R-V and scores on the VBVQ, assessing propensity for violence, was larger among the current sample (i.e., $r = .70$) in comparison to the effects observed in Study 1 among male students (i.e., $r = .62$) and male community members (i.e., $r = .61$), which were almost identical. Given that mean scores on the MCAA-R-V and VBVQ for participants in the current study were considerably higher than mean scores for these measures among male students and community members, one may expect a stronger relationship to emerge between these two measures. These results may also suggest that beliefs regarding violence are more relevant, and have a stronger relationship to violent outcomes, for samples that have a more extensive history of violence. As stated above, the mean score on the EVQ-Likelihood was only slightly higher among participants in the current sample, whereas the mean score was substantially higher for the VBVQ. Again, this may suggest that the EVQ-Likelihood did not accurately capture the intended construct which may account for the diminished relationship observed between beliefs regarding violence and likelihood of violence in the current study. Regardless, beliefs regarding violence appear important given that they accounted for a significant portion of the variance in these self-reported violent outcomes (i.e., likelihood of violence and propensity for violence), which is consistent with prior research using the MCAA Violence scale to assess beliefs regarding violence. For instance, more violence-supportive beliefs were associated with greater self-reported violent recidivism ($r = .60$; Maimone & Nunes, 2020), and more violent recidivism ($r = .19$; Mills et al., 2004) among males incarcerated in provincial and federal correctional

institutions. Last, more violence-supportive beliefs were associated with more self-reported prior violent behaviour in male students ($r = .37$ in Nunes et al., 2015 and $r = .31$ in Maimone & Nunes, 2020).

Table 42 displays the Pearson's r correlations and Spearman's rho correlations between beliefs regarding violence (i.e., MCAA-R-V) and file coded indicators of violent behaviour (i.e., risk of violent recidivism, risk of criminal recidivism, and number of violent charges and convictions). As shown in Table 42, beliefs regarding violence were not significantly associated with risk of violent recidivism, as assessed by scores on the VRAG and VRAG Cat., although a marginally significant relationship between scores on the MCAA-R-V and categorization of violence risk on the VRAG (i.e., VRAG Cat.) was observed, such that more violence-supportive beliefs were marginally associated with higher categorization of violence risk ($r = .31$). More violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and moderately associated with higher risk of violent recidivism, as assessed by scores on the VRAG-R ($r = .38$) and VRAG-R Cat. ($r = .41$). Beliefs regarding violence were not significantly associated with risk of general criminal recidivism, as assessed by scores on the LSI-OR, but a significant and moderate relationship was observed between scores on the MCAA-R-V and categorization of general criminal risk, as assessed by scores on the LSI-OR Cat., such that more violence-supportive beliefs were associated with higher categorization of criminal risk ($r = .41$). Last, beliefs regarding violence were not significantly associated with indices quantifying number of violent charges and convictions (i.e., All Viol. Occ. and Prior Viol. Occ.).

These results suggest that beliefs regarding violence are important for understanding violence given that scores on the MCAA-R-V accounted for significant variance in risk of violent recidivism and risk of general criminal recidivism. However, the relationship between beliefs regarding violence and variables quantifying number of violent charges and convictions were not significant. One interpretation of these results is that beliefs regarding violence are not related to violent histories; however, as stated above, these indices may be excluding important information regarding prior violent occurrences due to incomplete information contained in participants' institutional files. Therefore, an alternative interpretation is that the variables quantifying the number of violent charges and convictions were inaccurate which resulted in non-significant relationships observed between beliefs regarding violence and variables quantifying number of violent charges and convictions (i.e., *All Viol. Occ.* and *Prior Viol. Occ.*). Regardless these results provide further support for the importance of beliefs regarding violence in explaining violent outcomes among males convicted of violent offences and are consistent with prior research, outlined above (e.g., Maimone & Nunes, 2020; Mills et al., 2004; Nunes et al., 2015).

Variance Accounted for by Implicit Evaluative Attitudes Toward Violence

As in Study 1, hierarchical multiple linear regressions were conducted to assess whether implicit evaluative attitudes toward violence accounted for significantly more variance in violent behaviour over and above explicit evaluative attitudes toward violence or self-reported beliefs regarding violence. These regressions were conducted such that explicit measures of evaluative attitudes toward violence (i.e., VESD or EVQ) or the self-reported measure of beliefs regarding violence (i.e., MCAA-R-V) were added in the first

step of the regression and implicit measures of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) were entered in the second step of the regression, with either self-reported measures of violent behaviour entered as the outcome variable (i.e., measures of likelihood of violence [EVQ-Likelihood], or current propensity for violence [VBVQ]) or filed coded variables of violent behaviour entered as the outcome variable (i.e., risk of violent recidivism [VRAG and VRAG-R], categorization of violence risk [VRAG Cat. And VRAG-R Cat.], risk of criminal recidivism [LSI-OR], categorization of criminal risk [LSI-OR Cat.], and number of violent charges and convictions [All Viol. Occ.; including violent index charges and convictions and Prior Viol. Occ.; excluding violent index charges and convictions]). Accordingly, these data were examined to determine whether they conformed to the assumptions underlying hierarchical multiple linear regression. Specifically, these data were screened for the following assumptions: multicollinearity between predictors in the model, homoscedasticity of variances, linearity of association between the set of predictors and the outcome, and normality, homoscedasticity, and independence of residuals. Overall, most assumptions were upheld. Multivariate outliers were also examined for each regression model separately. In the event that multivariate outliers were found, they were excluded per analysis in an attempt to maximize power. Only those analyses that approached significance are reported.

When analyzing these relationships only the traditional VE-IAT, with attribute categories of *positive* and *negative*, significantly added incremental variance over and above beliefs regarding violence, as assessed by scores on the MCAA-R-V. As seen in Table 44, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, accounted for significantly more variance (i.e., $R^2 = .25$) in number of violent

charges and convictions (i.e., All Viol. Occ.), over and above beliefs regarding violence, as assessed by scores on the MCAA-R-V (i.e., $R^2 = .08$, $\Delta R^2 = .17$, $p < .05$), among males convicted of violent offences. Of note, beliefs regarding violence were only marginally significantly related to number of violent charges and convictions in Step 2 of the model.

Table 44

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Number of Violent Occurrences Above Beliefs Regarding Violence Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.35		6.56	[-13.09, 13.78]		-6.80		6.71	[-20.57, 6.97]	
MCAA-R-V	0.38	.28	0.25	[-0.13, 0.88]	.08	0.43 ^a	.32	0.23	[-0.04, 0.89]	.10
VE-IAT						-4.88*	-.41	2.00	[-8.97, -0.79]	.17
<i>F</i>	2.36					4.38*				
<i>R</i> ²	.08					.25				
ΔR^2						.17*				

Note. *N* = 30. I examined the variance accounted for by implicit (i.e., VE-IAT) evaluative attitudes toward violence and beliefs regarding violence (i.e., MCAA-R-V) in number of all violent occurrences (i.e., All Viol. Occ.; includes violent index charges and convictions, as well as prior violent charges and convictions). In Model 1, I entered beliefs regarding violence to predict number of violent occurrences. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

**p* < .05. ^amarginally significant at *p* = .070

The above hierarchical regression is the only model in which there was slight additional variance being accounted for by scores on the VE-IAT, assessing implicit evaluative attitudes toward violence, over and above an explicit/self-report measure designed to assess violent cognitions. These results are somewhat inconsistent to those observed in Study 1 among male students and community members, in which implicit evaluative attitudes toward violence, generally, accounted for significantly more variance in likelihood of violence, over and above explicit/self-report measures designed to assess violent cognitions (i.e., VESD, EVQ, and MCAA-R-V). These results suggest that implicit evaluative attitudes toward violence may not account for distinct and sufficient variance in violent outcomes in males convicted of violent offences; however, given the small sample size in the current study, these analyses were likely underpowered. In addition, previous research assessing the incremental variance accounted for by implicit evaluative attitudes toward violence in violent outcomes over and above explicit/self-report measures has been sparse, with one study reporting that implicit evaluative attitudes toward violence did not account for incremental variance in likelihood of physical aggression over and above beliefs regarding violence, in a sample of 106 undergraduate students (see Sprunger & Eckhardt, 2017). To the best of my knowledge, no studies to date have assessed this among forensic/correctional samples. Therefore, these results must be replicated among larger and similar samples, to that collected in the current study, in order to confirm these assertions.

Moderation of Implicit Evaluative Attitudes Toward Violence

The goal in this section was to explore the potential moderating role of implicit evaluative attitudes toward violence in the association between explicit/self-report

cognitions and indicators of violent behaviour. A series of hierarchical multiple linear regressions were conducted to assess whether implicit evaluative attitudes toward violence significantly moderated the relationship between explicit/self-report violent cognitions and violent behaviour. This effect was quantified by assessing the significance of the interaction between implicit and explicit/self-report measures of violent cognition on measures of violent behaviour. Specifically, the implicit measure of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) and explicit/self-report measure of violent cognition (i.e., explicit measures of evaluative attitudes toward violence [VESD or EVQ] or the self-report measure of beliefs regarding violence [MCAA-R-V]) were added in the first step of the regression and the interaction between the implicit measure of evaluative attitudes toward violence and the explicit/self-report measure of violent cognition was added in the second step of the regression (i.e., $VE-IAT \times VESD$, $VE-IAT \times EVQ$, $VE-IAT \times MCAA-R-V$, $P-VE-IAT \times VESD$, $P-VE-IAT \times EVQ$, or $P-VE-IAT \times MCAA-R-V$) with either a self-report measure of violence behaviour (i.e., EVQ-Likelihood or VBVQ) or file coded variable of violent behaviour (i.e., VRAG, VRAG Cat., VRAG-R, VRAG-R Cat., LSI-OR, LSI-OR Cat., All Viol. Occ., Prior Viol. Occ.) entered as the outcome variable. Preacher's online calculator (Preacher et al., 2006) was then used to assess the significance of the simple slopes, or in other words, to identify where the differences lie in the relationship between explicit/self-report measures of violent cognition and self-report or file coded measures of violent behaviour at different levels of the implicit measure of evaluative attitudes toward violence (i.e., the moderator). As stated above, these data were examined to determine whether they conformed to the assumptions underlying hierarchical multiple linear regression.

Specifically, these data were screened for the following assumptions: multicollinearity between predictors in the model, homoscedasticity of variances, linearity of association between the set of predictors and the outcome, and normality, homoscedasticity, and independence of residuals. These assumptions were, generally, upheld. As in the analyses above, multivariate outliers were also examined for each regression model separately. In the event that multivariate outliers were found, they were excluded per analysis in an attempt to maximize power. Only those analyses that approached significance are reported and analysis of the simple slopes using Preacher's calculator was only conducted for significant interactions.

Before conducting the regression analyses, implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT), explicit evaluative attitudes toward violence (i.e., VESD and EVQ), and self-report beliefs regarding violence (i.e., MCAA-R-V) were mean centered. Interaction terms between implicit and explicit/self-report violent cognitions were then created out of the centered terms (see above). As stated above, after controlling for implicit and explicit/self-report violent cognitions at Step 1 of the regression, the multiplicative interaction term of (centered) implicit evaluative attitudes toward violence by (centered) explicit evaluative attitudes toward violence/beliefs regarding violence was entered in the equation (at Step 2).

When analyzing moderated regressions among males convicted of violent offences, implicit evaluative attitudes toward violence, as measured by scores on the VE-IAT, significantly moderated some of the relationships between explicit evaluative attitudes toward violence and violent behaviour. A summary of the results of the regression equation predicting risk of violent recidivism, assessed by scores on the

VRAG, from explicit evaluative attitudes toward violence, assessed by scores on the VESD, and implicit evaluative attitudes toward violence, assessed by scores on the VE-IAT, as well as their multiplicative interaction, is displayed in Table 45. Explicit evaluative attitudes toward violence, as a main effect, did not add significant incremental variance in risk of violent recidivism ($b = 0.79$, $SE = 1.84$, $\beta = .08$, $t[27] = 0.43$, $p = .67$, $95\% \text{ CI} = [-2.99, 4.58]$, $sr^2 = .01$). Similarly, implicit evaluative attitudes toward violence, as a main effect, did not add significant incremental variance in risk of violent recidivism ($b = 0.57$, $SE = 2.96$, $\beta = .04$, $t[27] = 0.19$, $p = .85$, $95\% \text{ CI} = [-5.49, 6.64]$, $sr^2 = .00$). A significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., $\text{VESD} \times \text{VE-IAT}$), $b = 7.29$, $SE = 3.19$, $\beta = .46$, $t(26) = 2.29$, $p = .03$, $95\% \text{ CI} = [0.73, 13.84]$, $sr^2 = .17$, and explained an additional 17% of the variance, $F_{\text{change}}(26) = 5.23$, $p = .03$. Results from follow-up simple slopes analyses are illustrated in Figure 11. Specifically, explicit evaluative attitudes toward violence were not significantly associated with risk of violent recidivism at low levels (i.e., or more negative $[-1 \text{ SD}]$), $b = -3.46$, $SE = 2.53$, $t(26) = -1.37$, $p = .18$, or moderate levels (i.e., or more neutral $[0]$), $b = 1.11$, $SE = 1.72$, $t(26) = 0.65$, $p = .52$, of implicit evaluative attitudes toward violence. However, explicit evaluative attitudes toward violence were significantly associated with risk of violent recidivism at high levels (i.e., or more positive $[+1 \text{ SD}]$), $b = 5.69$, $SE = 2.74$, $t(26) = 2.07$, $p = .05$, of implicit evaluative attitudes toward violence. Although not significant, there was a decrease in risk of violent recidivism (i.e., a negative simple slope) at low (or more negative) implicit evaluative attitudes toward violence, such that a negative relationship was observed between explicit evaluative attitudes toward violence and risk

of violent recidivism. The increase in risk of violent recidivism when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was significant and most pronounced (i.e., largest simple slope) at high (or more positive) implicit evaluative attitudes toward violence, such that a significant and positive relationship was observed between explicit evaluative attitudes toward violence and risk of violent recidivism at high levels of implicit evaluative attitudes toward violence; however, the simple slope for the relationship between explicit evaluative attitudes toward violence and risk of violent recidivism was smallest, at mean (or more neutral) implicit evaluative attitudes toward violence, showing the weakest relationship between these constructs at this level of the moderator (see Figure 11).

Table 45

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Risk of Violent Recidivism Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	21.53***		1.83	[17.79, 25.28]		21.47***		1.70	[17.98, 24.96]	
VESD	0.79	.08	1.84	[-2.99, 4.58]	.01	1.11	.12	1.72	[-2.42, 4.65]	.01
VE-IAT	0.57	.04	2.96	[-5.49, 6.64]	.00	3.82	.25	3.09	[-2.54, 10.18]	.05
VESD × VE-IAT						7.29*	.46	3.19	[0.73, 13.84]	.17
<i>F</i>	0.11					1.83				
<i>R</i> ²	.01					.17				
ΔR^2						.17*				

Note. *N* = 30. I examined whether implicit evaluative attitudes toward violence (i.e., VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and risk of violent recidivism (i.e., VRAG) by examining the significance of the VESD by VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict risk of violence. In Model 2, I entered the VESD by VE-IAT interaction as the predictor.

p* < .05, **p* < .001.

Figure 11

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Risk of Violent Recidivism Among Males Convicted of Violent Offences in Study 2

Note. $N = 30$ males convicted of violent offences. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting risk of violent recidivism from the VESD, VE-IAT, and VESD by VE-IAT interaction. Violence Risk Appraisal Guide (VRAG Total) was entered as the outcome to assess risk of violent recidivism. VE-IAT = Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. VESD = Violent Evaluation Semantic Differential scales, used to assess explicit evaluative attitudes toward violence.

A summary of the results of the regression equation predicting categorization of violence risk, assessed by scores on the VRAG Cat., from explicit evaluative attitudes toward violence, assessed by scores on the VESD, and implicit evaluative attitudes toward violence, assessed by scores on the VE-IAT, as well as their multiplicative

interaction, is displayed in Table 46. Explicit evaluative attitudes toward violence, as a main effect, did not add significant incremental variance in categorization of violence risk ($b = 0.26$, $SE = 0.25$, $\beta = .20$, $t[27] = 1.04$, $p = .31$, 95% CI = [-0.25, 0.77], $sr^2 = .04$). Similarly, implicit evaluative attitudes toward violence, as a main effect, did not add significant incremental variance in categorization of violence risk ($b = 0.06$, $SE = 0.40$, $\beta = .03$, $t[27] = 0.16$, $p = .87$, 95% CI = [-0.76, 0.89], $sr^2 = .00$). A significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., VESD $\times$ VE-IAT), $b = 1.06$, $SE = 0.42$, $\beta = .49$, $t(26) = 2.51$, $p = .02$, 95% CI = [0.19, 1.94], $sr^2 = .19$, and explained an additional 19% of the variance, $F_{\text{change}}(26) = 6.28$, $p = .02$. Results from follow-up simple slopes analyses are illustrated in Figure 12. Specifically, explicit evaluative attitudes toward violence were not significantly associated with categorization of violence risk at low levels (i.e., or more negative [-1 SD]), $b = -0.36$, $SE = 0.34$, $t(26) = -1.07$, $p = .29$, or moderate levels (i.e., or more neutral [0]), $b = 0.31$, $SE = 0.23$, $t(26) = 1.34$, $p = .19$, of implicit evaluative attitudes toward violence. However, explicit evaluative attitudes toward violence were significantly associated with categorization of violence risk at high levels (i.e., or more positive [+1 SD]), $b = 0.97$, $SE = 0.36$, $t(26) = 2.67$, $p = .01$, of implicit evaluative attitudes toward violence. Although not significant, there was a decrease in categorization of violence risk (i.e., a negative simple slope) at low (or more negative) implicit evaluative attitudes toward violence, such that a negative relationship was observed between explicit evaluative attitudes toward violence and categorization of violence risk. Similarly, there was an increase in categorization of violence risk (i.e., a positive simple slope) at mean (or more neutral) implicit evaluative attitudes toward violence, such that a

positive relationship was observed between explicit evaluative attitudes toward violence and categorization of violence risk, but this relationship was not significant, and the simple slope was slightly lower in size to that at low levels of the moderator. Last, the increase in categorization of violence risk when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was significant and most pronounced (i.e., largest simple slope) at high (or more positive) implicit evaluative attitudes toward violence, such that a significant and positive relationship was observed between explicit evaluative attitudes toward violence and categorization of violence risk at high levels of the moderator (see Figure 12).

Table 46

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Categorization of Violence Risk Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	7.53***		.25	[7.03, 8.04]		7.52***		.23	[7.06, 7.99]	
VESD	0.26	.20	.25	[-0.25, 0.77]	.04	0.31	.23	.23	[-0.16, 0.78]	.05
VE-IAT	0.06	.03	.40	[-0.76, 0.89]	.00	0.54	.25	.41	[-0.31, 1.38]	.05
VESD × VE-IAT						1.06*	.49	.42	[0.19, 1.94]	.19
<i>F</i>	0.56					2.54 ^a				
<i>R</i> ²	.04					.23				
ΔR^2						.19*				

Note. *N* = 30. I examined whether implicit evaluative attitudes toward violence (i.e., VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and categorization of violence risk (i.e., VRAG Cat.) by examining the significance of the VESD by VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict categorization of violence risk. In Model 2, I entered the VESD by VE-IAT interaction as the predictor.

p* < .05, **p* < .001. ^amarginally significant at *p* = .078.

Figure 12

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting

Categorization of Violence Risk Among Males Convicted of Violent Offences in Study 2

Note. $N = 30$ males convicted of violent offences. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting categorization of violence risk from the VESD, VE-IAT, and VESD by VE-IAT interaction. Violence Risk Appraisal Guide – risk category (VRAG Cat.) was entered as the outcome to assess categorization of risk of violent recidivism. VE-IAT = Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. VESD = Violent Evaluation Semantic Differential scales, used to assess explicit evaluative attitudes toward violence.

A summary of the results of the regression equation predicting risk of violent recidivism, assessed by scores on the VRAG-R, from explicit evaluative attitudes toward violence, assessed by scores on the VESD, and implicit evaluative attitudes toward violence, assessed by scores on the VE-IAT, as well as their multiplicative interaction, is

displayed in Table 47 Explicit evaluative attitudes toward violence, as a main effect, did not add significant incremental variance in risk of violent recidivism ($b = 2.48$, $SE = 2.74$, $\beta = .17$, $t[27] = 0.91$, $p = .37$, 95% CI = [-3.13, 8.10], $sr^2 = .03$). Similarly, implicit evaluative attitudes toward violence, as a main effect, did not add significant incremental variance in risk of violent recidivism ($b = 3.43$, $SE = 4.39$, $\beta = .15$, $t[27] = 0.78$, $p = .44$, 95% CI = [-5.58, 12.44], $sr^2 = .02$). A marginally significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., VESD $\times$ VE-IAT), $b = 8.69$, $SE = 4.90$, $\beta = .36$, $t(26) = 1.77$, $p = .09$, 95% CI = [-1.38, 18.76], $sr^2 = .10$, and explained an additional 10% of the variance, $F_{\text{change}}(26) = 3.15$, $p = .09$. Results from follow-up simple slopes analyses are illustrated in Figure 13. Specifically, explicit evaluative attitudes toward violence were not significantly associated with risk of violent recidivism at low levels (i.e., or more negative [-1 SD]), $b = -2.59$, $SE = 3.89$, $t(26) = -0.67$, $p = .51$, or moderate levels (i.e., or more neutral [0]), $b = 2.86$, $SE = 2.64$, $t(26) = 1.08$, $p = .29$, of implicit evaluative attitudes toward violence. Explicit evaluative attitudes toward violence were marginally significantly associated with risk of violent recidivism at high levels (i.e., or more positive [+1 SD]), $b = 8.32$, $SE = 4.21$, $t(26) = 1.97$, $p = .06$, of implicit evaluative attitudes toward violence. Although not significant, there was a decrease in risk of violent recidivism (i.e., a negative simple slope) at low (or more negative) implicit evaluative attitudes toward violence, such that a negative relationship was observed between explicit evaluative attitudes toward violence and risk of violent recidivism. Similarly, there was an increase in risk of violent recidivism (i.e., a positive simple slope) at mean (or more neutral) implicit evaluative attitudes toward violence, such that a positive relationship

was observed between explicit evaluative attitudes toward violence and risk of violent recidivism, but this relationship was not significant, and the simple slope was relatively equal in size to that at low levels of the moderator. Last, the increase in risk of violent recidivism when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was significant and most pronounced (i.e., largest simple slope) at high (or more positive) implicit evaluative attitudes toward violence, such that a significant and positive relationship was observed between explicit evaluative attitudes toward violence and risk of violent recidivism at high levels of the moderator (see Figure 13).

Table 47

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Risk of Violent Recidivism Among Males Convicted of Violence in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	21.80***		2.71	[16.24, 27.36]		21.73***		2.61	[16.37, 27.09]	
VESD	2.48	.17	2.74	[-3.13, 8.10]	.03	2.86	.20	2.64	[-2.57, 8.29]	.04
VE-IAT	3.43	.15	4.39	[-5.58, 12.44]	.02	7.30	.31	4.76	[-2.47, 17.07]	.08
VESD × VE-IAT						8.69 ^a	.36	4.90	[-1.38, 18.76]	.10
<i>F</i>	0.73					1.57				
<i>R</i> ²	.05					.15				
ΔR^2						.10 ^a				

Note. *N* = 30. I examined whether implicit evaluative attitudes toward violence (i.e., VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and risk of violent recidivism (i.e., VRAG-R) by examining the significance of the VESD by VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict risk of violent recidivism. In Model 2, I entered the VESD by VE-IAT interaction as the predictor.

p* < .05, **p* < .001. ^amarginally significant at *p* = .088.

Figure 13

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Risk of Violent Recidivism Among Males Convicted of Violent Offences in Study 2

Note. $N = 30$ males convicted of violent offences. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting risk of violent recidivism from the VESD, VE-IAT, and VESD by VE-IAT interaction. Violence Risk Appraisal Guide – Revised (VRAG-R) was entered as the outcome to assess risk of violent recidivism. VE-IAT = Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. VESD = Violent Evaluation Semantic Differential scales, used to assess explicit evaluative attitudes toward violence.

A summary of the results of the regression equation predicting categorization of violence risk, assessed by scores on the VRAG-R Cat., from explicit evaluative attitudes toward violence, assessed by scores on the VESD, and implicit evaluative attitudes toward violence, assessed by scores on the VE-IAT, as well as their multiplicative interaction, is displayed in Table 48. Explicit evaluative attitudes toward violence, as a

main effect, did not add significant incremental variance in categorization of violence risk ($b = 0.42$, $SE = 0.36$, $\beta = .22$, $t[27] = 1.18$, $p = .25$, 95% CI = $[-0.31, 1.16]$, $sr^2 = .05$). Similarly, implicit evaluative attitudes toward violence, as a main effect, did not add significant incremental variance in categorization of violence risk ($b = 0.41$, $SE = 0.57$, $\beta = .13$, $t[27] = 0.71$, $p = .48$, 95% CI = $[-0.77, 1.59]$, $sr^2 = .02$). A marginally significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., VESD $\times$ VE-IAT), $b = 1.14$, $SE = 0.64$, $\beta = .36$, $t(26) = 1.78$, $p = .09$, 95% CI = $[-0.18, 2.45]$, $sr^2 = .10$, and explained an additional 10% of the variance, $F_{\text{change}}(26) = 3.17$, $p = .09$. Results from follow-up simple slopes analyses are illustrated in Figure 14. Specifically, explicit evaluative attitudes toward violence were not significantly associated with categorization of violence risk at low levels (i.e., or more negative $[-1 \text{ SD}]$), $b = -0.24$, $SE = 0.51$, $t(26) = -0.48$, $p = .64$, or moderate levels (i.e., or more neutral $[0]$), $b = 0.47$, $SE = 0.35$, $t(26) = 1.37$, $p = .18$, of implicit evaluative attitudes toward violence. Explicit evaluative attitudes toward violence were significantly associated with categorization of violence risk at high levels (i.e., or more positive $[+1 \text{ SD}]$), $b = 1.19$, $SE = 0.55$, $t(26) = 2.16$, $p = .04$, of implicit evaluative attitudes toward violence. Although not significant, there was a decrease in categorization of violence risk (i.e., a negative simple slope) at low (or more negative) implicit evaluative attitudes toward violence, such that a negative relationship was observed between explicit evaluative attitudes toward violence and categorization of violence risk. Similarly, there was an increase in categorization of violence risk (i.e., a positive simple slope) at mean (or more neutral) implicit evaluative attitudes toward violence, such that a positive relationship was observed between explicit evaluative

attitudes toward violence and categorization of violence risk, but this relationship was not significant, and the simple slope was relatively equal in size to that at low levels of the moderator. Last, the increase in categorization of violence risk when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was significant and most pronounced (i.e., largest simple slope) at high (or more positive) implicit evaluative attitudes toward violence, such that a significant and positive relationship was observed between explicit evaluative attitudes toward violence and categorization of violence risk at high levels of the moderator (see Figure 14).

Table 48

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Categorization of Violence Risk Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	7.67***		.35	[6.94, 8.39]		7.66***		.34	[6.96, 8.36]	
VESD	0.42	.22	.36	[-0.31, 1.16]	.05	0.47	.25	.35	[-0.24, 1.18]	.06
VE-IAT	0.41	.13	.57	[-0.77, 1.59]	.02	0.92	.30	.62	[-0.36, 2.19]	.07
VESD $\times$ VE-IAT						1.14 ^a	.36	.64	[-0.18, 2.45]	.10
<i>F</i>	0.97					1.75				
<i>R</i> ²	.07					.17				
ΔR^2						.10 ^a				

Note. *N* = 30. I examined whether implicit evaluative attitudes toward violence (i.e., VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and categorization of violence risk (i.e., VRAG-R Cat.) by examining the significance of the VESD by VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict categorization of violent risk. In Model 2, I entered the VESD by VE-IAT interaction as the predictor.

p* < .05, **p* < .001. ^amarginally significant at *p* = .087.

Figure 14

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting

Categorization of Violence Risk Among Males Convicted of Violent Offences in Study 2

Note. $N = 30$ males convicted of violent offences. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting categorization of violence risk from the VESD, VE-IAT, and VESD by VE-IAT interaction. Violence Risk Appraisal Guide – Revised – risk category (VRAG-R Cat.) was entered as the outcome to assess categorization of risk of violent recidivism. VE-IAT = Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. VESD = Violent Evaluation Semantic Differential scales, used to assess explicit evaluative attitudes toward violence.

When analyzing the moderated regressions involving the P-VE-IAT as the moderator, implicit evaluative attitudes toward violence significantly moderated some of the relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and violent behaviour. A summary of the results of the regression equation

predicting risk of violent recidivism, assessed by scores on the VRAG-R, from beliefs regarding violence, assessed by scores on the MCAA-R-V, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction, is displayed in Table 49. Beliefs regarding violence, as a main effect, significantly predicted risk of violent recidivism such that more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were associated with greater risk of violent recidivism ($b = 1.08$, $SE = 0.49$, $\beta = .40$, $t[25] = 2.20$, $p = .04$, 95% CI = [0.07, 2.09], $sr^2 = .16$). Implicit evaluative attitudes toward violence (i.e., P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of risk of violent recidivism over and above beliefs regarding violence ($b = -1.72$, $SE = 5.05$, $\beta = -.06$, $t[25] = -0.34$, $p = .74$, 95% CI = [-12.12, 8.68], $sr^2 = .00$). A marginally significant interaction was observed between beliefs regarding violence and implicit evaluative attitudes toward violence (i.e., MCAA-R-V $\times$ P-VE-IAT), $b = 1.89$, $SE = 1.03$, $\beta = .32$, $t(24) = 1.84$, $p = .08$, 95% CI = [-0.23, 4.01], $sr^2 = .10$, and explained an additional 10% of the variance, $F_{\text{change}}(24) = 3.37$, $p = .08$. Results from the follow-up simple slopes analyses are illustrated in Figure 15. Results show that beliefs regarding violence were not significantly associated with risk of violent recidivism at low levels (i.e., or more negative [-1 SD]), $b = 0.03$, $SE = 0.74$, $t(24) = 0.03$, $p = .97$, of implicit evaluative attitudes toward violence. However, more violence-supportive beliefs were significantly associated with greater risk of violent recidivism at moderate levels (i.e., or more neutral [0]), $b = 1.04$, $SE = 0.47$, $t(24) = 2.22$, $p = .04$, and high levels (i.e., or more positive [+1 SD]), $b = 2.06$, $SE = 0.71$, $t(24) = 2.90$, $p = .01$, of implicit evaluative attitudes toward violence. The increase in risk of violent recidivism when going from low (or more

negative) beliefs regarding violence to high (or more positive) beliefs regarding violence was most pronounced at high (or more positive) implicit evaluative attitudes toward violence and least pronounced, as well as non-significant, at low (or more negative) implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (see Figure 15).

Table 49

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Beliefs Regarding Violence and Risk of Violent Recidivism Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	20.54***		2.67	[15.04, 26.03]		20.32***		2.55	[15.05, 25.59]	
MCAA-R-V	1.08*	.40	0.49	[0.07, 2.09]	.16	1.04*	.39	0.47	[0.07, 2.01]	.15
P-VE-IAT	-1.72	-.06	5.05	[-12.12, 8.68]	.00	-2.17	-.08	4.83	[-12.14, 7.80]	.01
MCAA-R-V × P-VE-IAT						1.89 ^a	.32	1.03	[-0.23, 4.01]	.10
<i>F</i>	2.44					2.91 ^b				
<i>R</i> ²	.16					.27				
ΔR^2						.10 ^a				

Note. *N* = 28. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between beliefs regarding violence (i.e., MCAA-R-V) and risk of violent recidivism (i.e., VRAG-R) by examining the significance of the MCAA-R-V by P-VE-IAT interaction. In Model 1, I entered beliefs regarding violence (centered) and implicit evaluative attitudes toward violence (centered) to predict risk of violent recidivism. In Model 2, I entered the MCAA-R-V by P-VE-IAT interaction as the predictor.

p* < .05, **p* < .001. ^amarginally significant at *p* = .079. ^bmarginally significant at *p* = .055.

Figure 15

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Risk of Violent Recidivism Among Males Convicted of Violent Offences in Study 2

Note. $N = 28$ males convicted of violent offences. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting risk of violent recidivism from the MCAA-R-V, P-VE-IAT, and MCAA-R-V by P-VE-IAT interaction. Violence Risk Appraisal Guide – Revised (VRAG-R) was entered as the outcome to assess risk of violent recidivism. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. MCAA-R-V = Measures of Criminal Attitudes and Associates – Revised – Violence scale Violent, used to assess beliefs regarding violence.

A summary of the results of the regression equation predicting categorization of violence risk, assessed by scores on the VRAG-R Cat., from beliefs regarding violence, assessed by scores on the MCAA-R-V, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction, is

displayed in Table 50. Beliefs regarding violence, as a main effect, significantly predicted categorization of violence risk such that more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were associated with greater categorization of violence risk ($b = 0.15$, $SE = 0.06$, $\beta = .42$, $t[25] = 2.34$, $p = .03$, 95% CI = [0.02, 0.28], $sr^2 = .18$).

Implicit evaluative attitudes toward violence (i.e., P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of categorization of violence risk over and above beliefs regarding violence ($b = -0.19$, $SE = 0.66$, $\beta = -.05$, $t[25] = -0.28$, $p = .78$, 95% CI = [-1.54, 1.17], $sr^2 = .00$). A marginally significant interaction was observed between beliefs regarding violence and implicit evaluative attitudes toward violence (i.e., MCAA-R-V $\times$ P-VE-IAT), $b = 0.24$, $SE = 0.13$, $\beta = .31$, $t(24) = 1.79$, $p = .09$, 95% CI = [-0.04, 0.52], $sr^2 = .10$, and explained an additional 10% of the variance, $F_{\text{change}}(24) = 3.22$, $p = .09$. Results from the follow-up simple slopes analyses are illustrated in Figure 16. Results show that beliefs regarding violence were not significantly associated with categorization of violence risk at low levels (i.e., or more negative [-1 SD]), $b = 0.02$, $SE = 0.10$, $t(24) = 0.16$, $p = .87$, of implicit evaluative attitudes toward violence. However, more violence-supportive beliefs were significantly associated with greater categorization of violence risk at moderate levels (i.e., or more neutral [0]), $b = 0.15$, $SE = 0.06$, $t(24) = 2.30$, $p = .03$, and high levels (i.e., or more positive [+1 SD]), $b = 0.27$, $SE = 0.09$, $t(24) = 2.92$, $p = .01$, of implicit evaluative attitudes toward violence. The increase in categorization of violence risk when going from low (or more negative) beliefs regarding violence to high (or more positive) beliefs regarding violence was most pronounced at high (or more positive) implicit evaluative attitudes toward violence and least pronounced, as well as non-significant, at low (or

more negative) implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (see Figure 16).

Table 50

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Beliefs Regarding Violence and Categorization of Violence Risk Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	7.50***		0.35	[6.79, 8.22]		7.47***		0.33	[6.79, 8.16]	
MCAA-R-V	0.15*	.42	0.06	[0.02, 0.28]	.18	0.15*	.41	0.06	[0.02, 0.27]	.17
P-VE-IAT	-0.19	-.05	0.66	[-1.54, 1.17]	.00	-0.24	-.07	0.63	[-1.54, 1.06]	.00
MCAA-R-V × P-VE-IAT						0.24 ^a	.31	0.13	[-0.04, 0.52]	.10
<i>F</i>	2.75 ^b					3.07*				
<i>R</i> ²	.18					.28				
ΔR^2						.10 ^a				

Note. *N* = 28. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between beliefs regarding violence (i.e., MCAA-R-V) and categorization of violence risk (i.e., VRAG-R Cat.) by examining the significance of the MCAA-R-V by P-VE-IAT interaction. In Model 1, I entered beliefs regarding violence (centered) and implicit evaluative attitudes toward violence (centered) to predict categorization of violence risk. In Model 2, I entered the MCAA-R-V by P-VE-IAT interaction as the predictor.

p* < .05, **p* < .001. ^amarginally significant at *p* = .085. ^bmarginally significant at *p* = .083.

Figure 16

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting

Categorization of Violence Risk Among Males Convicted of Violent Offences in Study 2

Note. $N = 28$ males convicted of violent offences. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting categorization of violence risk from the MCAA-R-V, P-VE-IAT, and MCAA-R-V by P-VE-IAT interaction. Violence Risk Appraisal Guide – Revised – risk category (VRAG-R Cat.) was entered as the outcome to assess categorization of risk of violent recidivism. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. MCAA-R-V = Measures of Criminal Attitudes and Associates – Revised – Violence scale Violent, used to assess beliefs regarding violence.

A summary of the results of the regression equation predicting risk of violent recidivism, assessed by scores on the VRAG-R, from explicit evaluative attitudes toward violence, assessed by scores on the VESD, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction,

is displayed in Table 51. Explicit evaluative attitudes toward violence, as a main effect, did not add significant incremental variance in the prediction of risk of violent recidivism ($b = 2.57$, $SE = 2.91$, $\beta = .17$, $t[25] = 0.88$, $p = .39$, 95% CI = [-3.42, 8.55], $sr^2 = .03$).

Implicit evaluative attitudes toward violence (i.e., P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of risk of violent recidivism ($b = -1.08$, $SE = 5.43$, $\beta = -.04$, $t[25] = -0.20$, $p = .84$, 95% CI = [-12.26, 10.10], $sr^2 = .00$). A marginally significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., VESD $\times$ P-VE-IAT), $b = 10.13$, $SE = 5.50$, $\beta = .35$, $t(24) = 1.84$, $p = .08$, 95% CI = [-1.22, 21.49], $sr^2 = .12$, and explained an additional 12% of the variance, $F_{\text{change}}(24) = 3.39$, $p = .08$. Results from the follow-up simple slopes analyses are illustrated in Figure 17. Results show that explicit evaluative attitudes toward violence were not significantly associated with risk of violent recidivism at low levels (i.e., or more negative [-1 SD]), $b = -2.20$, $SE = 3.79$, $t(24) = -0.58$, $p = .57$, or moderate levels (i.e., or more neutral [0]), $b = 3.27$, $SE = 2.80$, $t(24) = 1.17$, $p = .26$, of implicit evaluative attitudes toward violence. However, more positive explicit evaluative attitudes toward violence were marginally significantly associated with greater risk of violent recidivism at high levels (i.e., or more positive [+1 SD]), $b = 8.73$, $SE = 4.35$, $t(24) = 2.01$, $p = .06$, of implicit evaluative attitudes toward violence. Although not significant, there was a decrease in risk of violent recidivism (i.e., a negative simple slope) at low (or more negative) implicit evaluative attitudes toward violence, such that a negative relationship was observed between explicit evaluative attitudes toward violence and risk of violent recidivism. Similarly, there was an increase in risk of violent recidivism (i.e., a positive simple slope) at mean (or more neutral)

implicit evaluative attitudes toward violence, such that a positive relationship was observed between explicit evaluative attitudes toward violence and risk of violent recidivism, but this relationship was not significant, with the size of the simple slope in between those observed at high and low levels of the moderator. Last, the increase in risk of violent recidivism when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was significant and most pronounced (i.e., largest simple slope) at high (or more positive) implicit evaluative attitudes toward violence, such that a significant and positive relationship was observed between explicit evaluative attitudes toward violence and risk of violent recidivism at high levels of the moderator (see Figure 17).

Table 51

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Risk of Violent Recidivism Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	20.54***		2.87	[14.63, 26.45]		20.75***		2.74	[15.09, 26.42]	
VESD	2.57	.17	2.91	[-3.42, 8.55]	.03	3.27	.22	2.80	[-2.52, 9.05]	.05
P-VE-IAT	-1.08	-.04	5.43	[-12.26, 10.10]	.00	-0.89	-.03	5.19	[-11.60, 9.82]	.00
VESD × P-VE-IAT						10.13 ^a	.35	5.50	[-1.22, 21.49]	.12
<i>F</i>	0.42					1.44				
<i>R</i> ²	.03					.15				
ΔR^2						.12 ^a				

Note. *N* = 28. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and risk of violent recidivism (i.e., VRAG-R) by examining the significance of the VESD by P-VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict risk of violent recidivism. In Model 2, I entered the VESD by P-VE-IAT interaction as the predictor.

****p* < .001. ^amarginally significant at *p* = .078.

Figure 17

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Risk of Violent Recidivism Among Males Convicted of Violent Offences in Study 2

Note. $N = 28$ males convicted of violent offences. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting risk of violent recidivism from the VESD, P-VE-IAT, and VESD by P-VE-IAT interaction. Violence Risk Appraisal Guide – Revised (VRAG-R) was entered as the outcome to assess risk of violent recidivism. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. VESD = Violent Evaluation Semantic Differential scales, used to assess explicit evaluative attitudes toward violence.

A summary of the results of the regression equation predicting categorization of violence risk, assessed by scores on the VRAG-R Cat., from explicit evaluative attitudes toward violence, assessed by scores on the VESD, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative

interaction, is displayed in Table 52. Explicit evaluative attitudes toward violence, as a main effect, did not add significant incremental variance in the prediction of categorization of violence risk ($b = 0.40$, $SE = 0.38$, $\beta = .21$, $t[25] = 1.05$, $p = .31$, 95% CI = [-0.39, 1.18], $sr^2 = .04$). Implicit evaluative attitudes toward violence (i.e., P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of categorization of violence risk ($b = -0.09$, $SE = 0.71$, $\beta = -.03$, $t[25] = -0.13$, $p = .90$, 95% CI = [-1.56, 1.37], $sr^2 = .00$). A marginally significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., VESD $\times$ P-VE-IAT), $b = 1.37$, $SE = 0.72$, $\beta = .36$, $t(24) = 1.92$, $p = .07$, 95% CI = [-0.10, 2.85], $sr^2 = .13$, and explained an additional 13% of the variance, $F_{\text{change}}(24) = 3.69$, $p = .07$. Results from the follow-up simple slopes analyses are illustrated in Figure 18. Results show that explicit evaluative attitudes toward violence were not significantly associated with categorization of violence risk at low levels (i.e., or more negative [-1 SD]), $b = -0.25$, $SE = 0.49$, $t(24) = -0.51$, $p = .62$, or moderate levels (i.e., or more neutral [0]), $b = 0.49$, $SE = 0.36$, $t(24) = 1.35$, $p = .19$, of implicit evaluative attitudes toward violence. However, more positive explicit evaluative attitudes toward violence were significantly associated with greater categorization of violence risk at high levels (i.e., or more positive [+1 SD]), $b = 1.23$, $SE = 0.57$, $t(24) = 2.18$, $p = .04$, of implicit evaluative attitudes toward violence. Although not significant, there was a decrease in categorization of violence risk (i.e., a negative simple slope) at low (or more negative) implicit evaluative attitudes toward violence, such that a negative relationship was observed between explicit evaluative attitudes toward violence and categorization of violence risk. Similarly, there was an increase in categorization of violence risk (i.e., a

positive simple slope) at mean (or more neutral) implicit evaluative attitudes toward violence, such that a positive relationship was observed between explicit evaluative attitudes toward violence and categorization of violence risk, but this relationship was not significant, with the size of the simple slope in between those observed at high and low levels of the moderator. Last, the increase in categorization of violence risk when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was significant and most pronounced (i.e., largest simple slope) at high (or more positive) implicit evaluative attitudes toward violence, such that a significant and positive relationship was observed between explicit evaluative attitudes toward violence and categorization of violence risk at high levels of the moderator (see Figure 18).

Table 52

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Categorization of Violence Risk Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	7.50***		0.38	[6.73, 8.27]		7.53***		0.36	[6.79, 8.27]	
VESD	0.40	.21	0.38	[-0.39, 1.18]	.04	0.49	.25	0.36	[-0.26, 1.24]	.06
P-VE-IAT	-0.09	-.03	0.71	[-1.56, 1.37]	.00	-0.07	-.02	0.68	[-1.46, 1.33]	.00
VESD × P-VE-IAT						1.37 ^a	.36	0.72	[-0.10, 2.85]	.13
<i>F</i>	0.56					1.64				
<i>R</i> ²	.04					.17				
ΔR^2						.13 ^a				

Note. *N* = 28. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and categorization of violence risk (i.e., VRAG-R Cat.) by examining the significance of the VESD by P-VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to categorization of violence risk. In Model 2, I entered the VESD by P-VE-IAT interaction as the predictor.

****p* < .001. ^amarginally significant at *p* = .067.

Figure 18

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting

Categorization of Violence Risk Among Males Convicted of Violent Offences in Study 2

Note. $N = 28$ males convicted of violent offences. Table displays the results of the

follow-up simple slopes analyses for the moderated regression predicting categorization

of violence risk from the VESD, P-VE-IAT, and VESD by P-VE-IAT interaction.

Violence Risk Appraisal Guide – Revised – risk category (VRAG-R Cat.) was entered as

the outcome to assess categorization of risk of violent recidivism. P-VE-IAT =

Personalized Violent Evaluation Implicit Association Test, used to assess implicit

evaluative attitudes toward violence. VESD = Violent Evaluation Semantic Differential

scales, used to assess explicit evaluative attitudes toward violence.

A summary of the results of the regression equation predicting risk of general criminal recidivism, assessed by scores on the LSI-OR, from beliefs regarding violence, assessed by scores on the MCAA-R-V, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction, is

displayed in Table 53. Beliefs regarding violence, as a main effect, significantly predicted risk of general criminal recidivism such that more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were associated with greater risk of criminal recidivism ($b = 0.61$, $SE = 0.26$, $\beta = .43$, $t[25] = 2.37$, $p = .03$, 95% CI = [0.08, 1.13], $sr^2 = .18$). Implicit evaluative attitudes toward violence (i.e., P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of risk of general criminal recidivism ($b = -1.11$, $SE = 2.63$, $\beta = -.08$, $t[25] = -0.42$, $p = .68$, 95% CI = [-6.52, 4.31], $sr^2 = .01$). A significant interaction was observed between beliefs regarding violence and implicit evaluative attitudes toward violence (i.e., MCAA-R-V $\times$ P-VE-IAT), $b = 1.20$, $SE = 0.52$, $\beta = .39$, $t(24) = 2.33$, $p = .03$, 95% CI = [0.14, 2.27], $sr^2 = .15$, and explained an additional 15% of the variance, $F_{\text{change}}(24) = 5.44$, $p = .03$. Results from the follow-up simple slopes analyses are illustrated in Figure 19. Results show that beliefs regarding violence were not significantly associated with risk of criminal recidivism at low levels (i.e., or more negative [-1 SD]), $b = -0.07$, $SE = 0.37$, $t(24) = -0.18$, $p = .86$, of implicit evaluative attitudes toward violence. However, more violence-supportive beliefs were significantly associated with greater risk of criminal recidivism at moderate levels (i.e., or more neutral [0]), $b = 0.58$, $SE = 0.24$, $t(24) = 2.46$, $p = .02$, and high levels (i.e., or more positive [+1 SD]), $b = 1.23$, $SE = 0.36$, $t(24) = 3.44$, $p = .002$, of implicit evaluative attitudes toward violence. Although not significant, there was a decrease in risk of criminal recidivism (i.e., a negative simple slope) at low (or more negative) implicit evaluative attitudes toward violence, such that a negative relationship was observed between beliefs regarding violence and risk of criminal recidivism. However, the increase in risk of criminal recidivism when going from low (or more negative) beliefs regarding

violence to high (or more positive) beliefs regarding violence was significant at mean (or more neutral) implicit evaluative attitudes toward violence and significant, as well as most pronounced (i.e., largest simple slope), at high (or more positive) implicit evaluative attitudes toward violence, such that a significant and positive relationship was observed between beliefs regarding violence and risk of criminal recidivism at moderate and high levels of the moderator (see Figure 19).

Table 53

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Beliefs Regarding Violence and Risk of Criminal Recidivism Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	27.46***		1.39	[24.60, 30.33]		27.33***		1.28	[24.68, 29.97]	
MCAA-R-V	0.61*	.43	0.26	[0.08, 1.13]	.18	0.58*	.41	0.24	[0.10, 1.07]	.17
P-VE-IAT	-1.11	-.08	2.63	[-6.52, 4.31]	.01	-1.39	-.10	2.43	[-6.40, 3.62]	.01
MCAA-R-V × P-VE-IAT						1.20*	.39	0.52	[-0.14, 2.27]	.15
<i>F</i>	2.85 ^a					4.05*				
<i>R</i> ²	.19					.34				
ΔR^2						.15*				

Note. *N* = 28. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between beliefs regarding violence (i.e., MCAA-R-V) and risk of criminal recidivism (i.e., LSI-OR) by examining the significance of the MCAA-R-V by P-VE-IAT interaction. In Model 1, I entered beliefs regarding violence (centered) and implicit evaluative attitudes toward violence (centered) to predict risk of criminal recidivism. In Model 2, I entered the MCAA-R-V by P-VE-IAT interaction as the predictor.

p* < .05, **p* < .001. ^amarginally significant at *p* = .077.

Figure 19

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Risk of Criminal Recidivism Among Males Convicted of Violent Offences in Study 2

Note. $N = 28$ males convicted of violent offences. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting risk of criminal recidivism from the MCAA-R-V, P-VE-IAT, and MCAA-R-V by P-VE-IAT interaction. Level of Service Inventory – Ontario Revision (LSI-OR) was entered as the outcome to assess risk of criminal recidivism. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. MCAA-R-V = Measures of Criminal Attitudes and Associates – Revised – Violence scale, used to assess beliefs regarding violence.

A summary of the results of the regression equation predicting categorization of general criminal risk, assessed by scores on the LSI-OR Cat., from beliefs regarding violence, assessed by scores on the MCAA-R-V, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction,

is displayed in Table 54. Beliefs regarding violence, as a main effect, significantly predicted categorization of criminal recidivism such that more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were associated with higher categorization of criminal risk ($b = 0.08$, $SE = 0.03$, $\beta = .51$, $t[25] = 2.97$, $p = .01$, 95% CI = $[0.02, 0.14]$, $sr^2 = .26$). Implicit evaluative attitudes toward violence (i.e., P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of categorization of general criminal risk ($b = 0.07$, $SE = 0.28$, $\beta = .04$, $t[25] = 0.25$, $p = .81$, 95% CI = $[-0.50, 0.63]$, $sr^2 = .00$). A significant interaction was observed between beliefs regarding violence and implicit evaluative attitudes toward violence (i.e., MCAA-R-V $\times$ P-VE-IAT), $b = 0.12$, $SE = 0.06$, $\beta = .34$, $t(24) = 2.10$, $p = .05$, 95% CI = $[0.00, 0.23]$, $sr^2 = .12$, and explained an additional 12% of the variance, $F_{\text{change}}(24) = 4.43$, $p = .05$.

Results from the follow-up simple slopes analyses are illustrated in Figure 20. Results show that beliefs regarding violence were not significantly associated with categorization of criminal risk at low levels (i.e., or more negative $[-1 \text{ SD}]$), $b = 0.02$, $SE = 0.04$, $t(24) = 0.34$, $p = .74$, of implicit evaluative attitudes toward violence. However, more violence-supportive beliefs were significantly associated with higher categorization of criminal risk at moderate levels (i.e., or more neutral $[0]$), $b = 0.08$, $SE = 0.03$, $t(24) = 2.44$, $p = .02$, and high levels (i.e., or more positive $[+1 \text{ SD}]$), $b = 0.14$, $SE = 0.04$, $t(24) = 3.27$, $p = .003$, of implicit evaluative attitudes toward violence. The increase in categorization of criminal risk when going from low (or more negative) beliefs regarding violence to high (or more positive) beliefs regarding violence was significant and most pronounced (i.e., largest simple slope), at high (or more positive) implicit evaluative attitudes toward violence and least pronounced, as well as non-significant, at low (or more negative)

implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (see Figure 20).

Table 54

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Beliefs Regarding Violence and Categorization of Criminal Risk Among Males Convicted of Violent Offences in Study 2

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	4.32***		0.15	[4.02, 4.62]		4.31***		0.14	[4.03, 4.59]	
MCAA-R-V	0.08**	.51	0.03	[0.02, 0.14]	.26	0.08**	.50	0.03	[0.03, 0.13]	.25
P-VE-IAT	0.07	.04	0.28	[-0.50, 0.63]	.00	0.04	.03	0.26	[-0.49, 0.57]	.00
MCAA-R-V × P-VE-IAT						0.12*	.34	0.06	[0.00, 0.23]	.12
<i>F</i>	4.49*					4.88**				
<i>R</i> ²	.26					.38				
ΔR^2						.12*				

Note. *N* = 28. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between beliefs regarding violence (i.e., MCAA-R-V) and categorization of criminal risk (i.e., LSI-OR Cat.) by examining the significance of the MCAA-R-V by P-VE-IAT interaction. In Model 1, I entered beliefs regarding violence (centered) and implicit evaluative attitudes toward violence (centered) to predict categorization of criminal risk. In Model 2, I entered the MCAA-R-V by P-VE-IAT interaction as the predictor.

p* < .05, *p* < .01, ****p* < .001.

Figure 20

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting

Categorization of Criminal Risk Among Males Convicted of Violent Offences in Study 2

Note. $N = 28$ males convicted of violent offences. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting categorization of criminal risk from the MCAA-R-V, P-VE-IAT, and MCAA-R-V by P-VE-IAT interaction. Level of Service Inventory – Ontario Revision – risk category (LSI-OR Cat.) was entered as the outcome to assess categorization of risk of criminal recidivism. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. MCAA-R-V = Measures of Criminal Attitudes and Associates – Revised – Violence scale, used to assess beliefs regarding violence.

As stated in Study 1, it was hypothesized that implicit evaluative attitudes toward violence would moderate the relationships between explicit/self-report violent cognitions and violent behaviour. As stated elsewhere, this hypothesis is in line with theories from the social psychology literature that propose a dual processing framework; a deliberative

processing mode underlying explicit evaluative attitudes and an automatic processing mode underlying implicit evaluative attitudes (e.g., MODE; Fazio, 1990). Implicit evaluative attitudes are activated immediately in the presence of an attitude object and may be changed according to certain factors including their availability and strength. As stated above, when activated implicit evaluative attitudes are strong, this likely limits the motivation to deliberate. In this case, explicit evaluative attitudes toward the object are more likely to be consistent with implicit evaluative attitudes toward the object and motivate the resulting behaviour. When no implicit evaluative attitude towards the object exists, an explicit evaluative attitude is constructed at the time from information available in the environment. In this case, the explicit evaluative attitude towards the object is more likely to be less reliable and thus, weakly related (or unrelated) to the resulting behaviour. Given that implicit evaluative attitudes are said to be activated first and then either acted on or changed according to these factors, implicit evaluative attitudes toward violence were proposed to moderate the relationship between explicit evaluative attitudes toward violence (or beliefs regarding violence to be inclusive) and violent behaviour. Specifically, it was proposed that the strength of one's implicit evaluative attitude towards violence (i.e., whether it is more positive or more negative) will affect the strength of relationship between one's explicit evaluative attitude towards violence and violent behaviour. Further, it was expected that a weaker relationship between explicit evaluative attitudes toward violence and violent behaviour would be observed at more neutral implicit evaluative attitudes toward violence, in comparison to when implicit evaluative attitudes toward violence are high (or more positive) or low (or more negative).

As in Study 1, implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) significantly moderated the relationships between explicit/self-report violent cognitions and violent behaviour (i.e., in this case risk of violent, as well as criminal, recidivism). However, when examining the simple slopes for these moderated regressions, the initial hypothesis was more clearly and consistently supported in the current study than in Study 1. Specifically, for the moderated regressions in which scores on the VE-IAT, assessing implicit evaluative attitudes toward violence, moderated the relationships between explicit evaluative attitudes toward violence (i.e., scores on the VESD) and risk of violent recidivism (i.e., scores on the VRAG, VRAG Cat. VRAG-R, and VRAG-R Cat.), the strongest, significant, and positive relationships between explicit evaluative attitudes toward violence and risk of violent recidivism were observed at high (or more positive) implicit evaluative attitudes toward violence. Although non-significant, negative relationships were observed between explicit evaluative attitudes toward violence and risk of violent recidivism at low (or more negative) implicit evaluative attitudes toward violence. Last, the weakest, and non-significant, relationships between explicit evaluative attitudes toward violence and risk of violent recidivism were observed at moderate (or more neutral) implicit evaluative attitudes toward violence. Therefore, when considering stronger positive or negative implicit evaluative attitudes toward violence, the relationships between explicit evaluative attitudes toward violence and risk of violent recidivism were of a higher magnitude and in a consistent direction. For instance, when implicit evaluative attitudes were more positive (i.e., higher), positive and significant relationships were observed between explicit evaluative attitudes toward violence and risk of violent recidivism and when implicit evaluative attitudes were more

negative (i.e., lower), negative relationships were observed between explicit evaluative attitudes toward violence and risk of violent recidivism (although the latter were not significant). In addition, when considering more neutral implicit evaluative attitudes toward violence, weaker, non-significant positive relationships were observed between explicit evaluative attitudes toward violence and risk of violent recidivism. This pattern of results is consistent with what was hypothesized, given that, generally, the strongest simple slopes quantifying the magnitude of relationships between explicit evaluative attitudes toward violence and risk of violent recidivism were observed when stronger implicit evaluative attitudes toward violence were considered (i.e., at high and low levels of implicit evaluative attitudes toward violence).

A similar, but somewhat less straightforward, pattern of results emerged for the moderated regressions in which scores on the P-VE-IAT, assessing implicit evaluative attitudes toward violence, significantly (or marginally significantly) moderated the relationships between explicit evaluative attitudes toward violence (i.e., scores on the VESD) and risk of violent recidivism (i.e., scores on the VRAG-R and VRAG-R Cat.). For instance, once again, the strongest, significant, and positive relationships between explicit evaluative attitudes toward violence and risk of violent recidivism were observed at high (or more positive) implicit evaluative attitudes toward violence. The weakest, and non-significant, relationships between explicit evaluative attitudes toward violence and risk of violent recidivism were, again, observed at moderate (or more neutral) implicit evaluative attitudes toward violence. Last, non-significant, negative relationships were, again, observed between explicit evaluative attitudes toward violence and risk of violent recidivism at low (or more negative) implicit evaluative attitudes toward violence, with

the magnitude of this relationship falling in between; however, the magnitude of these relationships was often comparable to that at moderate levels of the moderator.

Regardless these results show a consistent pattern to those observed when scores on the VE-IAT acted as the moderator in the relationships between explicit evaluative attitudes toward violence, assessed by scores on the VESD, and risk of violent recidivism, assessed by scores on the VRAG, VRAG Cat, VRAG-R, and VRAG-R Cat.

Implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, at least marginally significantly moderated the relationships between beliefs regarding violence, assessed by scores on the MCAA-R-V, and risk of violent (and criminal) recidivism (i.e., VRAG-R, VRAG-R, LSI-OR, and LSI-OR Cat.); however, a somewhat inconsistent pattern of results emerged when examining the simple slopes. As with the moderated regressions involving scores on the VESD, the strongest, significant, and positive relationships between beliefs regarding violence and risk of violent (and criminal) recidivism were observed at high (or more positive) implicit evaluative attitudes toward violence. However, significant positive—albeit smaller—relationships between beliefs regarding violence and risk of violent (and criminal) recidivism, were also observed at moderate (or more neutral) implicit evaluative attitudes toward violence. The weakest relationships between beliefs regarding violence and risk of violent (and criminal) recidivism, were observed at low (or more negative) implicit evaluative attitudes toward violence; however, with the exception of when scores on the LSI-OR Cat. were entered as the outcome, these relationships were negative in direction, which is consistent with the above regressions. It is important to note that theory concerning these effects, as reviewed above, pertains to the construct of explicit evaluative attitudes toward

violence, specifically, rather than beliefs regarding violence, as were entered here. This may account for the somewhat discrepant results given that beliefs regarding violence may interact differently with implicit evaluative attitudes toward violence than explicit evaluative attitudes toward violence. Somewhat related, Agnew (1994) found that the strongest relationship exists between neutralizations of violence (i.e., a construct that may encompass some beliefs regarding violence, such as justifications for violence) and violent behaviour for those who generally approve of violence (i.e., a construct similar to positive evaluative attitudes toward violence) when this effect is examined cross-sectionally, but found the strongest relationship between these same constructs for those who generally disapprove of violence when this effect was examined longitudinally (i.e., reported violent behaviour one year later was the outcome). Of note, Agnew (1994) did not assess approval of violence that was implicit in nature as the moderator, as was done in the current study. Importantly, further research is needed to replicate these results with similar and larger samples to show evidence for the reliability and stability in the pattern of effects.

In conclusion, it is evident from the pattern of results observed for the moderated regressions involving scores on the VESD, VE-IAT or P-VE-IAT, and violence risk measures (e.g., VRAG, VRAG Cat, VRAG-R, and VRAG-R Cat.), that the initial hypothesis was supported; however, many of the simple slopes quantifying the relationship between explicit evaluative attitudes toward violence (i.e., VESD) and risk of violent recidivism were not significant. This could be due to the small sample size contained in the current study that likely resulted in underpowered analyses. Therefore, future research must replicate these analyses in order to confirm the observed pattern of

results and provide more definitive support for this hypothesis. In the next study, the above analyses from Studies 1 and 2, were replicated among a much larger sample of community men recruited online. Online method of recruitment and collection was utilized in order to collect a large enough adult male sample to achieve adequate power for the statistical analyses and thus, provide more definitive conclusions regarding the relationships between constructs. The underlying factor structure of items within the measures designed to assess implicit evaluative attitudes toward violence, explicit evaluative attitudes toward violence, and beliefs regarding violence was also examined in Study 3 in order to determine the likely constructs being assessed by these measures.

**Study 3: Examining Implicit Evaluative Attitudes Toward Violence and Other
Explicit/Self-report Violent Cognitive Constructs, as well as Their Distinctiveness,
Among Online Samples**

In the current study, an online panel was used in order to obtain a larger sample of adult men from the general community in comparison to Study 1. The large sample allowed for adequate power in finding significance for statistical analyses replicating those conducted in Studies 1 and 2. The goal in replicating the previous analyses with more power was to provide more definitive conclusions regarding the relationships between implicit evaluative attitudes toward violence and other violent cognitive constructs, as well as outcomes of violent behaviour. The survey in the current study was created in and administered through an online survey platform called Qualtrics (<http://www.qualtrics.com>). Many online platforms, such as Qualtrics, have been used to create and administer surveys consisting mostly of self-report methods. In addition, often such online survey platforms are set-up to favour self-report methods, making it difficult to create and administer reaction time measures, such as the IAT, within them. Therefore, traditionally, IAT measures were created in off-line survey programs such as E-prime, that allow for reaction-time features, as was the case in Studies 1 and 2. As such, IAT measures have been mostly administered in-person, making it difficult to obtain large samples and achieve adequate power for subsequent statistical analyses. Until recently, existing alternative approaches to in-person data collection were onerous on the part of the participant as they often required participants to download software in order to complete such reaction time measures online (Carpenter et al., 2019). This also led to high attrition rates, making it difficult to obtain large samples. Although it was technically

possible to create and administer IAT-like measures utilizing online survey platforms, this was often complex and required high level knowledge of back-end platform features, as well as expertise of custom script (e.g., JavaScript; see Carpenter et al., 2019; De Leeuw, 2015). Traditionally, this resulted in the necessity of researchers to outsource the creation of such measures, which was often very timely and costly. In addition, not much was known about the resulting procedure in terms of its internal consistency and reliability in comparison to IAT measures created in and administered using traditional techniques (i.e., created through programs like E-prime and administered using in-person data collection). Fortunately, Carpenter and colleagues (2019) recently developed customizable scripts which allow for creation of IATs using online survey platform elements directly within Qualtrics. These scripts are provided on their website, *IATGEN: IATs in Qualtrics* (<http://iatgen.org>) along with empirical research providing evidence for the validity of this method of IAT creation and administration. Specifically, the customizable scripts created by Carpenter and colleagues (2019) consist of code that is added to survey elements (i.e., HTML to create the visual appearance of the IATs and JavaScript to enable interactivity of the IAT procedure) within the online platform (i.e., Qualtrics). This allows for the processing of reaction time features within Qualtrics (see Carpenter et al., 2019). The generated IAT procedure from this custom code can then be embedded within existing online surveys created in Qualtrics (Carpenter et al., 2019). The authors' customizable code can be pasted into R (R Core Team, 2016) and run through the addition of the *iatgen* R package (i.e., customizable source code is available at github.com/iatgen/iatgen; Carpenter et al., 2019). In addition, IAT elements within the code can be customized, such as stimulus words and IAT categories. Once ran, the R

script automatically generates a .qsf file which is then imported into Qualtrics to automatically generate an IAT survey within the online survey platform. In the current study, all elements of the IAT procedures (i.e., VE-IAT and P-VE-IAT) were in line with suggestions made by Greenwald et al. (2003) and thus, consistent with the features of the IAT procedures administered in Studies 1 and 2 (e.g., when participants make errors an error message is presented and stays there until a correct response is made and recorded; see *Measures* section in Study 1 for details regarding IAT procedures). In order to ensure that participants are completing the procedure using a computer and keyboard, those on mobile devices are branched out of the procedure (i.e., this is a feature embedded within the script, which is automatically generated in the resulting IAT survey in Qualtrics).

As mentioned above, Carpenter et al. (2019) assessed the validity of IATs generated using their custom script across three separate studies. Specifically, they assessed whether these IATs would “(1) detect IAT effects, (2) correlate as expected with explicit measures, (3) demonstrate sound psychometrics (e.g., error rates, internal consistency, etc.), and (4) produce results comparable to traditional IATs” (Carpenter et al., 2019, p. 14-15). Overall, support was found for the validity of IAT procedures generated using the custom script and administered directly through Qualtrics (Carpenter et al., 2019). For instance, all IATs across the three studies demonstrated strong and significant IAT effects, with reported effects sizes consistent to those observed in published empirical research by Greenwald et al. (1998), Lane et al. (2007), and Nosek et al. (2002). Internal consistencies were also found to be consistent with those reported by Hofmann et al. (2005) in their meta-analytic examination of various IAT procedures (i.e., $\alpha = .79$; Hofmann et al., 2005). Carpenter et al. (2019) also reported consistent error rates

to those observed in previous research (i.e., 5-10% in Rudman, 2011) and correlations between IAT measures and corresponding explicit measures were consistent with those reported among meta-analyses aggregating effects across several studies (e.g., average $r = .22$ reported in Hofmann et al., 2005). In their Study 3, Carpenter et al. (2019) reported similar psychometric properties between IATs generated with their custom script, and thus administered through Qualtrics, and those generated using more traditional reaction-time software. Importantly, Carpenter et al. (2019) reported identical IAT D scores between both modes of creation/administration, with no meaningful differences observed. In addition, intercorrelations between the IATs generated through the novel custom script and corresponding IATs generated using off-line reaction-time software were in line with what would be expected between identical measures. One limitation noted by Carpenter et al. (2019) is that a greater number of online participants were excluded due to reaction times faster than 300 milliseconds on more than 10% of the IAT trials in comparison to a sample of students collected in-person. This suggests that online participants may be more inclined to take the IAT procedure less seriously, resulting in more participants being excluded from analyses involving IAT D scores, in comparison to when in-person data collection methods are used. However, benefits such as reduced cost, time, increased sample sizes, ease of creation/administration, and simplified data management, may outweigh this slight loss in data when administering IATs online. Following from this, the current study utilized the custom script provided by Carpenter et al. (2019) to create the VE-IAT and P-VE-IAT, that was created in and administered through E-prime in Studies 1 and 2. The VE-IAT and P-VE-IAT were subsequently administered along with

the other explicit/self-report measures of violent cognitions and violent behaviour to an online panel of participants that were recruited through Qualtrics.

Study 3A: First Replication Using an Online Panel

In this Study, I sought to replicate the results of the previous studies, in particular Study 1, using a larger sample of community men recruited online. The same hypotheses were proposed as in Studies 1 and 2, for the relationships between violent cognition measures and the indicators of violent behaviour; (a) that more positive implicit evaluative attitudes toward violence would be associated with more positive explicit evaluative attitudes toward violence and more violence-supportive beliefs, (b) that more positive explicit evaluative attitudes toward violence would be associated with more violence-supportive beliefs, (c) that more positive implicit evaluative attitudes toward violence, more positive explicit evaluative attitudes toward violence, and more violence-supportive beliefs would be associated with more violent behaviour (e.g., more prior violence, greater propensity for violence, and greater likelihood of violence), (d) that implicit evaluative attitudes toward violence would account for additional variance in violent behaviour over and above explicit evaluative attitudes toward violence/beliefs regarding violence, and (e) that implicit evaluative attitudes toward violence would moderate the relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and indicators of violent behaviour.

Methods

Participants

Participants consisted of adult males from the community that were recruited online through Qualtrics (<http://www.qualtrics.com>). As in Study 1, participants did not have to self-report a history of violence to be included in the study. In addition, all participants had to be male, heterosexual, 18 years of age or older, and understand written

English. These criteria were clearly communicated during the recruitment process by Qualtrics. As in Studies 1 and 2, female participants, as well as those who identify as not being most sexually attracted to women, were not recruited (see Study 1 for justification).

Initially, 672 adult males consented to participate in the online survey. Out of these participants, a total of 638 did not withdraw and fully completed the survey through Qualtrics. The sample of 638 participants were all male, 18 years of age or older, most sexually attracted to women, and self-reported that they understood written English. In addition, all 638 participants correctly answered four or more of the quality control questions that were randomly interspersed among the items in the survey (see Appendix AG). As in Studies 1 and 2, five quality control questions were included in the survey to make sure participants were attending to the questions being asked. As before, they required participants to select a particular response and thus, just simply follow the instructions provided in the question (e.g., Please select ‘Very likely’.). Given that the procedure was quite lengthy (e.g., took over 30 minutes to complete) it seemed reasonable to miss/incorrectly answer a quality control question. An additional eleven participants were excluded because they had one or more missing score(s) on the main measures of interest. Because less than 5% missing data was observed, missing values analysis was not conducted and any missing scores were excluded listwise (i.e., across all *main* measures of interest). This left a final sample of 627 males from the community who were recruited online. Displayed in Table 55 are the demographic details regarding this sample.

Table 55

Demographics of Males from the Community Recruited Online in Study 3A

Demographic Variables	Frequency	%	<i>N</i>
What is your biological sex?			627
Male	627	100.0	
Female	0	0.0	
Other	0	0.0	
In what country are you currently living?			627
Canada	313	49.9	
United States	314	50.1	
Other	0	0	
What is your ethnicity?			627
White	396	63.2	
Black	45	7.2	
Indigenous	4	0.6	
Asian	90	14.4	
East Indian	11	1.8	
Hispanic/Latino	16	2.6	
Arab	7	1.1	
Other	13	2.1	
Selected more than one ethnicity	45	7.2	
Who are you most sexually attracted to?			627
Women	627	100.0	
Men	0	0.0	
Both women and men equally	0	0.0	
Other	0	0.0	
How old are you (years)?			627
17 or younger	0	0.0	
18-21	114	18.2	
22-23	46	7.3	
24-29	162	25.8	
30-34	91	14.5	
35-39	55	8.8	
40-49	99	15.8	
50-59	23	3.7	
60 or older	37	5.9	
What is the highest grade you have completed?			608
No schooling completed (includes pre-school)	3	0.5	
Kindergarten to grade 6	5	0.8	
Grade 7	3	0.5	
Grade 8	0	0.0	

Grade 9	7	1.1	
Grade 10	7	1.1	
Grade 11	16	2.6	
Grade 12	349	55.7	
Grade 13	218	34.8	
What is the highest level of education you have completed?			627
Did not complete high school	18	2.9	
High school (or equivalent)	167	26.6	
Community college	91	14.5	
Undergraduate degree	199	31.7	
Master's degree	119	19.0	
Doctoral degree	24	3.8	
Other	9	1.4	
What is your current employment status?			627
Full-time employed	345	55.0	
Part-time employed	83	13.2	
Not employed (includes homemaker, unable to work, etc.)	73	11.6	
Military	2	0.3	
Full-time student	76	12.1	
Part-time student	10	1.6	
Retired	25	4.0	
Other	13	2.1	
What is your current relationship status?			627
Single	324	51.7	
In a romantic relationship	39	6.2	
Living with a romantic partner	44	7.0	
Married	200	31.9	
Separated/divorced/widowed	20	3.2	
Do you speak English fluently?			627
No	6	1.0	
Yes	621	99.0	
Do you understand written English?			627
No	0	0.0	
Yes	627	100.0	
Do you understand spoken English?			627
No	2	0.3	
Yes	625	99.7	

Note. $N = 627$ males from the community, recruited online. Note that 19 participants were missing information on the highest grade they have completed (i.e., they chose not to answer this item).

Measures

Demographic Questions. Participants were first asked a series of demographic questions. Specifically, they were asked to report on their biological sex, country of origin, ethnicity, sexual orientation, age, high school completion, education, current employment status, current relationship status, and proficiency in English (see Appendix N).

Violent Cognition Measures. Measures were the same as those in Study 2 (i.e., still excluding the VE-RRT) described above, with the inclusion of the Criminal Attitudes to Violence Scale (CAVS; Polaschek et al., 2004) outlined below. The following internal consistencies were found for the measures of violent cognition in the current study: $\alpha = .86$ for the VE-IAT, $\alpha = .84$ for the P-VE-IAT, $\alpha = .86$ for the MCAA-R-V, $\alpha = .95$ for the CAVS, $\alpha = .94$ for the VESD, and $\alpha = .95$ for the EVQ.

Criminal Attitudes to Violence Scale. The CAVS (Polaschek et al., 2004) consists of 20 self-report items designed to measure beliefs regarding violence. Items are rated on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*), which are then summed to compute a total score that can range from 20 to 100 (see Appendix AH). CAVS scores have shown excellent internal consistency ($\alpha = .93$ to $.95$; Nunes et al., 2015; Polaschek et al., 2004) and are associated with violent criminal history (Polaschek et al., 2004). The CAVS was designed to have a single-factor structure and was uncorrelated with a social desirability bias measure. Total scores are summed, with higher scores corresponding to more violence-supportive beliefs. As mentioned above, the internal consistency for the CAVS was $.95$ in the current study.

Violent Behaviour Measures. Measures were the same as those in Study 1 described above. Therefore, the VBS, designed to assess prior violent behaviour, was included once again in this study. A subsequent measure of self-reported physical aggression – The Physical Aggression subscale of the Aggression Questionnaire (Buss & Perry, 1992) – was also added as an additional indicator of violent behaviour (see below). The following internal consistencies were found for the measures of violent behaviour in the current study: $\alpha = .83$ for the VBS, $\alpha = .85$ for the AQ-PA, $\alpha = .95$ for the EVQ-Likelihood, $\alpha = .88$ for the VBVQ.

Physical Aggression Subscale of the Aggression Questionnaire. The AQ (Buss & Perry, 1992) is a self-report scale designed to measure types of aggressive behaviour. The AQ consists of 29 items rated on a 5-point Likert scale from 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*). The items are categorized into four subscales: physical aggression, verbal aggression, hostility, and anger. For this study, I used the physical aggression subscale (AQ-PA), which includes nine items that ask about physically harming others (see Appendix AI). After reverse scoring responses to item six of the physical aggression subscale, total scores were computed by summing responses to all nine AQ-PA items, with higher scores indicating more self-reported physical aggression. This subscale has shown adequate internal consistency ($\alpha = .85$) and stability over time (Buss & Perry, 1992). As mentioned above, the internal consistency for the AQ-PA was .85 in the current study.

Procedure

This study was funded through a University Medical Research Fund (UMRF) through the Royal Ottawa Mental Health Care Group (Ottawa, ON). Therefore, ethics

approval was received by two different Institutional Review Boards (IRBs); Carleton University's IRB, and the Royal Ottawa's IRB.

The sample for Study 3 consisted of an online panel of participants that was recruited through Qualtrics (<http://www.qualtrics.com>). A Qualtrics panel is a pool of participants that Qualtrics has recruited (through a partner company) to participate in research studies designed by their clients. Once individuals agree to become panel members, they can be invited to take surveys. The inclusion criteria for this study, as in the previous studies, was that participants must be male, heterosexual, 18 years of age or older, and understand written English. Panelists who completed the current survey also had to reside in Canada or the USA. Panel members that met these criteria were invited by Qualtrics to take part in the current study by completing the online survey. If participants accepted this invitation, they were given a link to complete the survey. Once they began the online survey, they were first presented with the consent form (see Appendix AJ) that outlined the inclusion criteria, benefits to participating, study objectives and procedures, as well as potential risks to participating. The consent form also informed participants that they may withdraw or refuse to answer any questions at any point while completing the online survey. Only those who consented to participate were allowed to move forward. If consent was given, they first completed a series of demographic questions (see Appendix N), followed by the violent cognition measures and violent behavioural outcome measures (i.e., VE-IAT, P-VE-IAT, EVQ, SD, VBS, VBVQ, and EVQ-Likelihood). The order of these measures was counterbalanced and the order of items within each measure was randomized, to protect against any potential order effects. At the end of the survey participants were presented with 12 mood

stabilizing images (see Appendix W) and debriefed (see Appendix AK). The survey was therefore, administered online through Qualtrics and participation was confidential, as well as anonymous. Qualtrics protects participants' privacy through extensive security and rigorous privacy standards.

In regard to compensation, Qualtrics and its partners provide token awards to their panelists for completing research surveys. Awards can be in a variety of forms including gift cards, loyalty points, entry into draws for prizes, and cash awards given to participants for completing the survey. Qualtrics specifies the amount and conditions of compensation in the participants' agreement with Qualtrics (i.e., the company managing this survey panel) and this was also outlined in the consent form that was presented to participants before starting the survey online. The approach to compensating panelists, varies by partner but there is a general approach. Generally, panelists will see a list of surveys available to them for which they meet the study inclusion criteria. Compensation associated with each survey is also listed. When panelists finish participating, they are compensated with the posted cash-equivalent incentive (each survey has a cash equivalent value in the range of \$1.00 to \$1.75); however, participants are not fully compensated under the following circumstances: If they speed through the survey and take too little time to complete the survey, if participants answer all the questions with the same response (aka straightlining), and if participants are screened out as ineligible after initially completing the screening questions (e.g., male, 18 years of age or older, heterosexual, understand written English, live in Canada or USA). All panelists are aware of these exceptions before signing up to participate in a research panel.

Results and Discussion

Descriptive statistics for each measure used in the current study are reported in Table 56. As in Studies 1 and 2, participants included in the analyses were all male, most sexually attracted to females, 18 years of age or older, understood written English, selected the correct response option for at least four of the five quality control questions included in the survey (see description in the *Participant* section above), and had complete responses (i.e., no missing items) on all measures of interest (i.e., violent cognition and violent behaviour measures). As outlined above, this left a sample of 627 community males recruited through an online panel (see Table 55 in *Participant* section above, for their demographic details).

For the measures designed to assess implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) participants who took less than 300 milliseconds on 10% or more of the trials were also excluded from analyses involving these measures. As in Studies 1 and 2, I excluded these participants separately for each implicit measure in an effort to retain power for the subsequent analyses. An additional 93 participants (out of 627) were excluded due to having response times faster than 300 milliseconds on 10% or more of VE-IAT trials. An additional 84 participants (out of 627) were excluded due to having response times faster than 300 milliseconds on 10% or more of P-VE-IAT trials. As in Studies 1 and 2, the final indices for the effects associated with the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) were created in accordance with the improved scoring algorithm suggested by Greenwald et al. (2003), which is also outlined in the *Measures* section of Study 1. All variables (i.e., calculated total scores on all measures of interest) were screened for out-of-range values

and missing scores. A variable was considered to have a missing score when one or more items contained missing values for a particular participant. Less than 5% of total scores were missing across all variables of interest. Therefore, as in Studies 1 and 2, missing scores were excluded listwise. All variables were also examined for univariate outliers. In the event that univariate outliers were found, values were reduced accordingly.

Table 56

Descriptive Statistics of Measures of Interest for Males from the Community Recruited Online in Study 3A

Measure	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
VE-IAT	534	-1.60	0.21	-0.95	0.40
P-VE-IAT	543	-1.63	0.25	-0.95	0.37
MCAA-R-V	627	10.00	40.00	22.94	6.55
CAVS	627	20.00	100.00	48.78	17.95
VESD	627	1.00	5.33	1.98	1.04
EVQ	627	1.00	4.00	2.01	0.72
VBS	627	0.00	4.00	0.70	1.00
AQ-PA	627	9.00	42.00	23.57	7.49
EVQ-Likelihood	627	1.00	4.00	2.03	0.72
VBVQ	627	0.00	1.00	0.23	0.26

Note. VE-IAT = Violent Evaluation Implicit Association Test. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test. MCAA-R-V = Measures of Criminal Attitudes and Associations – Revised – Violence scale. CAVS = Criminal Attitudes to Violence Scale. VESD = Violent Evaluation Semantic Differential scales. EVQ = Evaluation of Violence Questionnaire. VBS = Violent Behaviour Scale. AQ-PA = Aggression Questionnaire – Physical Aggression subscale. EVQ-Likelihood = Evaluation of Violence Questionnaire – Likelihood of Violence version. VBVQ = Violent Behaviour Vignette Questionnaire.

Table 57
Bivariate Correlations Between Violent Cognitions and Violent Behaviour for Community Males Recruited Online in Study 3A

Variable	1	2	3	4	5	6	7	8	9	10
1. VE-IAT	-	.50*** <i>n</i> = 506	.09* <i>n</i> = 534	.12** <i>n</i> = 533	-.05 <i>n</i> = 531	.08 ^a <i>n</i> = 533	.06 <i>n</i> = 532	.10* <i>n</i> = 534	.14** <i>n</i> = 534	.03 <i>n</i> = 534
2. P-VE-IAT	.44*** <i>n</i> = 506	-	.12** <i>n</i> = 542	.15*** <i>n</i> = 538	-.02 <i>n</i> = 541	.12** <i>n</i> = 541	.07 <i>n</i> = 540	.10* <i>n</i> = 543	.20*** <i>n</i> = 543	.01 <i>n</i> = 542
3. MCAA-R-V	.09* <i>n</i> = 534	.11* <i>n</i> = 542	-	.78*** <i>n</i> = 625	.38*** <i>n</i> = 627	.76*** <i>n</i> = 623	.41*** <i>n</i> = 623	.69*** <i>n</i> = 625	.75*** <i>n</i> = 627	.44*** <i>n</i> = 627
4. CAVS	.10* <i>n</i> = 533	.12** <i>n</i> = 538	.76*** <i>n</i> = 625	-	.43*** <i>n</i> = 624	.79*** <i>n</i> = 618	.46*** <i>n</i> = 623	.76*** <i>n</i> = 619	.77*** <i>n</i> = 624	.44*** <i>n</i> = 627
5. VESD	-.05 <i>n</i> = 531	-.04 <i>n</i> = 541	.38*** <i>n</i> = 627	.45*** <i>n</i> = 624	-	.38*** <i>n</i> = 627	.38*** <i>n</i> = 618	.45*** <i>n</i> = 626	.35*** <i>n</i> = 627	.32*** <i>n</i> = 627
6. EVQ	.06 <i>n</i> = 533	.09* <i>n</i> = 541	.74*** <i>n</i> = 623	.77*** <i>n</i> = 618	.42*** <i>n</i> = 627	-	.42*** <i>n</i> = 618	.66*** <i>n</i> = 624	.82*** <i>n</i> = 619	.42*** <i>n</i> = 627
7. VBS	.11* <i>n</i> = 532	.11** <i>n</i> = 540	.42*** <i>n</i> = 623	.47*** <i>n</i> = 623	.35*** <i>n</i> = 618	.43*** <i>n</i> = 618	-	.52*** <i>n</i> = 624	.45*** <i>n</i> = 624	.39*** <i>n</i> = 620
8. AQ-PA	.09 ^b <i>n</i> = 534	.10* <i>n</i> = 543	.67*** <i>n</i> = 625	.74*** <i>n</i> = 619	.46*** <i>n</i> = 626	.66*** <i>n</i> = 624	.58*** <i>n</i> = 624	-	.73*** <i>n</i> = 623	.46*** <i>n</i> = 626
9. EVQlike	.11* <i>n</i> = 534	.18*** <i>n</i> = 543	.73*** <i>n</i> = 627	.74*** <i>n</i> = 624	.36*** <i>n</i> = 627	.81*** <i>n</i> = 619	.48*** <i>n</i> = 624	.72*** <i>n</i> = 623	-	.44*** <i>n</i> = 627
10. VBVQ	.04 <i>n</i> = 534	.02 <i>n</i> = 542	.45*** <i>n</i> = 627	.44*** <i>n</i> = 627	.32*** <i>n</i> = 627	.44*** <i>n</i> = 627	.40*** <i>n</i> = 620	.47*** <i>n</i> = 626	.46*** <i>n</i> = 627	-

Note. Sample sizes (n) vary because multivariate outliers were excluded per measure pair to retain power. Pearson's r (parametric) correlations above the diagonal and Spearman's rho (non-parametric) correlations below the diagonal. VE-IAT = implicit evaluative attitudes toward violence measured by traditional Implicit Association Test. P-VE-IAT = implicit evaluative attitudes towards violence measured by Personalized IAT. VE-RRT = implicit evaluative attitudes toward violence measured by Relational Responding Task. MCAA-R-V = self-report beliefs regarding violence measured by Measures of Criminal Attitudes and Associates – Revised Violence scale. VESD = explicit evaluative attitudes toward violence measured by Semantic Differential scales. EVQ = explicit evaluative attitudes toward violence measured by Evaluation of Violence Questionnaire. VBS = self-reported prior violence measured by Violent Behaviour Scale. AQ-PA = physical aggression measured by the Aggression Questionnaire – Physical Aggression subscale. EVQlike = likelihood of violence measured by Evaluation of Violence Questionnaire modified to assess likelihood of being violent. VBVQ = propensity for violence measured by Violent Behaviour Vignette Questionnaire.

^amarginally significant $p = .069$, ^b $p = .051$.

$**p < .01$, $*p < .05$, $***p < .001$.

Relationship Between Violent Cognition Measures

The bivariate relationships between implicit measures of evaluative attitudes toward violence and other explicit/self-report measures of violent cognition (i.e., explicit evaluative attitudes toward violence and self-report beliefs regarding violence), as well as the relationships between measures of violent cognition and self-report measures of violent behaviour, were assessed using Pearson's r correlations. Accordingly, I assessed whether these data met the assumptions underlying this analysis, such as normality, linearity, and homoscedasticity. As above, assumptions were generally met, with the exception of normality; most variables were significantly, positively skewed. Due to this violation, Spearman's rho correlations were also conducted, as in Studies 1 and 2. As above, multivariate outliers were also examined pairwise. In the event that multivariate outliers were found, they were excluded pairwise (rather than listwise) in order to retain power for the statistical analyses. The bivariate relationships between variables for community men recruited from an online panel are displayed in Table 57.

Implicit Evaluative Attitudes Toward Violence and Other Explicit Violent Cognitions. As seen in Table 57, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V ($r = .09$) and CAVS ($r = .12$). More positive Implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were marginally significantly associated with more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ ($r = .08$), but no relationship was found between scores on the VE-IAT and explicit evaluative attitudes toward violence, as assessed by scores on the VESD ($r = -.05$).

Implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT were significantly and weakly associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V ($r = .12$) and CAVS ($r = .15$). More positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly associated with more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ ($r = .12$); however, as with the VE-IAT, no relationship was found between scores on the P-VE-IAT and explicit evaluative attitudes toward violence, as assessed by scores on the VESD ($r = -.02$). As is evident here, the magnitude of effects was considerably larger for the P-VE-IAT (i.e., the personalized version of the VE-IAT), in comparison to the VE-IAT (i.e., the traditional version of the VE-IAT), which suggests that the P-VE-IAT may have more reliably assessed the construct of implicit evaluative attitudes toward violence. A significant, positive, and large relationship was observed between scores on the P-VE-IAT and VE-IAT (i.e., $r = .50$), suggesting that these measures are assessing related constructs; however, this effect is not large enough to suggest that they are assessing the same construct. The underlying factor structure of these measures needs to be assessed in order to determine whether these implicit measures are assessing the same, or at least a similar, construct.

Past research has found contradictory results regarding the relationship between scores on implicit and explicit measures of evaluative attitudes toward violence, as well as beliefs regarding violence, with most studies reporting small or insignificant effects (e.g., Bluemke & Zumbach, 2012; Eckhardt & Crane, 2014; Eckhardt et al., 2012; Hermann et al., 2018; Polaschek et al., 2010; Robertson & Murachver, 2007; Snowden et

al., 2004; Sprunger & Eckhardt, 2017; Zwetz et al., 2015). These results are somewhat consistent with those of the current study given that some weak, as well as some nonsignificant, relationships were reported here. In particular, explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were not related to either implicit measure of evaluative attitudes toward violence. Weak significant relationships were found between scores on the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) and scores on the EVQ. These relationships were somewhat consistent with those observed between scores on the implicit measures of evaluative attitudes toward violence and measures of beliefs regarding violence (i.e., MCAA-R-V and CAVS).

The results reported in the current study are somewhat consistent with those observed in Study 1 among male students and community men. Specifically, significant and weak to moderate associations were observed between scores on the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) and beliefs regarding violence, as assessed by scores on the MCAA-R-V, among male undergraduate students, such that more positive implicit evaluative attitudes toward violence were significantly associated with more violence-supportive beliefs (i.e., $r = .26$ for the VE-IAT and $r = .21$ for the P-VE-IAT). Among community men, these relationships were non-significant, but weak and positive relationships were still observed between these measures such that more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT and P-VE-IAT, were associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V (i.e., $r = .15$ for the VE-IAT and $r = .16$ for the P-VE-IAT). Results of the community male

sample in Study 1 are directly comparable to those reported in the current study among community men recruited online, with weak and significant, positive associations observed between scores on the VE-IAT and both measures of beliefs regarding violence (i.e., $r = .12$ for the CAVS and $r = .09$ for the MCAA-R-V), as well as between scores on the P-VE-IAT and these same measures (i.e., $r = .15$ for the CAVS and $r = .12$ for the MCAA-R-V). These results demonstrate the stability and reliability of these relationships and suggest that online administration of the IAT measures of implicit evaluative attitudes toward violence did not affect the procedure and/or ability to capture these effects. However, the magnitude of the relationships between implicit evaluative attitudes toward violence and beliefs regarding violence (i.e., note that this construct was assessed by scores on the MCAA-R-V because the CAVS was not administered in Study 2) were considerably smaller and non-significant in Study 2 among men convicted of violent offences (i.e., $r = .09$ for the VE-IAT and $.04$ for the P-VE-IAT).

Somewhat inconsistent results were found for the relationship between implicit and explicit evaluative attitudes toward violence between those reported in the current study and those reported in Studies 1 and 2. For instance, only scores on the VE-IAT were significantly, weakly and positively related to scores on the VESD among male students (i.e., $r = .19$) and no sizeable or significant effect was observed between these measures among men convicted of violent offences in Study 2 (i.e., $r = .01$). In addition, no sizable or significant effects were observed between implicit evaluative attitudes toward violence and explicit evaluative attitudes toward violence when assessed by scores on the EVQ in Studies 1 and 2. In addition, a marginally significant relationship was observed between implicit and explicit evaluative attitudes toward violence among

community men in Study 1, such that more positive implicit evaluative attitudes toward violence, as assessed by the P-VE-IAT, were marginally related to more explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $r = .20$). Consistent with the male student sample in Study 1, as well as the sample of men convicted of violent offences in Study 2, no sizeable or significant effects were observed between scores on the implicit measures of evaluative attitudes toward violence and explicit evaluative attitudes toward violence when assessed by scores on the EVQ among community men in Study 1. Inconsistently, no sizeable or significant relationships between the implicit measures of evaluative attitudes toward violence and explicit evaluative attitudes toward violence when assessed by scores on the VESD were observed in the current study among community men recruited online and a significant and weak association was observed between scores on the P-VE-IAT and scores on the EVQ, such that more positive implicit evaluative attitudes toward violence were associated with more positive explicit evaluative attitudes toward violence among the current sample (i.e., $r = .12$). Generally, the effects observed in the current study between implicit evaluative attitudes toward violence and explicit evaluative attitudes toward violence are comparable in size to the effects observed between implicit evaluative attitudes toward violence and beliefs regarding violence. This is consistent with recent research suggesting that the MCAA-R-V and EVQ may be assessing similar underlying constructs (see Nunes, Pedneault, Hermann, & Fraser, 2021), given that items contained within these measures, generally, did not separate into distinct factors when examined using exploratory factor analyses. Therefore, the similar results observed between these constructs, in the current study, further strengthens this assertion. However, subsequent

research examining the underlying factor structure of these measures is needed to confirm that they are assessing the same, or at least a similar, cognitive construct. Consistent with effects observed in the in-lab community male sample in Study 1, larger effects were generally observed between scores on the P-VE-IAT and explicit/self-report measures of violent cognition in the current study. This further demonstrates the stability of these results across similar samples of adult men.

Explicit Evaluative Attitudes Toward Violence and Beliefs Regarding

Violence. As seen in Table 57, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were significantly and moderately associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V ($r = .38$) and CAVS ($r = .43$). More positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were also significantly and strongly associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V ($r = .76$) and CAVS ($r = .79$). In addition, scores on both explicit measures of evaluative attitudes toward violence (i.e., the EVQ and VESD) were significantly, positively, and moderately associated with one another ($r = .38$). Last, scores on both measures of beliefs regarding violence (i.e., the MCAA-R-V and CAVS) were significantly, positively, and strongly associated with one another ($r = .78$). These results are consistent with those observed in Study 1 among male undergraduate students (i.e., $r = .48$ for the VESD and $r = .67$ for the EVQ) and in-lab community men (i.e., $r = .43$ for the VESD and $r = .73$ for the EVQ), as well as those reported among men convicted of violent offences in Study 2 (i.e., $r = .55$ for the VESD and $r = .75$ for the EVQ). From these results, it appears that explicit evaluative attitudes toward violence and self-report

beliefs regarding violence are related constructs. However, the observed effects for relationships between beliefs regarding violence (i.e., scores on the MCAA-R-V and CAVS) and explicit evaluative attitudes toward violence, as assessed by scores on the VESD only, are not large enough to suggest that they are the same construct; therefore, the constructs assessed by these measures appear to be assessing related, but distinct, constructs. These results are in line with prior research, outlined above, assessing the relationships between these measures and their factor structure, in which scores on the VESD formed a distinct, but correlated, factor to measures of beliefs regarding violence (see Nunes et al., 2015).

As evidenced from the results of the current study, higher scores on the EVQ, corresponding to more positive explicit evaluative attitudes toward violence, were more strongly associated with higher scores on the MCAA-R-V and CAVS, corresponding to more violence-supportive beliefs, than scores on the VESD—the other explicit measure of evaluative attitudes toward violence. These results were consistent with those reported in Studies 1 and 2 (i.e., the following are the Pearson's r correlations for the relationships between scores on the VESD and EVQ: $r = .59$ among male students, $r = .47$ among male in-lab community members, and $r = .62$ among males convicted of violent offences). Interestingly, comparable effect sizes were observed for the relationship between scores on the MCAA-R-V and CAVS and the relationship between scores on the EVQ and both measures of beliefs regarding violence (i.e., MCAA-R-V and CAVS) in the current study. These results are consistent with the relationships observed in Study 1 among male students and community men and mirror that of previous research assessing the relationship between scores on these measures and their factor structure. As outlined

above, Nunes, Pedneault, Hermann, and Fraser (2021) found that items from the EVQ, generally, formed the same factor as items from the MCAA-R-V, but formed a distinct factor from the VESD items. In addition, Nunes, Pedneault, Hermann, and Fraser (2021) found comparable effect sizes, to those found in the current study, for the relationships between scores on the EVQ and scores on the MCAA-R-V, CAVS, as well as VESD. The results of the current study, combined with those observed in Studies 1 and 2, as well as the results reported by Nunes and colleagues (2021), suggest that the EVQ may be assessing a construct that is similar to that assessed by the MCAA-R-V (e.g., beliefs regarding violence) rather than explicit evaluative attitudes, as presumably assessed by the VESD. However, replication of the results observed in Nunes, Pedneault, Hermann, and Fraser (2021), as well as further examination of the underlying factor structure of the MCAA-R-V, CAVS, VESD, and EVQ is needed to confirm this.

Relationship Between Violent Cognition Measures and Indicators of Violent Behaviour

Implicit Evaluative Attitudes Toward Violence and Violent Behaviour. As shown in Table 57, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly associated with more self-reported physical aggression, as assessed by scores on the AQ-PA ($r = .10$). More positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly associated with greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .14$). Scores on the VE-IAT were not related to prior violent behaviour ($r = .06$) nor propensity for violence at the time of assessment ($r = .03$) when considering the Pearson's r correlations. However, more

positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly associated with more prior violent behaviour, as assessed by scores on the VBS when considering the Spearman's rho correlations ($\rho = .11$). Consistent with the results involving the VE-IAT, more positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly associated with more self-reported physical aggression, as assessed by scores on the AQ-PA ($r = .10$). More positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly to moderately associated with greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .20$). As with the VE-IAT, scores on the P-VE-IAT were not related to prior violent behaviour ($r = .07$) nor propensity for violence at the time of assessment ($r = .01$) when considering the Pearson's r correlations. However, more positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly associated with more prior violent behaviour, as assessed by scores on the VBS when considering the Spearman's rho correlations ($\rho = .11$).

Consistent with the results observed in Study 1, implicit evaluative attitudes toward violence seem to be most highly related to likelihood of violent behaviour. For instance, scores on the P-VE-IAT were significantly, weakly, and positively related to scores on the EVQ-Likelihood, such that more positive implicit evaluative attitudes toward violence were associated with greater likelihood of violence (i.e., $r = .17$) among male students in Study 1. Scores on the VE-IAT were also significantly, weakly to moderately, and positively related to scores on the EVQ-Likelihood among men from the community in Study 1, such that more positive implicit evaluative attitudes toward

violence were associated with greater likelihood of violent behaviour (i.e., $r = .28$). These results were comparable to those observed in the current study, among an online sample of men from the community, given that scores on both the VE-IAT and P-VE-IAT were significantly, weakly, and positively associated with scores on the EVQ-Likelihood. Specifically, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT and P-VE-IAT, were associated with greater likelihood of violence, as assessed by scores on the EVQ-Likelihood (i.e., $r = .14$ for the VE-IAT and $r = .20$ for the P-VE-IAT), among the current sample. The consistency of results illustrates the reliability and stability of these effects across samples taken from demographically different populations (i.e., community vs. students), as well as across different modes of administration (i.e., in-lab vs. online). However, the results of the current study and those reported in Study 1, were inconsistent with those observed in Study 2 when assessing the relationship between implicit evaluative attitudes toward violence and likelihood of violence among men convicted of violent offences. Specifically, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were not significantly associated with likelihood of violence (i.e., $r = -.06$). In addition, a somewhat sizeable, but non-significant, negative effect size was observed for the relationship between implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, and likelihood of violence (i.e., $r = -.24$) in Study 2.

The results of the current study and those reported in Study 1 are generally consistent with the sparse research conducted thus far, as outlined above, with past research reporting significant, positive relationships between these constructs. For instance, more positive implicit evaluative attitudes toward violence were associated with

greater likelihood of intimate partner violence (i.e., Sprunger & Eckhardt, 2017) and greater intimate partner violent recidivism (i.e., Eckhardt & Crane, 2014). The current research project extends prior studies by assessing the link between implicit evaluative attitudes toward violence and indicators of general violence; however, the consistency of the results reported in the current study and those of prior studies assessing different violent outcomes shows support for there being a true association between these constructs and suggests that measuring implicit evaluative attitudes toward violence, along with other relevant factors, may be important for understanding the likelihood of future violence. In order to establish a predictive link between these constructs future research must assess whether scores on IAT measures designed to assess implicit evaluative attitudes toward violence are related to reported incidences of violent reoffending.

Explicit Evaluative Attitudes Toward Violence and Violent Behaviour. As seen in Table 57, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were significantly and moderately associated with more prior violent behaviour, as assessed by scores on the VBS ($r = .38$), more physical aggression, as assessed by scores on the AQ-PA ($r = .45$), greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .35$), and greater propensity for violence at the time of assessment, as assessed by scores on the VBVQ ($r = .32$). More positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were significantly and moderately to strongly associated with more prior violent behaviour, as assessed by scores on the VBS ($r = .42$), more physical aggression, as assessed by scores on the AQ-PA ($r = .66$), greater likelihood of violence, as assessed by scores on the

EVQ-Likelihood ($r = .82$), and greater propensity for violence at the time of assessment, as assessed by scores on the VBVQ ($r = .42$).

The results reported in the current study are generally consistent with those reported in Study 1, among male students and men from the community, and Study 2, among men convicted of violent offences. For instance, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD and EVQ, were significantly and moderately to strongly associated with prior violent behaviour, as assessed by scores on the VBS (i.e., $r = .40$ for the VESD and $r = .44$ for the EVQ), greater likelihood of violence, as assessed by scores on the EVQ-Likelihood (i.e., $r = .49$ for the VESD and $r = .83$ for the EVQ), and greater propensity for violence at the time of assessment, as assessed by scores on the VBVQ (i.e., $r = .47$ for the VESD and $r = .70$ for the EVQ), among male undergraduate students. In addition, more positive explicit evaluative attitudes toward violence (i.e., assessed by scores on the VESD and EVQ) were significantly and moderately to strongly associated with more prior violent behaviour (i.e., $r = .40$ for the VESD and $r = .45$ for the EVQ), greater likelihood of violence (i.e., $r = .53$ for the VESD and $r = .78$ for the EVQ), and greater propensity for violence at the time of assessment (i.e., $r = .41$ for the VESD and $r = .66$ for the EVQ) among men from the community. Last, more positive explicit evaluative attitudes toward violence (i.e., assessed by scores on the VESD and EVQ) were significantly and strongly associated with greater likelihood of violence (i.e., $r = .52$ for the VESD and $r = .66$ for the EVQ) among males convicted of violent offences in Study 2; however, only scores on the EVQ were significantly and strongly associated with greater propensity for violence at the time of assessment among males convicted of violent offences (i.e., $r = .27$ for the

VESD and $r = .57$). Results of Studies 1 and 2 are generally comparable to those observed among the current sample. In the current study, moderate to strong positive relationships were observed between scores on the explicit measures of evaluative attitudes toward violence and prior violent behaviour (i.e., $r = .38$ for the VESD and $r = .42$ for the EVQ), physical aggression (i.e., $r = .45$ for the VESD and $r = .66$ for the EVQ), likelihood of violence (i.e., $r = .35$ for the VESD and $r = .82$ for the EVQ), and propensity for violence at the time of assessment (i.e., $r = .32$ for the VESD and $r = .42$ for the EVQ), among community men recruited online. These effects were, generally, moderate in size and were comparable to those reported in Study 1, with both studies reporting large, positive, associations solely between explicit evaluative attitudes toward violence, assessed by scores on the EVQ, and likelihood of violent behaviour, assessed by scores on the EVQ-Likelihood. As outlined above, this is not surprising given that the EVQ-Likelihood was created out of the items from the EVQ and thus, it is not clear whether these measures are assessing a similar construct.

Results of the current study, as well as Studies 1 and 2, are consistent with prior research using the same, or similar, explicit measures of evaluative attitudes toward violence. As outlined above, more positive explicit evaluative attitudes toward violence, as assessed by scores on similar semantic differential scales, were related to more prior violent behaviour (i.e., Nunes et al., 2015) and greater likelihood of violence (i.e., Maimone & Nunes, 2020) among male undergraduate students. More positive explicit evaluative attitudes toward violence, as assessed by similar semantic differential scales, were also related to more prior violent behaviour and greater propensity for violence among community men recruited online (i.e., Nunes, Pedneault, Hermann, & Fraser,

2021). Last, explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were also related to more prior violent behaviour and propensity for violence among this same sample (i.e., Nunes, Pedneault, Hermann, & Fraser, 2021).

Beliefs Regarding Violence and Violent Behaviour. As seen in Table 57, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and moderately to strongly associated with more prior violent behaviour, as assessed by scores on the VBS ($r = .41$), more physical aggression, as assessed by scores on the AQ-PA ($r = .69$), greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .75$), and greater propensity for violence at the time of assessment, as assessed by scores on the VBVQ ($r = .44$). More violence-supportive beliefs, as assessed by scores on the CAVS, were significantly and moderately to strongly associated with more prior violent behaviour, as assessed by scores on the VBS ($r = .46$), more physical aggression, as assessed by scores on the AQ-PA ($r = .76$), greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .77$), and greater propensity for violence at the time of assessment, as assessed by scores on the VBVQ ($r = .44$).

As above, the results reported in the current study concerning the relationship between beliefs regarding violence and violent behaviour are generally consistent with those reported in Study 1, among male students and in-lab community men, and Study 2, among men convicted of violent offences. In male undergraduate students, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and strongly associated with more prior violent behaviour, as assessed by scores on the VBS (i.e., $r = .55$), greater likelihood of violence, as assessed by scores on the EVQ-Likelihood (i.e., $r = .66$), and greater propensity for violence at the time of assessment, as

assessed by scores on the VBVQ (i.e., $r = .62$). Among in-lab community men, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and strongly associated with more prior violence behaviour (i.e., $r = .51$), greater likelihood of violence (i.e., $r = .72$), and greater propensity for violence at the time of assessment (i.e., $r = .61$). In males convicted of violent offences, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and strongly associated with greater likelihood of violence (i.e., $r = .57$) and greater propensity for violence at the time of assessment (i.e., $r = .70$). Results reported in the current study were generally comparable with somewhat lower effect sizes reported between beliefs regarding violence and prior violent behaviour, as well as propensity for violence, and slightly higher effects reported between beliefs regarding violence and likelihood of violence. In the current study, the largest effects between these constructs were generally observed for the relationships between beliefs regarding violence and likelihood of violence. This is consistent with the results involving the cognitive constructs of implicit and explicit evaluative attitudes toward violence, with the largest effects, generally, being reported for the relationships between these constructs and likelihood of violence. In combination, these results suggest that the aforementioned violent cognitions may be most important for understanding likelihood of violence. In addition, collectively considering scores on measures designed to assess these violent cognitions (i.e., implicit and explicit evaluative attitudes toward violence and beliefs regarding violence) may be important for comprehensively understanding likelihood of violence and may aid in understanding whether one would be violent in the future.

However, future research must longitudinally assess the link between these constructs to determine whether a predictive relationship exists.

The results of the current study regarding violent beliefs are consistent with prior research assessing the link between this construct and violent behaviour. As outlined elsewhere, more violence-supportive beliefs, as assessed by scores on the MCAA Violence scale (MCAA-V and MCAA-R-V), were associated with greater self-reported risk of violent recidivism (i.e., Maimone & Nunes, 2020), and more incidences of violent recidivism (i.e., Mills et al., 2004), among men incarcerated in provincial and federal correctional institutions. More violence-supportive beliefs, as assessed by scores on the MCAA-V and MCAA-R-V, were also associated with more prior violent behaviour among male undergraduate students (i.e., Nunes et al., 2015; Maimone & Nunes, 2020). In addition, more violence-supportive beliefs, as assessed by scores on the CAVS, were associated with more current or previous convictions for violent offences and greater risk to reoffend among convicted men (i.e., Polaschek et al., 2004). Last, more violence-supportive beliefs, as assessed by scores on the CAVS, were associated with more physical aggression (i.e., Hutchings et al., 2010). The consistency of results observed in the current study involving beliefs regarding violence and violent behaviour, with those reported in Studies 1 and 2, as well as those reported among prior studies involving this construct, provide evidence for the reliability and stability of these relationships.

Variance Accounted for by Implicit Evaluative Attitudes Toward Violence

As in Studies 1 and 2, hierarchical multiple linear regressions were conducted to assess whether implicit evaluative attitudes toward violence accounted for significantly more variance in violent behaviour over and above explicit evaluative attitudes toward

violence or self-report beliefs regarding violence. These regressions were conducted such that explicit measures of evaluative attitudes toward violence (i.e., VESD or EVQ) or self-report measures of beliefs regarding violence (i.e., MCAA-R-V or CAVS) were added in the first step of the regression and implicit measures of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) were entered in the second step of the regression, with self-report measures of violent behaviour entered as the outcome variable (i.e., measures of prior violent behaviour [VBS], physical aggression [AQ-PA], likelihood of violence [EVQ-Likelihood], or propensity for violence at the time of assessment [VBVQ]). As in the above studies, these data were examined to determine whether they conformed to the assumptions underlying hierarchical multiple linear regressions. Specifically, these data were screened for the following assumptions: multicollinearity between predictors in the model, homoscedasticity of variances, linearity of associations between the set of predictors and the outcomes, and normality, homoscedasticity, and independence of residuals. For the most part, these assumptions were upheld. Multivariate outliers were also examined for each regression model separately. As in Studies 1 and 2, multivariate outliers were excluded per analysis in an attempt to maximize power. Altogether, thirty-two hierarchical regressions were conducted to examine whether implicit evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) accounted for significantly more variance in measures of violent behaviour over and above explicit/self-report measures of violent cognition. As in the studies above, only regression models that approached significance are reported here.

As seen in Table 58, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, accounted for significantly more variance (i.e., $R^2 = .541$) in

likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above beliefs regarding violence, as assessed by scores on the MCAA-R-V (i.e., $R^2 = .535$, $\Delta R^2 = .01$, $p < .05$). As seen in Table 59, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, accounted for significantly more variance (i.e., $R^2 = .13$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .12$, $\Delta R^2 = .02$, $p < .01$). In addition, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, accounted for significantly more variance (i.e., $R^2 = .21$) in self-reported physical aggression, as assessed by scores on the AQ-PA, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .20$, $\Delta R^2 = .01$, $p < .05$; see Table 60). Implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, also accounted for significantly more variance (i.e., $R^2 = .10$) in prior violent behaviour, as assessed by scores on the VBS, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .09$, $\Delta R^2 = .01$, $p < .05$; see Table 61). Last, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, also accounted for significantly more variance (i.e., $R^2 = .55$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above explicit evaluative attitudes toward violence, as assessed by scores on the EVQ (i.e., $R^2 = .54$, $\Delta R^2 = .01$, $p < .05$; see Table 62).

As seen in Table 63, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, accounted for significantly more variance (i.e., $R^2 = .54$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above beliefs regarding violence, as assessed by scores on the MCAA-R-V (i.e., $R^2 = .53$, $\Delta R^2 =$

.01, $p < .001$). Implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, also accounted for significantly more variance (i.e., $R^2 = .53$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above beliefs regarding violence, as assessed by scores on the CAVS (i.e., $R^2 = .52$, $\Delta R^2 = .01$, $p < .01$; see Table 64). In addition, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, accounted for significantly more variance (i.e., $R^2 = .14$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .11$, $\Delta R^2 = .03$, $p < .001$; see Table 65). Implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, also accounted for significantly more variance (i.e., $R^2 = .20$) in physical aggression, as assessed by scores on the AQ-PA, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .19$, $\Delta R^2 = .01$, $p < .05$; see Table 66). Implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, once again accounted for significantly more variance (i.e., $R^2 = .11$) in prior violent behaviour, as assessed by scores on the VBS, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .10$, $\Delta R^2 = .01$, $p < .05$; see Table 67). Last, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, accounted for significantly more variance (i.e., $R^2 = .55$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above explicit evaluative attitudes toward violence, as assessed by scores on the EVQ (i.e., $R^2 = .54$, $\Delta R^2 = .01$, $p < .001$; see Table 68).

Table 58

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Self-Reported Beliefs Regarding Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.18*		.08	[0.03, 0.33]		0.33**		.10	[0.14, 0.52]	
MCAA-R-V	0.08***	.73	.00	[0.07, 0.09]	.54	0.08***	.72	.00	[0.07, 0.09]	.52
VE-IAT						0.15*	.08	.06	[0.04, 0.26]	.01
<i>F</i>	612.39***					312.82***				
<i>R</i> ²	.535					.541				
ΔR^2						.01*				

Note. *N* = 534. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and self-reported beliefs regarding violence (i.e., MCAA-R Violence scale) in likelihood of violence (i.e., EVQ Likelihood). In Model 1, I entered self-reported beliefs regarding violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, *p* < .01, ****p* < .001.

Table 59

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.53***		.06	[1.41, 1.65]		1.78***		.09	[1.59, 1.96]	
VESD	0.23***	.34	.03	[0.18, 0.29]	.12	0.24***	.35	.03	[0.18, 0.29]	.12
VE-IAT						0.26**	.14	.08	[0.11, 0.42]	.02
<i>F</i>	69.64***					41.20***				
<i>R</i> ²	.12					.13				
ΔR^2						.02**				

Note. *N* = 531. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in likelihood of violence (i.e., EVQ Likelihood). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .01, *p* < .001.

Table 60

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Physical Aggression Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	16.99***		.61	[15.80, 18.19]		18.87***		.94	[17.02, 20.73]	
VESD	3.15***	.44	.28	[2.60, 3.69]	.20	3.18***	.45	.28	[2.64, 3.72]	.20
VE-IAT						2.03*	.10	.78	[0.50, 3.56]	.01
<i>F</i>	128.54***					68.35***				
<i>R</i> ²	.20					.21				
ΔR^2						.01*				

Note. *N* = 531. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in physical aggression (i.e., AQ_PA). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, **p* < .001.

Table 61

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Prior Violent Behaviour Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.12		.08	[-0.05, 0.28]		0.34**		.13	[0.09, 0.60]	
VESD	0.27***	.29	.04	[0.19, 0.34]	.09	0.27***	.30	.04	[0.20, 0.35]	.09
VE-IAT						0.24*	.09	.11	[0.03, 0.45]	.01
<i>F</i>	49.84***					27.66***				
<i>R</i> ²	.09					.10				
ΔR^2						.01*				

Note. *N* = 531. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in prior violent behaviour (i.e., VBS [Violent Behaviour Scale]). In Model 1, I entered explicit evaluative attitudes toward violence to predict prior violent behaviour. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, *p* < .01, ****p* < .001.

Table 62

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.54***		.06	[0.42, 0.66]		0.69***		.08	[0.53, 0.86]	
EVQ	0.73***	.74	.03	[0.68, 0.79]	.54	0.73***	.73	.03	[0.67, 0.79]	.53
VE-IAT						0.15*	.08	.06	[0.03, 0.26]	.01
<i>F</i>	632.87***					323.09***				
<i>R</i> ²	.54					.55				
ΔR ²						.01*				

Note. *N* = 533. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and explicit evaluative attitudes toward violence (i.e., EVQ) in likelihood of violence behaviour (i.e., EVQ Likelihood). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, **p* < .001.

Table 63

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Self-Reported Beliefs Regarding Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.20**		.08	[0.05, 0.35]		0.42***		.10	[0.23, 0.61]	
MCAA-R-V	0.08***	.73	.00	[0.07, 0.09]	.53	0.08***	.72	.00	[0.07, 0.08]	.50
P-VE-IAT						0.20***	.11	.06	[0.09, 0.31]	.01
<i>F</i>	609.94***					318.45***				
<i>R</i> ²	.53					.54				
ΔR ²						.01***				

Note. *N* = 542. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., P-VE-IAT) and self-reported beliefs regarding violence (i.e., MCAA-R Violence scale) in likelihood of violence behaviour (i.e., EVQ Likelihood). In Model 1, I entered self-reported beliefs regarding violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .01, *p* < .001.

Table 64

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Self-Reported Beliefs Regarding Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.58***		.06	[0.462, 0.703]		0.76***		.09	[0.583, 0.934]	
CAVS	0.03***	.72	.00	[0.027, 0.032]	.52	0.03***	.71	.00	[0.026, 0.031]	.49
P-VE-IAT						0.16**	.08	.06	[0.043, 0.273]	.01
<i>F</i>	577.82***					295.98***				
<i>R</i> ²	.52					.53				
ΔR^2						.01**				

Note. *N* = 538. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., P-VE-IAT) and self-reported beliefs regarding violence (i.e., CAVS) in likelihood of violence behaviour (i.e., EVQ Likelihood). In Model 1, I entered self-reported beliefs regarding violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .01, *p* < .001.

Table 65

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.55***		.06	[1.43, 1.67]		1.88***		.09	[1.69, 2.06]	
VESD	0.22***	.32	.03	[0.17, 0.28]	.10	0.22***	.33	.03	[0.17, 0.28]	.11
P-VE-IAT						0.35***	.18	.08	[0.20, 0.50]	.03
<i>F</i>	63.29***					43.31***				
<i>R</i> ²	.11					.14				
ΔR^2						.03***				

Note. *N* = 541. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., P-VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in likelihood of violence behaviour (i.e., EVQ Likelihood). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

****p* < .001.

Table 66

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Physical Aggression Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	17.08***		.61	[15.89, 18.27]		18.81***		.95	[16.95, 20.66]	
VESD	3.14***	.44	.28	[2.59, 3.68]	.19	3.15***	.44	.28	[2.61, 3.69]	.19
P-VE-IAT						1.82*	.09	.77	[0.31, 3.34]	.01
<i>F</i>	127.45***					67.06***				
<i>R</i> ²	.19					.20				
ΔR ²						.01*				

Note. *N* = 541. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., P-VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in physical aggression (i.e., AQ_PA). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, **p* < .001.

Table 67

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Prior Violent Behaviour Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.08		.08	[-0.07, 0.23]		0.28*		.12	[0.04, 0.52]	
VESD	0.28***	.32	.04	[0.21, 0.35]	.10	0.28***	.32	.04	[0.21, 0.35]	.10
P-VE-IAT						0.21*	.09	.10	[0.02, 0.41]	.01
<i>F</i>	59.38***					32.14***				
<i>R</i> ²	.10					.11				
ΔR^2						.01*				

Note. *N* = 541. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., P-VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in prior violent behaviour (i.e., VBS). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, **p* < .001.

Table 68

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.54***		.06	[0.42, 0.66]		0.74***		.08	[0.57, 0.90]	
EVQ	0.73***	.74	.03	[0.67, 0.79]	.54	0.72***	.73	.03	[0.66, 0.78]	.52
P-VE-IAT						0.19**	.10	.06	[0.08, 0.29]	.01
<i>F</i>	641.49***					332.51***				
<i>R</i> ²	.54					.55				
ΔR ²						.01**				

Note. *N* = 541. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., P-VE-IAT) and explicit evaluative attitudes toward violence (i.e., EVQ) in likelihood of violence (i.e., EVQ Likelihood scale). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .01, *p* < .001.

Overall, scores on the VE-IAT and P-VE-IAT added significant incremental variance when explaining likelihood of violence over and above most explicit measures of evaluative attitudes toward violence and self-report measures of beliefs regarding violence (i.e., the MCAA-R-V, CAVS, VESD, and EVQ). Considering these results in combination with those above—that all cognitive constructs of implicit evaluative attitudes toward violence, explicit evaluative attitudes toward violence, and beliefs regarding violence, were most strongly associated with likelihood of violence across Studies 1 and 3—it appears that these constructs may be most important when attempting to explain the likelihood of committing future violence and should be considered collectively to best explain this outcome. Further, the results of the current study, regarding whether implicit evaluative attitudes toward violence provide significant incremental validity in explaining likelihood of violence, are comparable to those reported in Study 1 among male students and community men, which provides compelling support for these assertions. Of note, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT and P-VE-IAT, explained significantly more variance in physical aggression and prior violent behaviour, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD. These results suggest that explicit evaluative attitudes toward violence better explain most violent outcomes (e.g., prior violent behaviour, physical aggression, and likelihood of violence) when coupled with implicit evaluative attitudes toward violence than when alone. In addition, the results of the current study also suggest that beliefs regarding violence, as assessed by scores on the MCAA-R-V and the CAVS, better explain likelihood of violence when coupled with implicit evaluative attitudes toward violence than when alone.

As previously stated, the results of the hierarchical multiple linear regressions are important because they provide evidence that implicit evaluative attitudes toward violence play a functionally distinct role in understanding violent outcomes, especially likelihood of behaving violently, in comparison to explicit evaluative attitudes toward violence and beliefs regarding violence. Therefore, implicit evaluative attitudes toward violence appear to be important to consider in conjunction with explicit/self-report measures of violent cognition to better understand the offence cycle of violence and the likelihood that someone would behave violently. In Study 3B, I sought to replicate these results among another online sample of community men. In addition, in Study 3C, I examined the underlying factor structure of measures designed to assess implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT), explicit evaluative attitudes toward violence (i.e., VESD and EVQ), and beliefs regarding violence (i.e., MCAA-R-V and CAVS) to determine whether these measures assess similar or distinct constructs. This was done to further establish the importance of distinctively assessing these constructs in relation to violent outcomes to establish a clearer understanding of the violent offence cycle.

Moderation of Implicit Evaluative Attitudes Toward Violence

As in Studies 1 and 2, a series of hierarchical multiple linear regressions were conducted to assess whether implicit evaluative attitudes toward violence significantly moderate the relationship between explicit/self-report violent cognitions and violent behaviour. As above, this effect was quantified by assessing the significance of the interaction between implicit and explicit/self-report measures of violent cognition on measures of violent behaviour. Specifically, the implicit measure of evaluative attitudes

toward violence (i.e., VE-IAT or P-VE-IAT) and explicit/self-report measure of violent cognition (i.e., explicit measures of evaluative attitudes toward violence [VESD or EVQ], or the self-report measures of beliefs regarding violence [MCAA-R-V or CAVS]) were added in the first step of the regression and the interaction between implicit measures of evaluative attitudes toward violence and the explicit/self-report measures of violent cognition was added in the second step of the regression (i.e., $VE-IAT \times VESD$, $VE-IAT \times EVQ$, $VE-IAT \times MCAA-R-V$, $VE-IAT \times CAVS$, $P-VE-IAT \times VESD$, $P-VE-IAT \times EVQ$, $P-VE-IAT \times MCAA-R-V$, or $P-VE-IAT \times CAVS$) with a self-report measure of violent behaviour as the outcome variable (i.e., VBS, AQ-PA, EVQ-Likelihood, or VBVQ). As in Studies 1 and 2, Preacher's online calculator (Preacher et al., 2006) was then used to assess the significance of the simple slopes. As above, these data were examined to determine whether they conformed to the assumptions underlying multiple linear regression. Specifically, these data were screened for the following assumptions: multicollinearity between predictors in the model, homoscedasticity of variances, linearity of association between the set of predictors and the outcome, and normality, homoscedasticity, and independence of residuals. For the most part, these assumptions were upheld. As in the analyses above, multivariate outliers were also examined for each regression model separately and were excluded per analysis in an attempt to maximize power. Altogether, thirty-two hierarchical linear regressions were conducted to examine whether implicit measures of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) moderated the relationship between explicit/self-report measures of violent cognition and self-report measures of violent behaviour. Only the regression analyses that

approached significance are reported and analyses of the simple slopes was only conducted for significant interactions.

As is outlined above, scores on implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT), explicit measures of evaluative attitudes toward violence (i.e., VESD and EVQ), and measures of beliefs regarding violence (i.e., MCAA-R-V and CAVS) were mean centered. Interaction terms between implicit and explicit/self-report violent cognitions were then created out of the centered terms (see above for terms). After controlling for implicit and explicit/self-report violent cognitions at Step 1 of the regression, the multiplicative interaction term was entered in the equation (at Step 2).

Of the thirty-two moderated regressions, three approached significance. A summary of the results of the regression equation predicting propensity for violence at the time of assessment, assessed by scores on the VBVQ, from beliefs regarding violence, assessed by scores on the CAVS, and implicit evaluative attitudes toward violence, assessed by scores on the VE-IAT, as well as their multiplicative interaction, is displayed in Table 69. Beliefs regarding violence, as a main effect, significantly predicted propensity for violence such that more violence-supportive beliefs, as assessed by scores on the CAVS, were associated with greater propensity for violence at the time of assessment ($b = 0.01$, $SE = .00$, $\beta = .49$, $t[530] = 12.73$, $p < .001$, 95% CI = [0.006, 0.009], $sr^2 = .23$). Implicit evaluative attitudes toward violence (i.e., scores on the VE-IAT), as a main effect, did not add significant incremental variance in the prediction of propensity for violence over and above beliefs regarding violence ($b = -0.02$, $SE = .03$, $\beta = -.03$, $t[530] = -0.68$, $p = .49$, 95% CI = [-0.07, 0.04], $sr^2 = .00$). A significant interaction

was observed between beliefs regarding violence and implicit evaluative attitudes toward violence (i.e., CAVS $\times$ VE-IAT), $b = -0.00$, $SE = .00$, $\beta = -.09$, $t(529) = -2.38$, $p = .02$, 95% CI = $[-0.01, -0.00]$, $sr^2 = .01$, and explained an additional 1% of the variance, $F_{\text{change}}(529) = 5.66$, $p = .02$. Results from follow-up simple slopes analyses are illustrated in Figure 21. Results show that more violence-supportive beliefs were significantly associated with greater propensity for violence at the time of assessment at low levels (i.e., or more negative $[-1\text{SD}]$), $b = 0.009$, $SE = .001$, $t(529) = 11.074$, $p < .001$, moderate levels (i.e., or more neutral $[0]$), $b = 0.008$, $SE = .001$, $t(529) = 13.637$, $p < .001$, and high levels (i.e., or more positive $[+1\text{SD}]$), $b = 0.007$, $SE = .001$, $t(529) = 9.544$, $p < .001$, of implicit evaluative attitudes toward violence. Although the differences were very slight, the increase in propensity for violence when going from low (or more negative) beliefs regarding violence to high (or more positive) beliefs regarding violence was most pronounced at low (or more negative) implicit evaluative attitudes toward violence and least pronounced at high (or more positive) implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (Figure 21).

Table 69

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Beliefs Regarding Violence and Propensity for Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.23***		.01	[0.21, 1.25]		0.23***		.01	[0.21, 0.25]	
CAVS	0.01***	.49	.00	[0.01, 0.01]	.23	0.01***	.50	.00	[0.01, 0.01]	.24
VE-IAT	-0.02	-.03	.03	[-0.07, 0.04]	.00	-0.01	-.01	.03	[-0.06, 0.05]	.00
CAVS × VE-IAT						-0.00*	-.09	.00	[-0.01, -0.00]	.01
<i>F</i>	81.46***					56.67***				
<i>R</i> ²	.24					.24				
ΔR^2						.01*				

Note. *N* = 533. I examined whether implicit evaluative attitudes toward violence (i.e., VE-IAT) significantly moderate the relationship between beliefs regarding violence (i.e., CAVS) and propensity for violence at the time of assessment (i.e., VBVQ) by examining the significance of the CAVS by VE-IAT interaction. In Model 1, I entered beliefs regarding violence (centered) and implicit evaluative attitudes toward violence (centered) to predict propensity for violence. In Model 2, I entered the CAVS by VE-IAT interaction as the predictor.

p* < .05, *p* < .01, ****p* < .001.

Figure 21

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Propensity for Violence Among Community Men Recruited Online in Study 3A

Note. $N = 533$ males from the community that were recruited online. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting propensity for violence from the CAVS, VE-IAT, and CAVS by VE-IAT interaction.

Violent Behaviour Vignette Questionnaire (VBVQ) was entered as the outcome to assess propensity for violence at the time of assessment. VE-IAT = Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. CAVS = Criminal Attitudes to Violence Scale, used to assess beliefs regarding violence.

A summary of the results of the regression equation predicting propensity for violence at the time of assessment, assessed by scores on the VBVQ, from explicit evaluative attitudes toward violence, assessed by scores on the EVQ, and implicit evaluative attitudes toward violence, assessed by scores on the VE-IAT, as well as their

multiplicative interaction, is displayed in Table 70. Explicit evaluative attitudes toward violence, as a main effect, significantly predicted propensity for violence such that more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were associated with more propensity for violence at the time of assessment ($b = 0.17$, $SE = .02$, $\beta = .46$, $t[530] = 11.77$, $p < .001$, $95\% \text{ CI} = [0.14, 0.20]$, $sr^2 = .21$). Implicit evaluative attitudes toward violence (i.e., VE-IAT), as a main effect, did not add significant incremental variance in the prediction of propensity for violence over and above explicit evaluative attitudes toward violence ($b = -0.00$, $SE = .03$, $\beta = -.00$, $t[530] = -0.06$, $p = .95$, $95\% \text{ CI} = [-0.06, 0.05]$, $sr^2 = .00$). A marginally significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., $\text{EVQ} \times \text{VE-IAT}$), $b = -0.08$, $SE = .04$, $\beta = -.08$, $t(529) = -1.94$, $p = .05$, $95\% \text{ CI} = [-0.16, 0.00]$, $sr^2 = .01$, and explained an additional 1% of the variance, $F_{\text{change}}(529) = 3.77$, $p = .05$. Results of the follow-up simple slopes analyses are illustrated in Figure 22. Results show that more positive explicit evaluative attitudes toward violence were significantly associated with greater propensity for violent at the time of assessment at low levels (i.e., or more negative [- 1SD]), $b = 0.20$, $SE = .02$, $t(529) = 9.44$, $p < .001$, moderate levels (i.e., or more neutral [0]), $b = 0.17$, $SE = .01$, $t(529) = 11.95$, $p < .001$, and high levels (i.e., or more positive [+ 1SD]), $b = 0.15$, $SE = .02$, $t(529) = 7.45$, $p < .001$, of implicit evaluative attitudes toward violence. The increase in propensity for violence when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was most pronounced at low (or more negative) implicit evaluative attitudes toward violence and least pronounced at high (or more positive) implicit evaluative

attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (Figure 22).

Table 70

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Propensity for Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	0.23***		.01	[0.21, 0.25]		0.23***		.01	[0.21, 0.25]	
EVQ	0.17***	.46	.02	[0.14, 0.20]	.21	0.17***	.46	.02	[0.15, 0.20]	.21
VE-IAT	-0.00	-.00	.03	[-0.06, 0.05]	.00	0.00	.01	.03	[-0.05, 0.06]	.00
EVQ $\times$ VE-IAT						-0.08 ^a	-.08	.04	[-0.16, 0.00]	.01
<i>F</i>	69.59***					47.89***				
<i>R</i> ²	.21					.21				
ΔR ²						.01 ^a				

Note. *N* = 533. I examined whether implicit evaluative attitudes toward violence (i.e., VE-IAT) significantly moderated the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and propensity for violence (i.e., VBQ) by examining the significance of the EVQ by VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to violent propensity. In Model 2, I entered the EVQ by VE-IAT interaction.

^amarginally significant at *p* = .053.

p* < .05, *p* < .01, ****p* < .001.

Figure 22

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Propensity for Violence Among Community Men Recruited Online in Study 3A

Note. $N = 533$ males from the community that were recruited online. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting propensity for violence from the EVQ, VE-IAT, and EVQ by VE-IAT interaction.

Violent Behaviour Vignette Questionnaire (VBVQ) was entered as the outcome to assess propensity for violence at the time of assessment. VE-IAT = Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. EVQ = Evaluation of Violence Questionnaire, used to assess explicit evaluative attitudes toward violence.

Last, a summary of the results of the regression equation predicting likelihood of violence, assessed by scores on the EVQ-Likelihood, from beliefs regarding violence, assessed by scores on the MCAA-R-V, and implicit evaluative attitudes toward violence,

assessed by scores on the P-VE-IAT, as well as their multiplicative interaction, is displayed in Table 71. Beliefs regarding violence, as a main effect, significantly predicted likelihood of violence such that more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were associated with greater likelihood of violence ($b = 0.08$, $SE = .00$, $\beta = .72$, $t[539] = 24.36$, $p < .001$, 95% CI = [0.07, 0.08], $sr^2 = .50$). Implicit evaluative attitudes toward violence, as a main effect, significantly predicted likelihood of violence such that more positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were associated with greater likelihood of violence ($b = 0.20$, $SE = .06$, $\beta = .11$, $t[539] = 3.63$, $p < .001$, 95% CI = [0.09, 0.31], $sr^2 = .01$). A significant interaction was observed between beliefs regarding violence and implicit evaluative attitudes toward violence (i.e., MCAA-R-V $\times$ P-VE-IAT), $b = 0.02$, $SE = .01$, $\beta = .07$, $t(538) = 2.25$, $p = .03$, 95% CI = [0.00, 0.03], $sr^2 = .004$, and explained an additional 0.4% of the variance, $F_{\text{change}}(538) = 5.06$, $p = .03$. Results of the follow-up simple slopes analyses are illustrated in Figure 23. Results show that more violence-supportive beliefs were significantly associated with greater likelihood of violence at low levels (i.e., or more negative [- 1SD]), $b = 0.071$, $SE = .005$, $t(538) = 15.826$, $p < .001$, moderate levels (i.e., or more neutral [0]), $b = 0.077$, $SE = .003$, $t(538) = 24.350$, $p < .001$, and high levels (i.e., or more positive [+ 1SD]), $b = 0.084$, $SE = .004$, $t(538) = 20.292$, $p < .001$, of implicit evaluative attitudes toward violence. The increase in likelihood of violence when going from low (or more negative) beliefs regarding violence to high (or more positive) beliefs regarding violence was most pronounced at high (or more positive) implicit evaluative attitudes toward violence and least pronounced at low

(or more negative) implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (Figure 23).

Table 71

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Beliefs Regarding Violence and Likelihood of Violence Among Males from the Community Recruited Online in Study 3A

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.98***		.02	[1.94, 2.02]		1.97***		.02	[1.93, 2.01]	
MCAA-R-V	0.08***	.72	.00	[0.07, 0.08]	.50	0.08***	.71	.00	[0.07, 0.08]	.49
P-VE-IAT	0.20***	.11	.06	[0.09, 0.31]	.01	0.19**	.10	.06	[0.08, 0.30]	.01
MCAA-R-V $\times$ P-VE-IAT						0.02*	.07	.01	[0.03, 0.15]	.00
<i>F</i>	318.447***					215.586***				
<i>R</i> ²	.542					.546				
ΔR ²						.004*				

Note. *N* = 542. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between beliefs regarding violence (i.e., MCAA-R-V) and likelihood of violence (i.e., EVQ-Likelihood) by examining the significance of the MCAA-R-V by P-VE-IAT interaction. In Model 1, I entered beliefs regarding violence (centered) and implicit evaluative attitudes toward violence (centered) to likelihood of violence. In Model 2, I entered the MCAA-R-V by P-VE-IAT interaction as the predictor.

p* < .05, *p* < .01, ****p* < .001.

Figure 23

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Likelihood of Violence Among Community Men Recruited Online in Study 3A

Note. $N = 542$ males from the community that were recruited online. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting likelihood of violence from the MCAA-R-V, P-VE-IAT, and MCAA-R-V by P-VE-IAT interaction. Evaluation of Violence Questionnaire – Likelihood of violence version (EVQ-Likelihood) was entered as the outcome to assess likelihood of violence. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. MCAA-R-V = Measures of Criminal Attitudes and Associates – Revised – Violence scale, used to assess beliefs regarding violence.

As outlined in the prior studies above, it was hypothesized that implicit evaluative attitudes toward violence would moderate the relationships between explicit/self-report violent cognitions and violent behaviour. As articulated elsewhere, this is in line with

theories from the social psychology literature that propose that implicit evaluative attitudes are activated first when in the presence of an attitude object and then are either acted on or changed according to several factors including their availability and strength (e.g., MODE; Fazio, 1990). The activation of stronger implicit evaluative attitudes likely limits motivation to deliberate; thus, likely producing consistent explicit evaluative attitudes toward the object which inform the resulting behaviour. However, if no implicit evaluative attitude towards the object exists during activation, a new explicit evaluative attitude towards the object is constructed from information available in the environment. In this case, it is more likely that the explicit evaluative attitude will be weakly or unrelated to the resulting behaviour (e.g., prior violence, propensity for violence, and/or likelihood of violence). Therefore, it was proposed that the strength of one's implicit evaluative attitude towards violence (i.e., whether it is more positive [i.e., high], more negative [i.e., low], or neutral [i.e., mean]) will affect the strength of relationship between one's explicit evaluative attitude towards violence and violent behaviour.

As in Study 1, this hypothesis was somewhat supported among the current sample of community men recruited online. Implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, significantly moderated the relationships between beliefs regarding violence (i.e., CAVS) and propensity for violence at the time of assessment (i.e., VBVQ), as well as marginally significantly moderated the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and propensity for violence at the time of assessment. For both of these regression models predicting propensity for violence, the strongest relationship between explicit/self-report violent cognitions and propensity for violence was found at low levels of (or more negative)

implicit evaluative attitudes toward violence, followed by moderate, and then high levels of (or more positive) implicit evaluative attitudes toward violence. These results suggest that those who hold more negative implicit evaluative attitudes toward violence have the strongest relationship between their explicit/self-report violent cognitions and propensity for violence at the time of assessment, followed by those who hold more neutral implicit evaluative attitudes, and last, those who hold more positive implicit evaluative attitudes. In addition, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, significantly moderated the relationship between beliefs regarding violence (i.e., MCAA-R-V) and likelihood of violence (i.e., EVQ-Likelihood). For this regression model predicting likelihood of violence, the strongest relationship between beliefs regarding violence and likelihood of violence was found at high levels of (or more positive) implicit evaluative attitudes toward violence, followed by moderate, and then low levels of (or more negative) implicit evaluative attitudes toward violence. These results suggest that those who hold more positive implicit evaluative attitudes toward violence have the strongest relationship between their beliefs regarding violence and likelihood of violence, followed by those who hold more neutral implicit evaluative attitudes, and last, those who hold more negative implicit evaluative attitudes.

As in Studies 1 and 2, it appears that the relationship between explicit/self-report violent cognitions and violent behaviour (i.e., risk of violent recidivism in Study 2) may differ depending on the level (or strength) of implicit evaluative attitudes toward violence, but the nature of these differences is, again, somewhat unclear. Consistent with the previous studies conducted in the current project, these differences appear to be inconsistent between samples and measures used in the current study. Regardless, these

results suggest that the relationships between implicit and explicit measures of evaluative attitudes toward violence are not independent in their relationship to violent outcomes and understanding how these constructs interact may aid in identifying who is more prone to violence. Study 3B was conducted to replicate and extend the relationships found in the current study among another, comparable, sample of community men that were recruited online. The aim, as stated elsewhere, was to establish stability in these results among a broader range of male samples in order to obtain a clearer understanding of these relationships and how these constructs relate to different violent outcomes. Additionally, the underlying factor structure of items within the measures designed to assess implicit evaluative attitudes toward violence (i.e., the VE-IAT and P-VE-IAT), explicit evaluative attitudes toward violence (i.e., the VESD and EVQ), and beliefs regarding violence (i.e., MCAA-R-V and CAVS) was examined in Study 3C by combining samples recruited in Studies 3A and 3B in order to examine whether these measures are assessing similar or distinct cognitive constructs. This is important to establish in order to determine whether distinctively examining scores on these measures aids in the understanding of violent behaviour.

Study 3B: Second Replication Using an Online Panel

In this study I sought to directly replicate the results of Study 3A, using a separate, but comparable, sample of community men recruited online. The same hypotheses were proposed as in Studies 1, 2, and 3A, for the relationships between violent cognition measures and the indicators of violent behaviour; (a) that more positive implicit evaluative attitudes toward violence would be associated with more positive explicit evaluative attitudes toward violence and more violence-supportive beliefs, (b) that more positive explicit evaluative attitudes toward violence would be associated with more violence-supportive beliefs, (c) that more positive implicit evaluative attitudes toward violence, more positive explicit evaluative attitudes toward violence, and more violence-supportive beliefs would be associated with more violent behaviour, (d) that implicit evaluative attitudes toward violence would account for incremental variance in violent behaviour over and above explicit evaluative attitudes toward violence/beliefs regarding violence, and (e) that implicit evaluative attitudes toward violence would moderate the relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and indicators of violent behaviour.

Methods

Participants

Participants consisted of adult males from the community that were recruited online through Qualtrics (<http://www.qualtrics.com>). As in Studies 1 and 3A, participants did not have to self-report a history of violence to be included in the study. In addition, all participants had to be male, heterosexual, 18 years of age or older, and understand written English. These criteria were clearly communicated during the recruitment process

by Qualtrics. As in all previous studies, female participants, as well as those who identify as not being most sexually attracted to women, were not recruited (see Study 1 for justification).

Initially, 1,234 adult males consented to participate in the online survey. Out of these participants, a total of 827 did not withdraw and fully completed the survey through Qualtrics. The sample of 827 participants were all male, 18 years of age or older, most sexually attracted to women, and self-reported that they understood written English. In addition, all 827 participants correctly answered four or more of the quality control questions that were randomly interspersed among the items in the survey (see Appendix AL). As in all previous studies, five quality control questions were included in the survey to make sure participants were attending to the questions being asked. As before, they required participants to select a particular response and thus, just simply follow the instructions provided in the question (e.g., Please select 'Very likely'). Given that the procedure was quite lengthy (e.g., took about 25 minutes to complete) it seemed reasonable to miss/incorrectly answer a quality control question. An additional seven participants were excluded because they had one or more missing score(s) on the main measures of interest. Because less than 5% missing data was observed, missing values analysis was not conducted and any missing scores were excluded listwise (i.e., across all *main* measures of interest). This left a final sample of 820 males from the community who were recruited online. Displayed in Table 72 are the demographic details regarding this sample.

Table 72

Demographics of Males from the Community Recruited Online in Study 3B

Demographic Variables	Frequency	%	<i>N</i>
What is your biological sex?			820
Male	820	100.0	
Female	0	0.0	
Other	0	0.0	
In what country are you currently living?			820
Canada	412	50.2	
United States	408	49.8	
Other	0	0	
What is your ethnicity?			820
White	583	71.1	
Black	54	6.6	
Indigenous	4	0.5	
Asian	105	12.8	
East Indian	15	1.8	
Hispanic/Latino	16	2.0	
Arab	6	0.7	
Other	5	0.6	
Selected more than one ethnicity	32	3.9	
Who are you most sexually attracted to?			820
Women	820	100.0	
Men	0	0.0	
Both women and men equally	0	0.0	
Other	0	0.0	
How old are you (years)?			820
17 or younger	0	0.0	
18-21	95	11.6	
22-23	35	4.3	
24-29	173	21.1	
30-34	115	14.0	
35-39	48	5.9	
40-49	86	10.5	
50-59	23	2.8	
60 or older	245	29.9	
What is the highest grade you have completed?			797
No schooling completed (includes pre-school)	2	0.2	
Kindergarten to grade 6	1	0.1	
Grade 7	1	0.1	
Grade 8	1	0.1	

Grade 9	3	0.4	
Grade 10	14	1.7	
Grade 11	34	4.1	
Grade 12	435	53.0	
Grade 13	306	37.3	
What is the highest level of education you have completed?			820
Did not complete high school	18	2.2	
High school (or equivalent)	233	28.4	
Community college	129	15.7	
Undergraduate degree	273	33.3	
Master's degree	126	15.4	
Doctoral degree	27	3.3	
Other	14	1.7	
What is your current employment status?			819
Full-time employed	376	45.9	
Part-time employed	111	13.5	
Not employed (includes homemaker, unable to work, etc.)	74	9.0	
Military	2	0.2	
Full-time student	61	7.4	
Part-time student	8	1.0	
Retired	177	21.6	
Other	10	1.2	
What is your current relationship status?			820
Single	326	39.8	
In a romantic relationship	45	5.5	
Living with a romantic partner	55	6.7	
Married	336	41.0	
Separated/divorced/widowed	58	7.1	
Do you speak English fluently?			820
No	13	1.6	
Yes	807	98.4	
Do you understand written English?			820
No	0	0.0	
Yes	820	100.0	
Do you understand spoken English?			620
No	1	0.1	
Yes	819	99.9	

Note. $N = 627$ males from the community, recruited online. Note that 23 participants

were missing information on the highest grade they have completed (i.e., they chose not

to answer this item) and 1 participant was missing information on what his current employment status was.

Measures

Demographic Questions. Participants were first asked the same series of demographic questions, as in Study 3A. Specifically, they were asked to report on their biological sex, country of origin, ethnicity, sexual orientation, age, high school completion, education, current employment status, current relationship status, and proficiency in English (see Appendix N).

Violent Cognition Measures. The measures administered to assess cognitions regarding violence were the same as those in Study 3A. Specifically, the VE-IAT and P-VE-IAT were administered to assess implicit evaluative attitudes toward violence, the VESD and EVQ were administered to assess explicit evaluative attitudes toward violence, and the MCAA-R-V and CAVS were administered to assess beliefs regarding violence. The following internal consistencies were found for the measures of violent cognition in the current study: $\alpha = .86$ for the VE-IAT, $\alpha = .84$ for the P-VE-IAT, $\alpha = .87$ for the MCAA-R-V, $\alpha = .96$ for the CAVS, $\alpha = .95$ for the VESD, and $\alpha = .96$ for the EVQ.

Violent Behaviour Measures. The VBS, designed to assess prior violent behaviour, and the VBVQ, designed to assess propensity for violence at the time of assessment, were not administered in this study. Therefore, only two measures assessing self-reported indicators of violent behaviour were administered in the current study. Specifically, the EVQ-Likelihood was administered to assess likelihood of violence and the AQ-PA was administered to assess self-reported physical aggression. The following

internal consistencies were found for the measures of violent behaviour in the current study: $\alpha = .85$ for the AQ-PA and $\alpha = .96$ for the EVQ-Likelihood.

Procedure

A separate and unique sample of online adult males from the general population was recruited through a Qualtrics panel in the current study; however, the same procedure was utilized as in Study 3A. Therefore, please refer to the *Procedure* section of Study 3A above, for details regarding the procedure of the current study.

Results and Discussion

The current study is a direct replication of Study 3A above. Descriptive statistics for each measure used in the current study are reported in Table 73. As in Studies 1, 2, and 3A, participants included in the analyses were all male, most sexually attracted to females, 18 years of age or older, understood written English, selected the correct response option for at least three of the five quality control questions included in the survey (see description in the *Participant* section above), and had complete responses (i.e., no missing items) on all measures of interest (i.e., violent cognition and violent behaviour measures). As outlined above, this left a sample of 820 community males recruited through an online panel (see Table 72 in *Participant* section above, for demographic details regarding these samples).

For the measures designed to assess implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) participants who took less than 300 milliseconds on 10% or more of the trials were also excluded from analyses involving these measures. As in Studies 1, 2, and 3A, I excluded these participants separately for each implicit measure in an effort to retain power for the subsequent analyses. An additional 116 participants (out

of 820) were excluded due to having response times faster than 300 milliseconds on 10% or more of VE-IAT trials. An additional 122 participants (out of 820) were excluded due to having response times faster than 300 milliseconds on 10% or more of P-VE-IAT trials. As in Studies 1, 2, and 3A, the final indices for the effects associated with the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) were created in accordance with the improved scoring algorithm suggested by Greenwald et al. (2003), which is also outlined in the *Measures* section of Study 1. All variables (i.e., calculated total scores on all measures of interest) were screened for out-of-range values and missing scores. A variable was considered to have a missing score when one or more items contained missing values for a particular participant. Less than 5% of total scores were missing across all variables of interest. Therefore, as in Studies 1, 2, and 3A, missing scores were excluded listwise. All variables were also examined for univariate outliers. As above, in the event that univariate outliers were found, values were reduced accordingly.

Table 73*Descriptive Statistics of Measures of Interest for Males from the Community Recruited**Online in Study 3B*

Measure	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
VE-IAT	704	-1.69	0.21	-1.03	0.35
P-VE-IAT	698	-1.69	0.20	-0.99	0.36
MCAA-R-V	820	10.00	40.00	21.47	6.58
CAVS	820	20.00	100.00	45.48	17.58
VESD	820	1.00	5.17	1.86	1.04
EVQ	820	1.00	4.00	1.86	0.71
AQ-PA	820	9.00	42.00	22.55	7.34
EVQ-Likelihood	820	1.00	4.00	1.90	0.71

Note. VE-IAT = Violent Evaluation Implicit Association Test. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test. MCAA-R-V = Measures of Criminal Attitudes and Associations – Revised – Violence scale. CAVS = Criminal Attitudes to Violence Scale. VESD = Violent Evaluation Semantic Differential scales. EVQ = Evaluation of Violence Questionnaire. AQ-PA = Aggression Questionnaire – Physical Aggression subscale. EVQ-Likelihood = Evaluation of Violence Questionnaire – Likelihood of Violence version.

Table 74
Bivariate Correlations Between Violent Cognitions and Violent Behaviour for Community Males Recruited Online in Study 3B

Variable	1	2	3	4	5	6	8	9
1. VE-IAT	-	.50*** <i>n</i> = 656	.22*** <i>n</i> = 702	.23*** <i>n</i> = 702	.14*** <i>n</i> = 702	.18*** <i>n</i> = 703	.15*** <i>n</i> = 701	.18*** <i>n</i> = 703
2. P-VE-IAT	.49*** <i>n</i> = 656	-	.17*** <i>n</i> = 695	.16*** <i>n</i> = 695	.08* <i>n</i> = 697	.11** <i>n</i> = 697	.12** <i>n</i> = 696	.12** <i>n</i> = 697
3. MCAA-R-V	.20*** <i>n</i> = 702	.18*** <i>n</i> = 695	-	.82*** <i>n</i> = 814	.49*** <i>n</i> = 817	.82*** <i>n</i> = 809	.77*** <i>n</i> = 813	.81*** <i>n</i> = 813
4. CAVS	.20*** <i>n</i> = 702	.15*** <i>n</i> = 695	.80*** <i>n</i> = 814	-	.59*** <i>n</i> = 810	.82*** <i>n</i> = 817	.79*** <i>n</i> = 818	.82*** <i>n</i> = 815
5. VESD	.10** <i>n</i> = 702	.05 <i>n</i> = 697	.46*** <i>n</i> = 817	.55*** <i>n</i> = 810	-	.56*** <i>n</i> = 815	.52*** <i>n</i> = 820	.56*** <i>n</i> = 811
6. EVQ	.15*** <i>n</i> = 703	.09* <i>n</i> = 697	.81*** <i>n</i> = 809	.79*** <i>n</i> = 817	.53*** <i>n</i> = 815	-	.76*** <i>n</i> = 818	.90*** <i>n</i> = 805
8. AQ_PA	.14*** <i>n</i> = 701	.12** <i>n</i> = 696	.76*** <i>n</i> = 813	.78*** <i>n</i> = 818	.51*** <i>n</i> = 820	.76*** <i>n</i> = 818	-	.78*** <i>n</i> = 816
9. EVQlike	.17*** <i>n</i> = 703	.12** <i>n</i> = 697	.80*** <i>n</i> = 813	.79*** <i>n</i> = 815	.51*** <i>n</i> = 811	.88*** <i>n</i> = 805	.77*** <i>n</i> = 816	-

Note. Sample sizes (n) vary because multivariate outliers were excluded per measure pair to retain power. Pearson's r (parametric) correlations above the diagonal and Spearman's rho (non-parametric) correlations below the diagonal. VE-IAT = implicit evaluative attitudes toward violence measured by traditional Implicit Association Test. P-VE-IAT = implicit evaluative attitudes towards violence measured by Personalized IAT. VE-RRT = implicit evaluative attitudes toward violence measured by Relational Responding Task. MCAA-R-V = self-report beliefs regarding violence measured by Measures of Criminal Attitudes and Associates – Revised Violence scale. VESD = explicit evaluative attitudes toward violence measured by Semantic Differential scales. EVQ = explicit evaluative attitudes toward violence measured by Evaluation of Violence Questionnaire. AQ-PA = physical aggression measured by the Aggression Questionnaire – Physical Aggression subscale. EVQlike = likelihood of violence measured by Evaluation of Violence Questionnaire modified to assess likelihood of being violent.

$**p < .01$, $*p < .05$, $***p < .001$.

Relationship Between Violent Cognition Measures

The bivariate relationships between implicit measures of evaluative attitudes toward violence and other explicit/self-report measures of violent cognition (i.e., explicit evaluative attitudes toward violence and self-report beliefs regarding violence), as well as the relationships between measures of violent cognition and self-report measures of violent behaviour, were assessed using Pearson's r correlations. Accordingly, I assessed whether these data met the assumptions underlying this analysis, such as normality, linearity, and homoscedasticity. As above, assumptions were generally met, with the exception of normality; most variables were significantly, positively skewed. Due to this violation, Spearman's rho correlations were also conducted, as in Studies 1, 2, and 3A. As above, multivariate outliers were also examined pairwise. In the event that multivariate outliers were found, they were excluded pairwise (rather than listwise) in order to retain power for the statistical analyses. The bivariate relationships between variables for community men recruited from an online panel are displayed in Table 74.

Implicit Evaluative Attitudes Toward Violence and Other Explicit Violent Cognitions. As seen in Table 74, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V ($r = .22$) and CAVS ($r = .23$). The magnitude of these relationships is larger in the current study in comparison to those observed in Study 3A. More positive Implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly associated with more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD ($r = .14$) and the EVQ ($r = .18$). Again, the magnitude of these

relationships is larger in the current study, in comparison to those observed in Study 3A, in which the relationship between scores on the VE-IAT and VESD was not significant. Implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT were significantly and weakly associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V ($r = .17$) and CAVS ($r = .16$). The magnitude of these relationships is more consistent with those observed in Study 3A. More positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly associated with more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD ($r = .08$) and the EVQ ($r = .11$). The magnitude of the relationship between scores on the P-VE-IAT and the EVQ is almost identical to that observed in Study 3A; however, the magnitude of the relationship between scores on the P-VE-IAT and VESD is now positive and significant, which contradicts the non-significant and negative effect observed for the relationship between these variables in Study 3A.

Evidently, the magnitude of effects was considerably larger for the VE-IAT (i.e., the traditional version of the VE-IAT), in comparison to the P-VE-IAT (i.e., the personalized version of the VE-IAT), which contradicts the results observed in Study 3A. However, the effects observed in the current study concerning the P-VE-IAT and other explicit/self-report violent cognition measures are in line with those observed in Study 3A, showing the stability of these results across similar samples. As in the previous studies, a significant, positive, and large relationship was observed between scores on the P-VE-IAT and VE-IAT (i.e., $r = .50$), suggesting that these measures are assessing related constructs; however, this effect is not large enough to suggest that they are

assessing the same construct. The underlying factor structure of these measures was assessed in Study 3C, along with the other explicit/self-report measures of violent cognition, in order to determine whether these implicit measures are assessing the same, or at least a similar, construct.

As consistently stated throughout, past research has found contradictory results regarding these relationships, with most studies reporting small or insignificant effects (e.g., Bluemke & Zumbach, 2012; Eckhardt & Crane, 2014; Eckhardt et al., 2012; Hermann et al., 2018; Polaschek et al., 2010; Robertson & Murachver, 2007; Snowden et al., 2004; Sprunger & Eckhardt, 2017; Zwetz et al., 2015). The results of the current study show evidence for the stability of these relationships given that weak, but generally significant, relationships were reported here and in Study 3A. Additionally, the results observed here, and in Study 3A, are somewhat consistent with those observed in Study 1 among male students and community men. To illustrate, significant and weak to moderate associations were observed between scores on the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT) and beliefs regarding violence, as assessed by scores on the MCAA-R-V, among male undergraduate students (i.e., $r = .26$ for the VE-IAT and $r = .21$ for the P-VE-IAT) in Study 1. Weak and positive relationships were also observed among in-lab community men in Study 1, but these relationships were non-significant (i.e., $r = .15$ for the VE-IAT and $r = .16$ for the P-VE-IAT). Of note, the relationship between implicit evaluative attitudes toward violence and beliefs regarding violence, as assessed by scores on the CAVS, was not examined in Study 1. The size of effects observed for the relationship between scores on P-VE-IAT and scores on the MCAA-R-V for the in-lab community male sample in Study 1 are

directly comparable to those reported here and in Study 3A among community men recruited online, with weak and significant, positive associations observed between scores on the P-VE-IAT and these same measures (i.e., as stated above $r = .16$ for the MCAA-R-V in Study 1; $r = .16$ for the CAVS and $r = .17$ for the MCAA-R-V in the current study; $r = .15$ for the CAVS and $r = .12$ for the MCAA-R-V in Study 3A); however, the effect sizes observed for the relationship between implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, and beliefs regarding violence are considerably larger in the current study, compared to those observed in Study 3A among a similar sample of online community men and Study 1 among in-lab community men (i.e., as stated above $r = .15$ for the MCAA-R-V in Study 1; $r = .23$ for the CAVS and $r = .22$ for the MCAA-R-V in the current study; $r = .12$ for the CAVS and $r = .09$ for the MCAA-R-V in Study 3A). Comparatively, the magnitude of the relationships between implicit evaluative attitudes toward violence and beliefs regarding violence (i.e., note that this construct was assessed by scores on the MCAA-R-V because the CAVS was not administered in Study 2) were considerably smaller and non-significant in Study 2 among men convicted of violent offences (i.e., $r = .09$ for the VE-IAT and $.04$ for the P-VE-IAT).

Somewhat inconsistent results were found for the relationships between implicit and explicit evaluative attitudes toward violence between those reported here and in Studies 1, 2, and 3A. For instance, scores on the VE-IAT were significantly, weakly and positively related to scores on the VESD among male students in Study 1 (i.e., $r = .19$) and among online community men in the current study (i.e., $r = .14$). In addition, a comparable, weak, and positive effect was observed among in-lab community men in

Study 1 (i.e., $r = .14$), although this effect was not significant. In contrast, no sizable or significant effects were observed between these measures among men recruited online in Study 3A (i.e., $r = -.05$) or among men convicted of violent offences in Study 2 (i.e., $r = .01$). Effect sizes for the relationship between scores on the P-VE-IAT and scores on the VESD were fairly consistent across studies. For instance, weak and insignificant effects were observed in Study 1 among male students (i.e., $r = .05$), in Study 2 among men convicted of violent offences (i.e., $r = -.04$), and in Study 3A among men recruited online (i.e., $r = -.02$). A comparable effect size was observed between scores on the P-VE-IAT and VESD in the current study among men recruited online (i.e., $r = .08$), although this effect was significant. In contrast, a larger—albeit still weak—marginally significant, and positive effect was observed between scores on these measures in Study 1 among male students (i.e., $r = .20$). A considerably larger —albeit still weak—significant effect for the relationship between scores on the VE-IAT and EVQ was found in the current study among men recruited online (i.e., $r = .18$). This result is inconsistent with those observed in Studies 1, 2, and 3A regarding the relationship between these variables. Specifically, weak and non-significant relationships were observed in Study 1 among male students (i.e., $r = .11$) and in-lab community men (i.e., $r = .10$), in Study 2 among men convicted of violent offences (i.e., $r = .10$), and in Study 3A among men recruited online (i.e., $r = .08$, note that this effect size was marginally significant at $p = .07$). Last, a weak and significant effect was observed for the relationship between scores on the P-VE-IAT and scores on the EVQ in the current study among men recruited online (i.e., $r = .11$), which is consistent with the effect observed in Study 3A among a similar sample of men recruited online (i.e., $r = .12$). In contrast, weak and non-significant effects were observed

for the relationship between scores on these measures among male students (i.e., $r = .06$) and in-lab community men (i.e., $r = .07$) in Study 1, as well as among men convicted of violent offences (i.e., $r = -.08$) in Study 2.

The effects observed in the current study between implicit evaluative attitudes toward violence and beliefs regarding violence were larger in size compared to those observed between implicit and explicit evaluative attitudes toward violence, with the smallest effect sizes observed for the relationships between implicit evaluative attitudes toward violence and explicit evaluative attitudes toward violence, when assessed by the VESD. The effects observed between implicit evaluative attitudes toward violence and beliefs regarding violence when using the MCAA-R-V versus the CAVS are almost identical, which may suggest that the MCAA-R-V and CAVS are assessing similar constructs. As mentioned above, recent research by my colleagues suggests that the MCAA-R-V and EVQ may be assessing similar underlying constructs (see Nunes, Pedneault, Hermann, & Fraser, 2021), given that items in these measures, generally, did not separate into distinct factors when examined using exploratory factor analyses. Study 3C extends my colleagues' findings by exploring the underlying factor structure of items within all violent cognition measures administered in the current study to determine whether they are likely assessing distinct cognitive constructs regarding violence.

Explicit Evaluative Attitudes Toward Violence and Beliefs Regarding Violence. As seen in Table 74, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were significantly and moderately associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V ($r = .49$) and CAVS ($r = .59$). More positive explicit evaluative attitudes toward

violence, as assessed by scores on the EVQ, were also significantly and strongly associated with more violence-supportive beliefs, as assessed by scores on the MCAA-R-V ($r = .82$) and CAVS ($r = .82$). In addition, scores on both explicit measures of evaluative attitudes toward violence (i.e., the EVQ and VESD) were significantly, positively, and moderately associated with one another ($r = .56$). Last, scores on both measures of beliefs regarding violence (i.e., the MCAA-R-V and CAVS) were significantly, positively, and strongly associated with one another ($r = .82$).

The relationships observed between beliefs regarding violence, as assessed by scores on the MCAA-R-V, and explicit evaluative attitudes toward violence are consistent with those observed in Study 1 among male students (i.e., $r = .48$ for the VESD and $r = .67$ for the EVQ) and in-lab community men (i.e., $r = .43$ for the VESD and $r = .73$ for the EVQ), as well as those observed in Study 2 among men convicted of violent offences (i.e., $r = .55$ for the VESD and $r = .75$ for the EVQ), and last, as those observed in Study 3A among men recruited online (i.e., $r = .38$ for the VESD and $r = .76$ for the EVQ). Of note, fairly large effects quantifying the relationship between scores on the MCAA-R-V and EVQ were observed across all studies. In addition, the relationships between beliefs regarding violence, as assessed by scores on the CAVS, and explicit evaluative attitudes toward violence were consistent with those observed in Study 3A among a similar sample of men recruited online (i.e., $r = .43$ for the VESD and $r = .79$ for the EVQ).

The relationship between measures designed to assess explicit evaluative attitudes toward violence (i.e., VESD and EVQ) were generally consistent across all studies. For instance, large, significant, and positive effects were observed in Study 1 among male

students (i.e., $r = .59$) and Study 2 among men convicted of violent offences (i.e., $r = .62$). Slightly more diminished effects were observed between measures of explicit evaluative attitudes toward violence in Study 1 among in-lab community men (i.e., $r = .47$) and in Study 3A among a similar sample of men recruited online (i.e., $r = .38$). Therefore, the effect between explicit measures of evaluative attitudes toward violence observed in the current study (i.e., $r = .56$) was generally more consistent with those observed in Study 1 among male students and Study 2 among men convicted of violent offences, but all effects were moderate to large and in a consistent direction. Important to note, is that none of the effects observed quantifying the relationship between scores on the VESD and EVQ are large enough to suggest that they are assessing the same construct.

Last, the effect quantifying the relationship between measures designed to assess beliefs regarding violence (i.e., MCAA-R-V and CAVS) was fairly large and consistent across Studies 3A (i.e., $r = .78$) and Study 3B (i.e., $r = .82$) among men recruited online. Of note, the effect sizes quantifying the relationships between scores on these measures (i.e., MCAA-R-V and CAVS), as well as their relationship to scores on the EVQ, were all identical and large in the current study (i.e., $r = .82$). Accordingly, it appears that explicit evaluative attitudes toward violence and self-report beliefs regarding violence are related constructs. Consistent with Studies 1, 2, and 3A, the observed effects for relationships between beliefs regarding violence (i.e., scores on the MCAA-R-V and CAVS) and explicit evaluative attitudes toward violence, as assessed by scores on the VESD only, are not large enough to suggest that they assess the same construct. As mentioned above, these results are in line with prior research by my colleagues, in which scores on the

VESD formed a distinct, but correlated, factor to measures of beliefs regarding violence (see Nunes et al., 2015), suggesting that these measures are assessing, related, but distinct constructs.

Consistent with the results of Studies 1, 2, and 3A, higher scores on the EVQ, corresponding to more positive explicit evaluative attitudes toward violence, were more strongly associated with higher scores on the MCAA-R-V and CAVS, corresponding to more violence-supportive beliefs, than scores on the VESD—the other explicit measure of evaluative attitudes toward violence. Interestingly, comparable effect sizes were observed for the relationship between scores on the MCAA-R-V and CAVS, as well as their relationship to scores on the EVQ. As outlined previously, these results mirror research by Nunes, Pedneault, Hermann, and Fraser (2021) in which they reported that items from the EVQ, generally, formed the same factor as items from the MCAA-R-V, but formed a distinct factor from VESD items. They also reported comparable effect sizes quantifying the relationships between scores on the EVQ and scores on the MCAA-R-V, CAVS, as well as VESD. Study 3C sought to replicate and extend this research by assessing the underlying factor structure of items within the MCAA-R-V, CAVS, VESD, and EVQ, as well as implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT).

Relationship Between Violent Cognition Measures and Indicators of Violent

Behaviour

Implicit Evaluative Attitudes Toward Violence and Violent Behaviour. As shown in Table 74, more positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly associated with more

self-reported physical aggression, as assessed by scores on the AQ-PA ($r = .15$). More positive implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly and weakly associated with greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .18$). Consistent with the results involving the VE-IAT, more positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly associated with more self-reported physical aggression, as assessed by scores on the AQ-PA ($r = .12$). Last, more positive implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly and weakly to moderately associated with greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .12$).

The results observed in the current study are generally consistent with those observed in Study 1. For instance, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly, weakly, and positively related to scores on the EVQ-Likelihood (i.e., $r = .17$) among male students. Implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were also significantly, weakly to moderately, and positively related to scores on the EVQ-Likelihood among men from the community (i.e., $r = .28$). Results of the current study are also consistent with those observed in Study 3A among a similar sample of men recruited online. For instance, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were significantly, weakly, and positively related to scores on the EVQ-Likelihood (i.e., $r = .14$) and AQ-PA, assessing physical aggression (i.e., $r = .10$), in Study 3A. In addition, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, were significantly, weakly, and positively related to scores on the EVQ-

Likelihood (i.e., $r = .20$) and AQ-PA (i.e., $r = .10$) in Study 3A. Results of the current study, as well as those observed in Studies 1 and 3A, were inconsistent with those observed in Study 2 when assessing the relationship between implicit evaluative attitudes toward violence and likelihood of violence among men convicted of violent offences. Specifically, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, were not significantly associated with likelihood of violence (i.e., $r = -.06$). In addition, a somewhat sizeable, but non-significant, negative effect size was observed for the relationship between implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, and likelihood of violence (i.e., $r = -.24$) in Study 2.

The consistency of results observed across Studies 1, 3A, and 3B, illustrates the reliability and stability of the effects quantifying the relationship between implicit evaluative attitudes toward violence and likelihood of violence across different samples (i.e., male community vs. male students) and modes of administration (i.e., in-lab vs. online). As outlined above, these results are generally consistent with sparse prior research reporting significant, positive relationships between these constructs. For instance, more positive implicit evaluative attitudes toward violence have been associated with greater likelihood of intimate partner violence (i.e., Sprunger & Eckhardt, 2017) and greater intimate partner violent recidivism (i.e., Eckhardt & Crane, 2014) among prior empirical studies. When considering results across studies it appears that measuring implicit evaluative attitudes toward violence, along with other relevant factors, may be important for understanding the likelihood of future violence. Therefore, results of the current research project, containing a retrospective and correlational methodological design, provide a first step in establishing a link between implicit evaluative attitudes

toward violence and likelihood of violence; however, future research must assess whether scores on IAT measures designed to assess implicit evaluative attitudes toward violence are related to reported incidences of violent reoffending in order to establish a predictive link between these constructs.

Explicit Evaluative Attitudes Toward Violence and Violent Behaviour. As seen in Table 74, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were significantly and strongly associated with more physical aggression, as assessed by scores on the AQ-PA ($r = .52$), and greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .56$). More positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were significantly and strongly associated with more physical aggression, as assessed by scores on the AQ-PA ($r = .76$), and greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .90$).

The results reported in the current study are generally consistent with those reported in Studies 1, 2, and 3A. For instance, more positive explicit evaluative attitudes toward violence, as assessed by scores on the VESD, were significantly and strongly associated with greater likelihood of violence (i.e., EVQ-Likelihood) among male students (i.e., $r = .49$) and in-lab community men (i.e., $r = .53$) in Study 1, as well as males convicted of violent offences (i.e., $r = .52$) in Study 2, and the magnitude of these effects was consistent with that observed in the current study (i.e., $r = .56$). However, the relationship between these variables (i.e., VESD and EVQ-Likelihood) was moderate—albeit still significant—in Study 3A (i.e., $r = .35$) in men recruited online. When considering the effect sizes for the relationship between explicit evaluative attitudes

toward violence, as assessed by scores on the EVQ, and likelihood of violence, large and significant correlations were reported in Study 1, among male students (i.e., $r = .83$) and in-lab community men (i.e., $r = .78$), as well as among men recruited online (i.e., $r = .82$) in Study 3A, such that more positive explicit evaluative attitudes toward violence were associated with greater likelihood of violence. A slightly smaller effect size for the relationship between these variables (i.e., EVQ and EVQ-Likelihood) was observed among males convicted of violence in Study 2, however, the effect was still large in magnitude and in the same direction (i.e., $r = .66$). In addition, similar moderate to large effect sizes for the relationships between explicit evaluative attitudes toward violence (i.e., VESD and EVQ) and physical aggression (i.e., AQ-PA) were observed across the current study and Study 3A, such that more positive explicit evaluative attitudes toward violence were related to more physical aggression in both samples of men recruited online (i.e., $r = .45$ for the VESD and $r = .66$ for the EVQ in Study 3A; $r = .52$ for the VESD and $r = .76$ for the EVQ in the current study).

Results of the current study, in combination with Studies 1, 2, and 3A, are consistent with prior research using similar explicit measures of evaluative attitudes toward violence. As outlined above, research administering similar semantic differential scales reported similar results such that more positive explicit evaluative attitudes toward violence were related to more prior violent behaviour (i.e., Nunes et al., 2015) and greater likelihood of violence (i.e., Maimone & Nunes, 2020) in male undergraduate students and more prior violent behaviour, as well as greater propensity for violence in community men recruited online (i.e., Nunes, Pedneault, Hermann, & Fraser, 2021). Last, in a prior empirical study, more positive explicit evaluative attitudes toward violence, as assessed

by scores on the EVQ, were related to more prior violent behaviour and greater propensity for violence in community men recruited online (i.e., Nunes, Pedneault, Hermann, & Fraser, 2021).

Beliefs Regarding Violence and Violent Behaviour. As seen in Table 74, more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were significantly and strongly associated with more physical aggression, as assessed by scores on the AQ-PA ($r = .77$), and greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .81$). More violence-supportive beliefs, as assessed by scores on the CAVS, were also significantly and strongly associated with more physical aggression, as assessed by scores on the AQ-PA ($r = .79$), and greater likelihood of violence, as assessed by scores on the EVQ-Likelihood ($r = .82$).

As above, the results reported in the current study concerning the relationship between beliefs regarding violence and likelihood of violence are generally consistent with those reported in Studies 1, 2, and 3A. Large effect sizes for the relationship between these constructs were observed among male students (i.e., $r = .66$) and in-lab community men (i.e., $r = .72$) in Study 1, males convicted of violent offences (i.e., $r = .57$) in Study 2, and men recruited online (i.e., $r = .75$) in Study 3A, such that more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were associated with greater likelihood of violence (i.e., EVQ-Likelihood). The effect size for the relationship between these constructs was largest among men recruited online in the current study (i.e., $r = .81$), but, as illustrated here, all effects were large and in a consistent direction. In addition, effect sizes for the relationship between beliefs regarding violence, as assessed by scores on the CAVS, and likelihood of violence were

almost identical to those involving the MCAA-R-V in Studies 3A and 3B (i.e., $r = .77$ in Study 3A; $r = .82$ in Study 3B). Last, large and significant effect sizes were also observed for the relationships between beliefs regarding violence (i.e., MCAA-R-V and CAVS) and physical aggression (i.e., AQ-PA) across the current study and Study 3A, such that more violence-supportive beliefs were related to more physical aggression in both samples of men recruited online (i.e., $r = .69$ for the MCAA-R-V and $r = .76$ for the CAVS in Study 3A; $r = .77$ for the MCAA-R-V and $r = .79$ for the CAVS in the current study).

As outlined elsewhere, prior research has reported significant relationships between more violence-supportive beliefs, as assessed by scores on the MCAA Violence scale (MCAA-V and MCAA-R-V), and greater self-reported risk of violent recidivism (i.e., Maimone & Nunes, 2020), as well as more incidences of violent recidivism (i.e., Mills et al., 2004), among men incarcerated in provincial and federal correctional institutions. In addition, prior research has reported significant relationships between more violence-supportive beliefs, as assessed by scores on the CAVS, and greater risk to reoffend among convicted men (i.e., Polaschek et al., 2004). Last, prior research has reported a significant relationship between more violence-supportive beliefs, as assessed by scores on the CAVS, and more physical aggression (i.e., Hutchings et al., 2010). The consistency in results observed in the current study and those reported in Studies 1, 2, and 3A, as well as those reported in prior empirical research, provide compelling evidence for the reliability and stability of these relationships.

Variance Accounted for by Implicit Evaluative Attitudes Toward Violence

As in Studies 1 and 2, and 3A, hierarchical multiple linear regressions were conducted to assess whether implicit evaluative attitudes toward violence accounted for significantly more variance in violent behaviour (i.e., likelihood of violence and physical aggression in this case) over and above explicit evaluative attitudes toward violence or self-report beliefs regarding violence. These regressions were conducted such that explicit measures of evaluative attitudes toward violence (i.e., VESD or EVQ) or self-report measures of beliefs regarding violence (i.e., MCAA-R-V or CAVS) were added in the first step of the regression and implicit measures of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) were entered in the second step of the regression, with self-report measures of violent behaviour entered as the outcome variable (i.e., measures of prior violent physical aggression [AQ-PA] and likelihood of violence [EVQ-Likelihood]). As in the above studies, these data were examined to determine whether they conformed to the assumptions underlying hierarchical multiple linear regressions. Specifically, these data were screened for the following assumptions: multicollinearity between predictors in the model, homoscedasticity of variances, linearity of associations between the set of predictors and the outcomes, and normality, homoscedasticity, and independence of residuals. For the most part, these assumptions were upheld. Multivariate outliers were also examined for each regression model separately. As in Studies 1, 2, and 3A, multivariate outliers were excluded per analysis in an attempt to maximize power. Altogether, sixteen hierarchical regressions were conducted to examine whether implicit evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) accounted for significantly more variance in measures of violent behaviour over and

above explicit/self-report measures of violent cognition. As in the studies above, only regression models that approached significance are reported here.

As seen in Table 75, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, accounted for significantly more variance (i.e., $R^2 = .27$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .26$, $\Delta R^2 = .01$, $p < .01$). As seen in Table 76, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, accounted for significantly more variance (i.e., $R^2 = .272$) in physical aggression, as assessed by scores on the AQ-PA, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .268$, $\Delta R^2 = .004$, $p < .05$).

As seen in Table 77, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, accounted for significantly more variance (i.e., $R^2 = .284$) in likelihood of violence, as assessed by scores on the EVQ-Likelihood, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .278$, $\Delta R^2 = .006$, $p < .05$). Implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, also accounted for significantly more variance (i.e., $R^2 = .29$) in physical aggression, as assessed by scores on the AQ-PA, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD (i.e., $R^2 = .28$, $\Delta R^2 = .01$, $p < .05$; see Table 78).

Table 75

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3B

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.20***		.05	[1.11, 1.29]		1.43***		.08	[1.27, 1.60]	
VESD	0.35***	.51	.02	[0.31, 0.39]	.26	0.34***	.50	.02	[0.29, 0.38]	.24
VE-IAT						0.21**	.11	.06	[0.08, 0.33]	.01
<i>F</i>	247.00***					130.40***				
<i>R</i> ²	.26					.27				
ΔR^2						.01**				

Note. *N* = 702. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in likelihood of violence (i.e., EVQ Likelihood). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .01, *p* < .001.

Table 76

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Physical Aggression Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3B

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	15.19***		.48	[14.24, 16.13]		16.74***		.90	[14.97, 18.50]	
VESD	3.76***	.52	.24	[3.30, 4.22]	.27	3.69***	.51	.24	[3.23, 4.16]	.25
VE-IAT						1.39*	.07	.68	[0.06, 2.72]	.00
<i>F</i>	255.835***					130.593***				
<i>R</i> ²	.268					.272				
ΔR^2						.004*				

Note. *N* = 702. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in physical aggression (i.e., AQ-PA). In Model 1, I entered explicit evaluative attitudes toward violence to predict physical aggression. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, **p* < .001.

Table 77

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Likelihood of Violence Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3B

Variable	Model 1					Model 2				
	<i>B</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>B</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.18***		.05	[1.09, 1.27]		1.33***		.08	[1.18, 1.49]	
VESD	0.36***	.53	.02	[0.32, 0.41]	.28	0.36***	.52	.02	[0.31, 0.40]	.27
P-VE-IAT						0.15*	.08	.06	[0.03, 0.26]	.01
<i>F</i>	267.880***					137.826***				
<i>R</i> ²	.278					.284				
ΔR^2						.006*				

Note. *N* = 697. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., P-VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in likelihood of violence (i.e., EVQ Likelihood). In Model 1, I entered explicit evaluative attitudes toward violence to predict likelihood of violence. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, **p* < .001.

Table 78

Hierarchical Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Explain Additional Variance in Physical Aggression Above Explicit Evaluative Attitudes Toward Violence Among Males from the Community Recruited Online in Study 3B

Variable	Model 1					Model 2				
	<i>B</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>B</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	14.99***		.48	[14.04, 15.94]		16.53***		.83	[14.91, 18.16]	
VESD	3.90***	.53	.24	[3.44, 4.36]	.28	3.86***	.53	.24	[3.40, 4.32]	.27
P-VE-IAT						1.47*	.07	.64	[0.22, 2.73]	.01
<i>F</i>	273.65***					140.32***				
<i>R</i> ²	.28					.29				
ΔR^2						.01*				

Note. *N* = 697. I examined the variance accounted for by implicit evaluative attitudes toward violence (i.e., P-VE-IAT) and explicit evaluative attitudes toward violence (i.e., VESD) in physical aggression (i.e., AQ-PA). In Model 1, I entered explicit evaluative attitudes toward violence to predict physical aggression. In Model 2, I entered implicit evaluative attitudes toward violence as the predictor.

p* < .05, **p* < .001.

Overall, scores on the VE-IAT and P-VE-IAT added significant incremental variance when explaining likelihood of violence, as well as physical aggression, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD. These results are comparable to those reported in Study 1, regarding these same constructs, among male students and community men, which provides compelling support for the assertion that both implicit and explicit evaluative attitudes toward violence are important to consider when attempting to explain likelihood of violence and should be considered collectively to best explain this outcome. Of note, implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT and P-VE-IAT, explained significantly more variance in physical aggression and likelihood of violence, over and above explicit evaluative attitudes toward violence, as assessed by scores on the VESD in both Studies 3A and 3B. These results suggest that explicit evaluative attitudes toward violence better explain physical aggression and likelihood of violence when coupled with implicit evaluative attitudes toward violence than when alone.

As previously stated, the results of the hierarchical multiple linear regressions are important because they provide evidence that implicit evaluative attitudes toward violence play a functionally distinct role to that of explicit evaluative attitudes toward violence when explaining violent outcomes, especially likelihood of behaving violently. In conclusion, implicit evaluative attitudes toward violence appear to be important to consider in conjunction with explicit evaluative attitudes toward violence to better understand the offence cycle of violence and the likelihood that someone would behave violently. To further establish the importance of distinctively assessing these constructs in

relation to violent outcomes, I examined the underlying factor structure of items within the measures designed to assess implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT), explicit evaluative attitudes toward violence (i.e., VESD and EVQ), and beliefs regarding violence (i.e., MCAA-R-V and CAVS) in Study 3C. The aim of this analysis was to determine whether these measures assess similar or distinct cognitive constructs regarding violence.

Moderation of Implicit Evaluative Attitudes Toward Violence

As in Studies 1, 2, and 3A, a series of hierarchical multiple linear regressions were conducted to assess whether implicit evaluative attitudes toward violence significantly moderate the relationship between explicit/self-report violent cognitions and violent behaviour. As above, this effect was quantified by assessing the significance of the interaction between implicit and explicit/self-report measures of violent cognition on measures of violent behaviour. Specifically, the implicit measure of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) and explicit/self-report measure of violent cognition (i.e., explicit measures of evaluative attitudes toward violence [VESD or EVQ], or self-report measures of beliefs regarding violence [MCAA-R-V or CAVS]) were added in the first step of the regression and the interaction between implicit measures of evaluative attitudes toward violence and the explicit/self-report measures of violent cognition was added in the second step of the regression (i.e., VE-IAT $\times$ VESD, VE-IAT $\times$ EVQ, VE-IAT $\times$ MCAA-R-V, VE-IAT $\times$ CAVS, P-VE-IAT $\times$ VESD, P-VE-IAT $\times$ EVQ, P-VE-IAT $\times$ MCAA-R-V, or P-VE-IAT $\times$ CAVS) with a self-report measure of violent behaviour as the outcome variable (i.e., AQ-PA or EVQ-Likelihood). As in Studies 1, 2, and 3A, Preacher's online calculator (Preacher et al., 2006) was then used to

assess the significance of the simple slopes. As above, these data were examined to determine whether they conformed to the assumptions underlying multiple linear regression. Specifically, these data were screened for the following assumptions: multicollinearity between predictors in the model, homoscedasticity of variances, linearity of association between the set of predictors and the outcome, and normality, homoscedasticity, and independence of residuals. For the most part, these assumptions were upheld. As in the analyses above, multivariate outliers were also examined for each regression model separately and were excluded per analysis in an attempt to maximize power. Altogether, sixteen hierarchical multiple linear regressions were conducted to examine whether implicit measures of evaluative attitudes toward violence (i.e., VE-IAT or P-VE-IAT) moderated the relationship between explicit/self-report measures of violent cognition and self-report measures of violent behaviour. Only the regression analyses that approached significance are reported and analyses of the simple slopes was only conducted for significant interactions.

As is outlined above, scores on implicit measures of evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT), explicit measures of evaluative attitudes toward violence (i.e., VESD and EVQ), and measures of beliefs regarding violence (i.e., MCAA-R-V and CAVS) were mean centered. Interaction terms between implicit and explicit/self-report violent cognitions were then created out of the centered terms (see above for terms). After controlling for implicit and explicit/self-report violent cognition at Step 1 of the regression, the multiplicative interaction term was entered in the equation (at Step 2).

Of the sixteen moderated regressions, three approached significance. A summary of the results of the regression equation predicting likelihood of violence, assessed by scores on the EVQ-Likelihood, from beliefs regarding violence, assessed by scores on the MCAA-R-V, and implicit evaluative attitudes toward violence, assessed by scores on the VE-IAT, as well as their multiplicative interaction, is displayed in Table 79. Beliefs regarding violence, as a main effect, significantly predicted likelihood of violence such that more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were associated with greater likelihood of violence ($b = 0.01$, $SE = .00$, $\beta = .77$, $t[699] = 31.43$, $p < .001$, $95\% \text{ CI} = [0.08, 0.09]$, $sr^2 = .56$). Implicit evaluative attitudes toward violence (i.e., scores on the VE-IAT), as a main effect, did not add significant incremental variance in the prediction of likelihood of violence over and above beliefs regarding violence ($b = 0.08$, $SE = .05$, $\beta = .04$, $t[699] = 1.63$, $p = .10$, $95\% \text{ CI} = [-0.02, 0.17]$, $sr^2 = .00$). A significant interaction was observed between beliefs regarding violence and implicit evaluative attitudes toward violence (i.e., $\text{MCAA-R-V} \times \text{VE-IAT}$), $b = 0.02$, $SE = .01$, $\beta = .06$, $t(698) = 2.25$, $p = .03$, $95\% \text{ CI} = [0.00, 0.03]$, $sr^2 = .003$, and explained an additional 0.3% of the variance, $F_{\text{change}}(698) = 5.07$, $p = .03$. Results from follow-up simple slopes analyses are illustrated in Figure 24. Results show that more violence-supportive beliefs were significantly associated with greater likelihood of violence at low levels (i.e., or more negative $[-1\text{SD}]$), $b = 0.07$, $SE = .004$, $t(698) = 19.68$, $p < .001$, moderate levels (i.e., or more neutral $[0]$), $b = 0.08$, $SE = .003$, $t(698) = 30.24$, $p < .001$, and high levels (i.e., or more positive $[+1\text{SD}]$), $b = 0.09$, $SE = .003$, $t(698) = 26.46$, $p < .001$, of implicit evaluative attitudes toward violence. Although the differences were very slight, the increase in likelihood of violence when going from low (or more negative)

beliefs regarding violence to high (or more positive) beliefs regarding violence was most pronounced at high (or more positive) implicit evaluative attitudes toward violence and least pronounced at low (or more negative) implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (Figure 24).

Table 79

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Beliefs Regarding Violence and Likelihood of Violence Among Males from the Community Recruited Online in Study 3B

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.84***		.02	[1.81, 1.87]		1.83***		.02	[1.80, 1.86]	
MCAA-R-V	0.08***	.77	.00	[0.08, 0.09]	.56	0.08***	.76	.00	[0.07, 0.09]	.53
VE-IAT	0.08	.04	.05	[-0.02, 0.17]	.00	0.07	.04	.05	[-0.03, 0.16]	.00
MCAA-R-V $\times$ VE-IAT						0.02*	.06	.01	[0.00, 0.03]	.00
<i>F</i>	530.789***					357.612***				
<i>R</i> ²	.603					.606				
ΔR ²						.003*				

Note. *N* = 702. I examined whether implicit evaluative attitudes toward violence (i.e., VE-IAT) significantly moderate the relationship between beliefs regarding violence (i.e., MCAA-R-V) and likelihood of violence (i.e., EVQ Likelihood) by examining the significance of the MCAA-R-V by VE-IAT interaction. In Model 1, I entered beliefs regarding violence (centered) and implicit evaluative attitudes toward violence (centered) to predict likelihood of violence. In Model 2, I entered the MCAA-R-V by VE-IAT interaction as the predictor.

p* < .05, **p* < .001.

Figure 24

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Likelihood of Violence Among Community Men Recruited Online in Study 3B

Note. $N = 702$ males from the community that were recruited online. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting likelihood of violence from the MCAA-R-V, VE-IAT, and MCAA-R-V by VE-IAT interaction. Evaluation of Violence Questionnaire – Likelihood of violence version (EVQ-Likelihood) was entered as the outcome to assess likelihood of violence. VE-IAT = Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. MCAA-R-V = Measures of Criminal Attitudes and Associates – Revised – Violence scale, used to assess beliefs regarding violence.

A summary of the results of the regression equation predicting likelihood of violence, assessed by scores on the EVQ-Likelihood, from beliefs regarding violence, assessed by scores on the MCAA-R-V, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction, is

displayed in Table 80. Beliefs regarding violence, as a main effect, significantly predicted likelihood of violence such that more violence-supportive beliefs, as assessed by scores on the MCAA-R-V, were associated with greater likelihood of violence ($b = 0.08$, $SE = .00$, $\beta = .79$, $t[692] = 33.03$, $p < .001$, 95% CI = [0.08, 0.09], $sr^2 = .60$). Implicit evaluative attitudes toward violence (i.e., scores on the P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of likelihood of violence over and above beliefs regarding violence ($b = -0.01$, $SE = .05$, $\beta = -.00$, $t[692] = -0.14$, $p = .89$, 95% CI = [-0.10, 0.08], $sr^2 = .00$). A significant interaction was observed between beliefs regarding violence and implicit evaluative attitudes toward violence (i.e., MCAA-R-V $\times$ P-VE-IAT), $b = 0.01$, $SE = .01$, $\beta = .05$, $t(691) = 2.08$, $p = .04$, 95% CI = [0.00, 0.03], $sr^2 = .002$, and explained an additional 0.2% of the variance, $F_{\text{change}}(691) = 4.33$, $p = .04$. Results from follow-up simple slopes analyses are illustrated in Figure 25. Results show that more violence-supportive beliefs were significantly associated with greater likelihood of violence at low levels (i.e., or more negative [- 1SD]), $b = 0.077$, $SE = .004$, $t(691) = 20.92$, $p < .001$, moderate levels (i.e., or more neutral [0]), $b = 0.082$, $SE = .003$, $t(691) = 33.48$, $p < .001$, and high levels (i.e., or more positive [+ 1SD]), $b = 0.087$, $SE = .003$, $t(691) = 26.61$, $p < .001$, of implicit evaluative attitudes toward violence. Although the differences were, once again, very slight, the increase in likelihood of violence when going from low (or more negative) beliefs regarding violence to high (or more positive) beliefs regarding violence was most pronounced at high (or more positive) implicit evaluative attitudes toward violence and least pronounced at low (or more negative) implicit evaluative attitudes toward violence with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (Figure 25).

Table 80

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Beliefs Regarding Violence and Likelihood of Violence Among Males from the Community Recruited Online in Study 3B

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	1.84***		.02	[1.80, 1.87]		1.83***		.02	[1.80, 1.86]	
MCAA-R-V	0.08***	.79	.00	[0.08, 0.09]	.60	0.08***	.78	.00	[0.08, 0.09]	.58
P-VE-IAT	-0.01	-.00	.05	[-0.10, 0.08]	.00	-0.00	-.00	.05	[-0.09, 0.08]	.00
MCAA-R-V $\times$ P-VE-IAT						0.01*	.05	.01	[0.00, 0.03]	.00
<i>F</i>	561.126***					377.328***				
<i>R</i> ²	.619					.621				
ΔR ²						.002*				

Note. *N* = 695. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between beliefs regarding violence (i.e., MCAA-R-V) and likelihood of violence (i.e., EVQ Likelihood) by examining the significance of the MCAA-R-V by P-VE-IAT interaction. In Model 1, I entered beliefs regarding violence (centered) and implicit evaluative attitudes toward violence (centered) to predict likelihood of violence. In Model 2, I entered the MCAA-R-V by P-VE-IAT interaction as the predictor.

p* < .05, **p* < .001.

Figure 25

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Likelihood of Violence Among Community Men Recruited Online in Study 3B

Note. $N = 695$ males from the community that were recruited online. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting likelihood of violence from the MCAA-R-V, P-VE-IAT, and MCAA-R-V by P-VE-IAT interaction. Evaluation of Violence Questionnaire – Likelihood of violence version (EVQ-Likelihood) was entered as the outcome to assess likelihood of violence. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test, used to assess implicit evaluative attitudes toward violence. MCAA-R-V = Measures of Criminal Attitudes and Associates – Revised – Violence scale, used to assess beliefs regarding violence.

A summary of the results of the regression equation predicting physical aggression, assessed by scores on the AQ-PA, from explicit evaluative attitudes toward violence, assessed by scores on the EVQ, and implicit evaluative attitudes toward violence, assessed by scores on the P-VE-IAT, as well as their multiplicative interaction,

is displayed in Table 81. Explicit evaluative attitudes toward violence, as a main effect, significantly predicted physical aggression such that more positive explicit evaluative attitudes toward violence, as assessed by scores on the EVQ, were associated with more physical aggression ($b = 7.82$, $SE = .27$, $\beta = .73$, $t[694] = 28.53$, $p < .001$, 95% CI = [7.28, 8.36], $sr^2 = .53$). Implicit evaluative attitudes toward violence (i.e., scores on the P-VE-IAT), as a main effect, did not add significant incremental variance in the prediction of physical aggression over and above explicit evaluative attitudes toward violence ($b = 0.66$, $SE = .51$, $\beta = .03$, $t[694] = 1.28$, $p = .20$, 95% CI = [-0.35, 1.67], $sr^2 = .00$). A marginally significant interaction was observed between explicit evaluative attitudes toward violence and implicit evaluative attitudes toward violence (i.e., $EVQ \times P\text{-}VE\text{-}IAT$), $b = -1.37$, $SE = .76$, $\beta = -.05$, $t(693) = -1.81$, $p = .07$, 95% CI = [-2.86, 0.12], $sr^2 = .002$, and explained an additional 0.2% of the variance, $F_{\text{change}}(693) = 3.28$, $p = .07$.

Results from follow-up simple slopes analyses are illustrated in Figure 26. Results show that more positive explicit evaluative attitudes toward violence were significantly associated with more physical aggression at low levels (i.e., or more negative [- 1SD]), $b = 8.43$, $SE = .43$, $t(693) = 19.39$, $p < .001$, moderate levels (i.e., or more neutral [0]), $b = 7.93$, $SE = .28$, $t(693) = 28.23$, $p < .001$, and high levels (i.e., or more positive [+ 1SD]), $b = 7.44$, $SE = .35$, $t(693) = 21.50$, $p < .001$, of implicit evaluative attitudes toward violence. Although the differences were, once again, very slight, the increase in physical aggression when going from low (or more negative) explicit evaluative attitudes toward violence to high (or more positive) explicit evaluative attitudes toward violence was most pronounced at low (or more negative) implicit evaluative attitudes toward violence and least pronounced at high (or more positive) implicit evaluative attitudes toward violence

with mean (or more neutral) implicit evaluative attitudes toward violence falling in between (Figure 26).

Table 81

Hierarchical Multiple Linear Regression Coefficients Examining Whether Implicit Evaluative Attitudes Toward Violence Moderate the Relationship Between Explicit Evaluative Attitudes Toward Violence and Physical Aggression Among Males from the Community Recruited Online in Study 3B

Variable	Model 1					Model 2				
	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²
Constant	22.02***		.18	[21.66, 22.39]		22.06***		.19	[21.70, 22.43]	
EVQ	7.82***	.73	.27	[7.28, 8.36]	.53	7.93***	.75	.28	[7.38, 8.49]	.52
P-VE-IAT	0.66	.03	.51	[-0.35, 1.66]	.00	0.61	.03	.51	[-0.40, 1.61]	.00
EVQ $\times$ P-VE-IAT						-1.37 ^a	-.05	.76	[-2.86, 0.12]	.00
<i>F</i>	416.919***					279.952***				
<i>R</i> ²	.546					.548				
ΔR ²						.002 ^a				

Note. *N* = 697. I examined whether implicit evaluative attitudes toward violence (i.e., P-VE-IAT) significantly moderate the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and physical aggression (i.e., AQ-PA) by examining the significance of the EVQ by P-VE-IAT interaction. In Model 1, I entered explicit evaluative attitudes toward violence (centered) and implicit evaluative attitudes toward violence (centered) to predict physical aggression. In Model 2, I entered the EVQ by P-VE-IAT interaction as the predictor.

****p* < .001. ^amarginally significant at *p* = .071.

Figure 26

Follow-up Simple Slopes Analyses for Above Moderated Regression Predicting Physical Aggression Among Community Men Recruited Online in Study 3B

Note. $N = 697$ males from the community that were recruited online. Table displays the results of the follow-up simple slopes analyses for the moderated regression predicting physical aggression from the EVQ, P-VE-IAT, and EVQ by P-VE-IAT interaction.

Aggression Questionnaire – Physical Aggression subscale (AQ-PA) was entered as the outcome to assess physical aggression. P-VE-IAT = Personalized Violent Evaluation

Implicit Association Test, used to assess implicit evaluative attitudes toward violence.

EVQ = Evaluation of Violence Questionnaire, used to assess explicit evaluative attitudes toward violence.

As outlined in prior studies above, theories from the social psychology literature propose that when stronger implicit evaluative attitudes toward an object exist and are activated this limits motivation to deliberate, likely resulting in consistent explicit evaluative attitudes toward the object that then motivate the resulting behaviour.

Conversely, when no implicit evaluative attitudes toward the object exist, explicit evaluative attitudes are created from whatever information is available in the environment, which are likely weakly related to violent behaviour (e.g., MODE; Fazio, 1990). Thus, it was hypothesized that implicit evaluative attitudes toward violence would moderate the relationships between explicit/self-report violent cognitions and violent behaviour. Specifically, the strength of the relationship between explicit/self-report violent cognitions and violent behaviour was expected to vary depending on the level of implicit evaluative attitudes toward violence (i.e., high, neutral, and low levels).

As in Studies 1 and 3A, this hypothesis was somewhat supported among the current sample of community men recruited online. Implicit evaluative attitudes toward violence, as assessed by scores on the VE-IAT, significantly moderated the relationships between beliefs regarding violence (i.e., MCAA-R-V) and likelihood of violence (i.e., EVQ-Likelihood). For this regression model predicting likelihood of violence, the strongest relationship between beliefs regarding violence and likelihood of violence was found at high levels of (or more positive) implicit evaluative attitudes toward violence, followed by moderate, and then low levels of (or more negative) implicit evaluative attitudes toward violence. These results suggest that those who hold more positive implicit evaluative attitudes toward violence have the strongest relationship between their beliefs regarding violence and likelihood of violence, followed by those who hold more neutral implicit evaluative attitudes, and last, those who hold more negative implicit evaluative attitudes. In addition, implicit evaluative attitudes toward violence, as assessed by scores on the P-VE-IAT, significantly moderated the relationship between beliefs regarding violence (i.e., MCAA-R-V) and likelihood of violence (i.e., EVQ-Likelihood),

as well as marginally significantly moderated the relationship between explicit evaluative attitudes toward violence (i.e., EVQ) and physical aggression (i.e., AQ-PA). For the regression model predicting likelihood of violence, the strongest relationship between beliefs regarding violence and likelihood of violence was found at high levels of (or more positive) implicit evaluative attitudes toward violence, followed by moderate, and then low levels of (or more negative) implicit evaluative attitudes toward violence. These results suggest that those who hold more positive implicit evaluative attitudes toward violence have the strongest relationship between their beliefs regarding violence and likelihood of violence, followed by those who hold more neutral implicit evaluative attitudes, and last, those who hold more negative implicit evaluative attitudes. These results are in line with those above involving the VE-IAT, in the current study, as well as somewhat related to Agnew's (1994) findings in which more neutralizations of violence (i.e., a construct that likely encompasses some beliefs regarding violence as assessed by the MCAA-R-V, such as justifications for violence) were most strongly related to more violent behaviour for those who generally approved of violence (i.e., in other words at high levels of the moderator which was a similar construct to positive evaluative attitudes toward violence although this variable was not implicit), when this effect was examined cross-sectionally, as was the case in the current study. In contrast, for the regression model predicting physical aggression, in the current study, the strongest relationship between explicit evaluative attitudes toward violence and physical aggression was found at low levels of (or more negative) implicit evaluative attitudes toward violence, followed by moderate, and then high levels of (or more positive) implicit evaluative attitudes toward violence. These results suggest that those who hold more negative implicit

evaluative attitudes toward violence have the strongest relationship between their explicit evaluative attitudes toward violence and physical aggression, followed by those who hold more neutral implicit evaluative attitudes, and last, those who hold more positive implicit evaluative attitudes.

It appears that the relationship between explicit/self-report violent cognitions and violent behaviour may differ depending on the level (or strength) of implicit evaluative attitudes toward violence, but the nature of these differences is, again, somewhat unclear when considering the results of the moderated regressions across studies. Consistent with the previous studies, these differences appear to be inconsistent between samples and measures used in the current study. However, as articulated elsewhere, these results suggest that the relationships between implicit evaluative attitudes toward violence and explicit/self-report violent cognitions are not independent in their relationship to violent outcomes and understanding how these constructs interact may aid in identifying who is more prone to violence. In Study 3C, the underlying factor structure of items within the measures designed to assess implicit evaluative attitudes toward violence (i.e., the VE-IAT and P-VE-IAT), explicit evaluative attitudes toward violence (i.e., the VESD and EVQ), and beliefs regarding violence (i.e., MCAA-R-V and CAVS) was examined. Samples from Studies 3A and 3B were combined, with the aim of examining whether these measures are assessing similar or distinct cognitive constructs. The results of this analysis will help establish whether distinctively examining scores on these measures advances our understanding of violent behaviour.

Study 3C: Distinctiveness of Measures Assessing Violent Cognitive Constructs

The distinctiveness of items within the measures designed to assess implicit evaluative attitudes toward violence, explicit evaluative attitudes toward violence, and beliefs regarding violence was assessed in the current study. This was done by assessing the underlying factor structure of items within these measures using a Structural Equation Modeling technique called, Exploratory Factor Analysis (EFA). In EFA, the way in which items within measures cluster together determines how many factors they are assessing. If items from different measures cluster together, this suggests that they are assessing similar constructs (or similar cognitive constructs regarding violence). However, if items from different measures form distinct clusters, this suggests that they are likely assessing different constructs (or different cognitive constructs regarding violence). Assessing whether the items within the measures of cognitions regarding violence assess similar or different constructs is important because it provides further insight into the utility of distinctively assessing scores on such measures and the likelihood that doing so would provide additional information in explaining violence. Last, the relationships between the factors found in the EFA and the violent behavioural outcome measures (i.e., physical aggression and likelihood of violence) were also assessed.

For the EFA, it was hypothesized that items in implicit measures of evaluative attitudes toward violence would form a distinct factor from items in explicit measures of evaluative attitudes toward violence and items in self-report measures of beliefs regarding violence. In addition, it was hypothesized that items in explicit measures of evaluative attitudes toward violence may not form a separate factor from items in self-

report measures of beliefs regarding violence. This was hypothesized because, as outlined above, the MODE model (Fazio, 1990) states that evaluative attitudes toward violence are activated either through an automatic processing mode or a deliberative processing mode. This dual-mode processing framework may inform the mechanisms through which implicit (i.e., activated through the automatic processing mode) and explicit (i.e., activated through the deliberative processing mode) evaluative attitudes toward violence are activated from memory. Evaluative attitudes activated through a deliberative processing mode require conscious thought and deliberation and therefore, self-reported beliefs regarding violence may be similar to explicit evaluative attitudes toward violence because they may be activated by the same underlying mental process (i.e., the deliberative mental processing mode). However, implicit evaluative attitudes toward violence lack conscious thought and deliberation and are believed to be more spontaneous and immediate. Therefore, implicit evaluative attitudes toward violence may be distinct from other explicit/self-report cognitive constructs regarding violence because they may be activated by a different underlying mental process (i.e., the automatic mental processing mode). Last, it was hypothesized that the distinct factors found from the EFA would be independently associated with violent behaviour (i.e., physical aggression and likelihood of violence) and together would account more variance in violence than either one alone.

Methods

Participants

Participants consisted of adult males from the community that were recruited online through Qualtrics (<http://www.qualtrics.com>). As in Study 1, 3A, and 3B,

participants did not have to self-report a history of violence to be included in the study. In addition, all participants had to be male, heterosexual, 18 years of age or older, and understand written English. These criteria were clearly communicated during the recruitment process by Qualtrics. As in all previous studies, female participants, as well as those who identify as not being most sexually attracted to women, were not recruited (see Study 1 for justification).

Initially, 1,906 adult males consented to participate in the online survey. Out of these participants, a total of 1,465 did not withdraw and fully completed the survey through Qualtrics. The sample of 1,465 participants were all male, 18 years of age or older, most sexually attracted to women, and self-reported that they understood written English. In addition, all 1,465 participants correctly answered four or more of the quality control questions that were randomly interspersed among the items in the survey (see Appendices AG and AL). As in all previous studies, five quality control questions were included in the survey to make sure participants were attending to the questions being asked. As before, they required participants to select a particular response and thus, just simply follow the instructions provided in the question (e.g., Please select 'Very likely'). Given that the procedure was quite lengthy (e.g., took over 30 minutes to complete) it seemed reasonable to miss/incorrectly answer a quality control question. An additional seventeen participants were excluded because they had one or more missing score(s) on the main measures of interest. Because less than 5% missing data was observed, missing values analysis was not conducted and any missing scores were excluded listwise (i.e., across all *main* measures of interest). This left a sample of 1,448 participants. Out of this sample, an additional 309 participants were excluded due to having response times faster

than 300 milliseconds on more than 10% of the VE-IAT and P-VE-IAT trials.

Inconsistent with all previous studies, these participants were excluded listwise because scores on both the VE-IAT and P-VE-IAT were entered into analyses together, along with scores on the explicit/self-report measures of violent cognitions, in the current study. This left a final sample of 1,141 males from the community who were recruited online. Displayed in Table 82 are the demographic details regarding this sample.

Table 82

Demographics of Males from the Community Recruited Online in Study 3C

Demographic Variables	Frequency	%	<i>N</i>
What is your biological sex?			1141
Male	1141	100.0	
Female	0	0.0	
Other	0	0.0	
In what country are you currently living?			1141
Canada	590	51.7	
United States	551	48.3	
Other	0	0	
What is your ethnicity?			1141
White	792	69.4	
Black	66	5.8	
Indigenous	8	0.7	
Asian	156	13.7	
East Indian	19	1.7	
Hispanic/Latino	24	2.1	
Arab	10	0.9	
Other	11	1.0	
Selected more than one ethnicity	55	4.8	
Who are you most sexually attracted to?			1141
Women	1141	100.0	
Men	0	0.0	
Both women and men equally	0	0.0	
Other	0	0.0	
How old are you (years)?			1141
17 or younger	0	0.0	
18-21	147	12.9	
22-23	58	5.1	

24-29	261	22.9	
30-34	148	13.0	
35-39	79	6.9	
40-49	145	12.7	
50-59	42	3.7	
60 or older	261	22.9	
What is the highest grade you have completed?			1107
No schooling completed (includes pre-school)	3	0.3	
Kindergarten to grade 6	5	0.4	
Grade 7	1	0.1	
Grade 8	0	0.0	
Grade 9	7	0.6	
Grade 10	17	1.5	
Grade 11	41	3.6	
Grade 12	628	55.0	
Grade 13	405	35.5	
What is the highest level of education you have completed?			1141
Did not complete high school	30	2.6	
High school (or equivalent)	313	27.4	
Community college	177	15.5	
Undergraduate degree	380	33.3	
Master's degree	185	16.2	
Doctoral degree	39	3.4	
Other	17	1.5	
What is your current employment status?			1140
Full-time employed	540	47.3	
Part-time employed	148	13.0	
Not employed (includes homemaker, unable to work, etc.)	123	10.8	
Military	1	0.1	
Full-time student	106	9.3	
Part-time student	15	1.3	
Retired	187	16.4	
Other	20	1.8	
What is your current relationship status?			1141
Single	503	44.1	
In a romantic relationship	63	5.5	
Living with a romantic partner	79	6.9	
Married	426	37.3	
Separated/divorced/widowed	70	6.1	
Do you speak English fluently?			1141
No	14	1.2	

Yes	1127	98.8	
Do you understand written English?			1141
No	0	0.0	
Yes	1141	100.0	
Do you understand spoken English?			1141
No	3	0.3	
Yes	1138	99.7	

Note. $N = 1141$ males from the community, recruited online. Note that 34 participants were missing information on the highest grade they have completed (i.e., they chose not to answer this item) and 1 participant was missing information on what his current employment status was.

Measures

Violent Cognition Measures. The same measures administered in Study 3A and Study 3B, designed to assess various cognitive constructs regarding violence (i.e., VE-IAT, P-VE-IAT, VESD, EVQ, MCAA-R-V, and CAVS), were analyzed in the current study. The following internal consistencies were found for the measures of violent cognition in the current study: $\alpha = .88$ for the VE-IAT, $\alpha = .88$ for the P-VE-IAT, $\alpha = .86$ for the MCAA-R-V, $\alpha = .95$ for the CAVS, $\alpha = .94$ for the VESD, and $\alpha = .96$ for the EVQ.

Violent Behaviour Measures. The same measures administered in Study 3B, designed to assess physical aggression (i.e., AQ-PA) and likelihood of violence (i.e., EVQ-Likelihood) were analyzed in the current study. The following internal consistencies were found for the measures of violent behaviour in the current study: $\alpha = .85$ for the AQ-PA and $\alpha = .95$ for the EVQ-Likelihood.

Procedure

The samples collected in Study 3A and Study 3B were combined in the current study to obtain a large sample, with an aim to achieve adequate power to run more sophisticated analyses; however, the same procedure was utilized as in Study 3A and thus, Study 3B. Therefore, please refer to the *Procedure* section of Study 3A above, for details regarding the procedure of the current study.

Results and Discussion

Descriptive statistics for each measure used in the current study are reported in Table 83. As in Studies 1, 2, 3A, and 3B, participants included in the analyses were all male, most sexually attracted to females, 18 years of age or older, understood written English, selected the correct response option for at least four of the five quality control questions included in the survey (see description for these items in the *Participant* section above), and had complete responses (i.e., no missing items) on all measures of interest. As outlined above, this left a sample of 1,450 participants.

For the measures designed to assess implicit evaluative attitudes toward violence (i.e., VE-IAT and P-VE-IAT), participants who took less than 300 milliseconds on 10% or more of the IAT trials were also excluded from all analyses in the current study. This deviated from what was done in the previous studies; however, it was necessary to exclude these participants across both measures (i.e., excluded listwise) because the VE-IAT and P-VE-IAT were included at the same time for the analyses in this study. An additional 309 participants (out of 1,450) were excluded due to having response times faster than 300 milliseconds on 10% or more of VE-IAT and P-VE-IAT trials. This left a final sample of 1,141 male participants recruited online.

Table 83

Descriptive Statistics of Measures of Interest for Males from the Community Recruited

Online in Study 3C

Measure	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>
VE-IAT	1141	-1.69	0.44	-1.02	0.34
P-VE-IAT	1141	-1.69	0.70	-1.00	0.35
MCAA-R-V	1141	10.00	40.00	21.51	6.44
CAVS	1141	20.00	100.00	45.01	16.72
VESD	1141	1.00	7.00	1.86	1.02
EVQ	1141	1.00	4.00	1.85	0.68
AQ-PA	1141	9.00	42.00	22.29	7.19
EVQ-Likelihood	1141	1.00	4.00	1.88	0.68

Note. VE-IAT = Violent Evaluation Implicit Association Test. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test. MCAA-R-V = Measures of Criminal Attitudes and Associations – Revised – Violence scale. CAVS = Criminal Attitudes to Violence Scale. VESD = Violent Evaluation Semantic Differential scales. EVQ = Evaluation of Violence Questionnaire. AQ-PA = Aggression Questionnaire – Physical Aggression subscale. EVQ-Likelihood = Evaluation of Violence Questionnaire – Likelihood of Violence version.

In the current study, an exploratory factor analysis (EFA) was conducted to assess the underlying factor structure of items from the MCAA-R-V and CAVS, both designed to assess beliefs regarding violence, the EVQ and VESD, both designed to assess explicit evaluative attitudes toward violence, and the VE-IAT and P-VE-IAT, both designed to assess implicit evaluative attitudes toward violence. In EFA, items covary if they belong to the same underlying latent factor. Therefore, items that load onto the same latent factor are believed to assess a similar underlying construct. Due to the fact that scoring

according to Greenwald et al.'s (2003) improved IAT scoring algorithm produces one IAT effect score (i.e., VE-IAT d score and P-VE-IAT d score), which is not ideal for conducting an EFA of item variance, response latencies were parcelled into four D scores per IAT measure in the current study. This produced four sets of D scores per IAT measure which were then used as item indicators in the EFA. Data parcelling is a common statistical procedure used whereby scores from two or more items are parcelled and averaged, with the resulting averaged parcelled scores replacing the original item scores in the subsequent analysis (Bandalos, 2002; Chequer, 2014). Additionally, Chequer (2014) used data parcelling when assessing the construct validity of various IATs using a structural equation modeling (SEM) technique called confirmatory factor analysis (i.e., a SEM technique similar to EFA). In the current study, VE-IAT and P-VE-IAT data parcels were created using the following procedure. First, a random equal number of trials containing response latencies were selected four times from each IAT block that is used to create the D score index (i.e., Blocks 3, 4, 6, and 7). Specifically, response latencies for a random set of five trials (out of a total of 20 trials) were selected from Block 3 (i.e., the compatible practice block), response latencies for a random set of ten trials (out of a total of 40 trials) were selected from Block 4 (i.e., the compatible critical block), response latencies for a random set of five trials (out of a total of 20 trials) were selected from Block 6 (i.e., the incompatible practice block), and response latencies for a random set of ten trials (out of a total of 40 trials) were selected from Block 7 (i.e., the incompatible critical block) for each participant. Response latencies for each block were randomly selected a total of four times out of the remaining trials. Response latencies for the randomly selected trials were then combined to create a total of four data

parcels for each IAT measure (i.e., four parcels for the VE-IAT and four parcels for the P-VE-IAT). Therefore, each of the four data parcels contained five trials from Block 3, ten trials from Block 4, five trials from Block 6, and ten trials from Block 7, for each participant. The response latencies contained within each data parcel were then converted into IAT *D* scores according to Greenwald et al.'s (2003) improved scoring algorithm, as was done in all other studies throughout the current dissertation. Therefore, each participant received four IAT *D* scores for the VE-IAT and four IAT *D* scores for the P-VE-IAT. Table 84 displays the descriptive statistics regarding these data parcels, along with their associated internal consistencies (i.e., Cronbach's α). The four VE-IAT and four P-VE-IAT data parcels (i.e., containing IAT *D* scores) were then entered into the EFA, along with items from other explicit/self-report measures of violent cognition, as item indicators for these implicit measures of evaluative attitudes toward violence.

Table 84*Descriptive Statistics of VE-IAT and P-VE-IAT Parcels for Males from the Community**Recruited Online in Study 3C*

Measure	<i>N</i>	Minimum	Maximum	<i>M</i>	<i>SD</i>	α
VE-IAT						
Parcel 1	1141	-1.74	0.90	-1.02	0.43	.70
Parcel 2	1141	-1.77	0.41	-1.17	0.32	.62
Parcel 3	1141	-1.77	0.87	-1.00	0.43	.67
Parcel 4	1141	-1.79	0.91	-1.08	0.41	.70
P-VE-IAT						
Parcel 1	1141	-1.79	0.94	-1.03	0.44	.72
Parcel 2	1141	-1.78	0.92	-1.09	0.42	.74
Parcel 3	1141	-1.76	0.99	-0.98	0.42	.62
Parcel 4	1141	-1.76	1.08	-1.12	0.36	.65

Note. VE-IAT = Violent Evaluation Implicit Association Test. P-VE-IAT = Personalized Violent Evaluation Implicit Association Test. Both used to assess implicit evaluative attitudes toward violence. All parcels were entered into the EFA as item indicators of the VE-IAT and P-VE-IAT.

All variables (i.e., items and data parcels on for all measures of interest) were screened for out-of-range values and missing scores. Items contained less than 5% missing data; thus, as mentioned above, missing scores were excluded listwise.

The aim in the current study was to determine how many factors underlie the measures of violent cognition that were administered throughout this dissertation. Determining the factor structure of these measures provides indication as to whether items from different measures are likely assessing a similar or different cognitive construct regarding violence. Additionally, determining this provides further indication as to whether scores

on these measures should be assessed separately and in conjunction with scores on other measures of violent cognition.

Factor Structure of The Violent Cognition Measures

All items from the MCAA-R-V, CAVS, EVQ, VESD, VE-IAT, and P-VE-IAT were included in the EFA using Mplus Version 8.5 (Muthen & Muthen, 2015) to assess their underlying factor structure. As mentioned above, missing data was excluded listwise along with those who had response times faster than 300 milliseconds on more than 10% of the VE-IAT and P-VE-IAT trials. In order to exclude these participants, all missing scores, as well as fast response times, were coded as 9999 so that these cases would be recognized as missing in Mplus (i.e., Mplus cannot run if any cell is left blank). First, a polychoric correlation matrix was computed and examined for correlations exceeding .90, suggesting issues with multicollinearity (or singularity) among the items. A polychoric correlation, rather than Pearson's r correlation, matrix was computed to examine bivariate relationships between all items included in the EFA. This was done because many of the measures of violent cognition (i.e., MCAA-R-V, CAVS, EVQ, and VESD) were ordinal in nature and prior research suggests that Pearson's r correlations become biased when estimating effects between ordinal variables, which is further exacerbated when data are not normally distributed (see Brown, 2006; Holgado-Tello et al., 2010; O'Connor, 2009). When examining the polychoric correlation matrix, many of the correlations were greater than .30 suggesting the matrix was factorable. When examining effect sizes for multicollinearity, only one item pair contained a correlation of .90—between VESD item 3 and VESD item 4. Given that the response scale contained in VESD item 3 was more consistent with the response scales used in subsequent violent

cognition scales (i.e., VESD item 3 was “Doing violence is” ...rated on a scale from ‘*Very bad*’ to ‘*Very good*’), this item was retained over VESD item 4 (i.e., response ranged from *Very wrong* to *Very right* on this item).

Factors were extracted using the weighted least square (WLSMV) estimator method. This method is recommended by Muthen and Muthen (2015) when factor analyzing ordinal variables and is generally more robust when dealing with skewed data (e.g., Brown, 2006; Flora & Curran, 2004). In order to determine the degree to which items load onto factors resulting from the various models, a factor rotation method must be selected (see Field, 2013; Tabachnick & Fidell, 2012). Factors can be rotated according to an oblique rotation (Geomin) method that allows factors to correlate or an orthogonal rotation method that does not allow factors to correlate (see Costello & Osborne, 2005; Fabrigar et al., 1999; Russell, 2002; Schmitt, 2011). Accordingly, oblique rotation was selected because factors were expected to correlate with one another given the significant, and often positive, correlations between total scores on the violent cognition measures observed across studies in the current dissertation.

Following the extraction of factors, several methods were utilized to determine the number of factors to retain. This is consistent with prior research suggesting that multiple retention methods should be considered to help determine the final factor structure (see Henson & Roberts, 2006). Therefore, decisions regarding factor retention were based on a combination of the following retention methods: (a) the Scree plot, (b) Kaiser’s criterion, (c) parallel analysis, and (d) Velicer’s minimum average partial (MAP) test. First, the scree plot was examined which suggested retaining 7 factors (see Figure 27). Second, in order to determine the number of factors to retain according to the

Kaiser's criterion, eigenvalues were examined. The number of factors with corresponding eigenvalues greater than 1.00 is the model suggested for retention according to this criterion. In the current analysis, Kaiser's criterion suggested retaining 8 factors. Of note, Kaiser's criterion tends to overfactor, thus the results of the parallel analysis and MAP test are generally given more weight and considered less subjective (O'Connor, 2000; Schmitt, 2011). Next, the results of the parallel analysis were examined, which compares eigenvalues from the original dataset to those obtained from several randomly generated datasets. According to the parallel analysis, the 7-factor model was suggested for retention (results of the parallel analysis are reported in Table 85). Last, the MAP test was conducted, in which factor retention is based on the amount of systematic variance compared to unsystematic variance in the correlation matrix, following factor extraction. According to the MAP test, 7 (Velicer, 1976) or 6 (Velicer et al., 2000) factors were suggested for retention. Considering all retention methods listed above, the 7-factor model appeared to fit these data best.

Figure 27

Scree Plot from Parallel Analysis Using the 95% Percentile Eigenvalues for the EFA

Conducted in Study 3C

Table 85

Results of the Parallel Analysis Consisting of Eigenvalues and Proportion of Variance Explained for Factors 1 Through 8 Conducted in Study 3C

Factors	Initial Eigenvalue	Proportion of Variance Explained Pre-rotation	95 th Percentile Eigenvalues
1	22.76	37.93%	1.51
2	4.28	7.13%	1.47
3	2.82	4.70%	1.43
4	2.38	3.97%	1.40
5	1.93	3.22%	1.38
6	1.66	2.77%	1.36
7	1.31 ^a	2.18%	1.34
8	1.19	1.98%	1.32

Note. The proportion of variance explained applies to the unrotated factor structure solution. Only the results for the raw data permutations ($n = 1,000$ data sets) 95th percentile eigenvalues are presented in the table as the same results were obtained when computer-generated normally distributed data were used ($n = 5,000$ data sets).

^aThe point at which the parallel analysis 95th percentile eigenvalue exceeds the initial eigenvalue.

Following the examination of factor retention suggested by the above methods, model fit indices were examined to help further determine the number of factors to retain. First, the root mean square error of approximation (RMSEA) was examined. The RMSEA assesses the fit of a model by comparing its relative fit to that of a factor structure with perfect fit (Tabachnick & Fidell, 2007). Models with RMSEA values less than .06 are considered to have good fit (Hu & Bentler, 1999). The 7-factor model suggested by the retention methods above, had an adequate RMSEA estimate of .04, suggesting good fit. An additional fit index considered was the comparative fit index

(CFI) that assesses the fit of the model corresponding to the suggested factor structure relative to a baseline model that assumes no relationship between items (Brown, 2006). CFI values of .95 or greater are considered to suggest a good fitting model. Once again, the 7-factor model suggested by the retention methods outlined above had a CFI value of .97, suggesting good fit of these data to this model. Last, the standardized root mean square residual (SRMR) fit index was considered, which assesses the average difference between effect sizes from the original input correlation matrix to those from the correlation matrix predicted by the suggested factor structure (Brown, 2006). SRMR values of less than .08 suggest a good fitting model (Hu & Bentler, 1999; Schmitt, 2011). The 7-factor model suggested by the retention methods, once again, was considered to have a good fit to these data according to an SRMR value of .02. Overall, both retention methods and fit indices suggested retaining the 7-factor model. Table 86 displays the fit indices for models retaining 1 through 8 factors.

Table 86

Model Fit Statistics of Models 1 Through 8 for the EFA Conducted in Study 3C

Model	RMSEA (90% CI)	CFI	SRMR
1-factor	.101 (.100, .103)	.788	.102
2-factor	.085 (.083, .086)	.857	.078
3-factor	.073 (.072, .074)	.897	.059
4-factor	.061 (.060, .063)	.930	.042
5-factor	.054 (.052, .055)	.948	.034
6-factor	.047 (.045, .048)	.962	.029
7-factor	.041 (.039, .042)	.972	.023
8-factor	.035 (.033, .037)	.981	.019

Note. RMSEA (Root Mean Square Error of Approximation) should be less than .06, CFI (Comparative Fit Index) should be greater than .95, and SRMR (Standardized Root Mean Square Residual) should be less than .08 to indicate good fit.

Last, in order to classify items into their respective latent factors, the magnitude of their rotated factor loadings was examined for the 7-factor model. Items with corresponding rotated factor loadings of .40 or greater were considered to meaningfully load onto a particular factor, which is consistent with what is conventionally used according to the literature (see Cudeck & O'Dell, 1994; Schmitt & Sass, 2011; Stevens, 2002). In addition, standardized rotated factor loadings were examined in conjunction with the rotated factor loadings to confirm which factor the items best load onto. Standardized rotated factor loadings determine whether an item significantly loads onto a particular factor (Cudeck & O'Dell, 1994; Schmitt, 2011; Schmitt & Sass, 2011). This is investigated by assessing whether the standardized factor loading significantly differs from zero. In order to protect against Type I errors a correction procedure is used in which a corrected α level is computed (see Cudeck & O'Dell, 1994; Schmitt, 2011). Once the corrected α level is determined, a corresponding z -score is obtained as the critical cutoff value against which the standardized rotated factor loadings are compared. Standardized factor loadings exceeding this critical cutoff value are considered to significantly load onto the corresponding latent factor. In the event that items cross-loaded onto multiple factors (i.e., when rotated factor loadings are above .40 and standardized factor loadings are significant on more than one factor for a particular item), the correlations between the factors and the particular item were examined to determine which factor the item was more strongly correlated with and thus, which factor it was more consistent with. Table 87 contains the rotated factor loadings, as well as standardized rotated factor loadings (in parentheses), for all items according to the 7-factor model. As evident from Table 87, all, but two items (i.e., MCAA-R-V item 5, "It is

reasonable to expect a fight from someone you cheated” and MCAA-R-V item 7, “There is nothing wrong with beating up a child molester”), had rotated factor loadings above .40. However, all items had significant standardized rotated factor loadings and high correlations with the corresponding factor (see Table 87). According to Table 87, cross-loadings were observed for only a few items, namely CAVS item 17 (“It’s necessary to carry a gun or a knife if you live in a rough neighbourhood”), EVQ item 1 (“ You hitting [for example, punching or kicking] a guy who hurts someone you care about”, rated on a scale from ‘*Very negative*’ to ‘*Very positive*’), and EVQ item 7 (“You threatening to physically hurt a guy who tries to hurt you”, rated on a scale from ‘*Very bad*’ to ‘*Very good*’). All other items loaded exclusively onto one latent factor. As evident in Table 87, Factor 1 consisted mainly of cross-loadings (i.e., for the three items mentioned above), with only one item from the MCAA-R-V (i.e., MCAA-R-V item 3, “Sometimes a person may have to carry a weapon to protect themselves”) loading exclusively onto this factor. All other MCAA-R-V items (with the exception of MCAA-R-V item 5, “It is reasonable to expect a fight from someone you cheated” and MCAA-R-V item 7, “There is nothing wrong with beating up a child molester”, that did not load onto any factors, as stated above) loaded most strongly onto Factor 2. When examining the content of MCAA-R-V items 3, 5, and 7, it is apparent that they may not fit with the other items from the MCAA-R-V. For instance, considering items 5 (“It is reasonable to expect a fight from someone you cheated”) and 3 (“Sometimes a person may have to carry a weapon to protect themselves”), these beliefs do not involve the appraisal of a scenario in which the respondent is the assailant in an altercation, whereas most MCAA-R-V items included in Factor 2 represent either a justification or rationalization regarding the respondents’

engagement in violence toward another individual. Although, item 7 (“There is nothing wrong with beating up a child molester”) does involve the appraisal of a scenario in which the respondent engages in an act of violence toward another individual, it differs from the other items (e.g., Item 4, “Sometimes you have to fight to keep your self-respect”, or item 10, “It’s alright to fight someone if they stole from you”, etc.) because the violent behaviour in question is against someone who did not slight the respondent in some way. Further, item 7 might represent a moral obligation (e.g., Child molesters are bad and deserve to be beaten up) on the part of the respondent rather than a justification or rationalization to behave violently toward an individual because they slighted them in some way (e.g., It is all right to beat up someone who insulted or stole from me, etc.). All CAVS items loaded exclusively onto Factor 3, with the exception of CAVS item 17 that additionally cross-loaded onto Factor 1. However, a stronger correlation between CAVS item 17 and Factor 3 was found after examining the correlations for Factors 1 and 3 with this item, suggesting that CAVS item 17 is more consistent with Factor 3. All EVQ items loaded exclusively on Factor 4, with the exception of EVQ items 1 and 7 that additionally cross-loaded onto Factor 1. Once again, a stronger correlation between EVQ items 1 and 7 and Factor 4 was found after examining the correlations for Factors 1 and 4 with these items, suggesting that EVQ items 1 and 7 are more consistent with Factor 4. Additionally, all VESD items loaded exclusively onto Factor 5. Last, all VE-IAT parcels loaded exclusively onto Factor 6 and all P-VE-IAT items loaded exclusively onto Factor 7, suggesting that these two implicit measures of evaluative attitudes toward violence are assessing correlated, but distinct, constructs. Table 88 contains the correlations between the seven latent factors.

Table 87

Rotated Factor Loadings and Standardized Rotated Loadings for Items from All Scales Taken from the EFA Conducted in Study 3C

Measures of Criminal Attitudes and Associates – Violence scale	Rotated Factor Loading (Standardized Rotated Factor Loading)						
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
1. It's none of my business if I saw someone being robbed.	-.10 (-2.58)	.66 (16.87)	.04 (0.94)	-.02 (-0.85)	.06 (1.66)	-.09 (-2.74)	.14 (3.69)
2. It's understandable to hit someone who insults you.	.04 (1.58)	.56 (13.03)	.15 (3.23)	.20 (3.39)	.03 (1.04)	.03 (1.21)	-.03 (-1.60)
3. Sometimes a person may have to carry a weapon to protect themselves.	.58 (18.64)	.28 (4.03)	.15 (2.64)	-.02 (-0.64)	.01 (0.23)	-.04 (-1.38)	.07 (2.11)
4. Sometimes you have to fight to keep your self-respect.	.13 (4.20)	.50 (11.03)	.19 (4.29)	.17 (3.17)	-.04 (-1.33)	.02 (0.94)	-.07 (-2.92)
5. It is reasonable to expect a fight from someone you cheated.	.36 (11.24)	.37 (6.74)	.07 (1.57)	.19 (3.49)	.004 (0.15)	.06 (2.40)	-.08 (-2.98)
6. Ignoring a store being robbed is not wrong.	-.07 (-1.75)	.62 (14.44)	-.08 (-1.62)	.04 (1.06)	.05 (1.49)	-.08 (-2.21)	.12 (3.03)
7. There is nothing wrong with beating up a child molester.	.39 (12.80)	.19 (3.31)	.15 (2.74)	.18 (3.37)	.01 (0.35)	.05 (1.68)	.02 (0.64)
8. It's not wrong to fight to save face.	.08 (2.51)	.52 (12.12)	.05 (1.05)	.25 (4.19)	-.04 (-1.38)	-.01 (-0.42)	-.03 (-1.05)
9. Someone who makes you very angry deserves to be hit.	-.01 (-0.65)	.56 (12.89)	.14 (3.12)	.25 (4.50)	.001 (0.05)	.03 (1.49)	-.01 (-0.28)

10. It's all right to fight someone if they stole from you.	.36 (11.77)	.47 (9.85)	.002 (0.08)	.24 (3.98)	.04 (1.66)	.06 (2.50)	-.03 (-1.36)
<hr/> Criminal Attitudes to Violence Scale <hr/>							
1. If somebody insults me or my family I feel better if I beat them up.	.02 (0.98)	.09 (3.23)	.62 (19.02)	.18 (5.53)	.00 (-0.02)	.02 (0.92)	-.01 (-0.29)
2. Lots of people are out to get you so you have to be violent.	-.05 (-2.02)	.04 (1.62)	.77 (27.32)	.01 (0.19)	.05 (1.96)	.04 (1.60)	.05 (2.60)
3. When I get violent, what I want most is to teach the other person a lesson.	.11 (4.43)	-.04 (-1.36)	.70 (20.19)	.15 (4.11)	-.05 (-2.20)	-.03 (-1.34)	-.001 (-0.52)
4. Men should be allowed to sort their differences out by fighting.	.05 (2.23)	.02 (0.87)	.72 (21.66)	.00 (-0.25)	.14 (5.28)	.01 (0.66)	.02 (0.72)
5. If somebody puts me down, I feel like I have to fight them to get back my pride.	-.08 (-3.11)	.18 (6.31)	.65 (19.04)	.10 (2.58)	-.01 (-0.53)	.025 (1.18)	.011 (0.55)
6. The best thing about being violent is that it gets my anger out of my system.	-.03 (-1.48)	-.01 (-0.26)	.72 (22.84)	.10 (2.95)	.04 (1.52)	.01 (0.26)	-.03 (-1.49)
7. Fighting between men is normal.	.14 (5.33)	-.02 (-0.75)	.70 (20.24)	-.004 (-0.14)	.10 (3.75)	-.01 (-0.55)	.01 (0.42)
8. After a fight I feel happy if I won and depressed if I lost.	.10 (3.72)	-.02 (-0.73)	.64 (18.06)	.04 (1.19)	.07 (2.44)	.03 (1.40)	-.04 (-1.82)
9. Some people have to be treated roughly because they lack feelings that can be hurt.	.06 (2.56)	.02 (0.89)	.77 (26.07)	-.01 (-0.25)	.03 (1.12)	-.04 (-1.73)	.06 (3.00)
10. My loyalty to my friends or gang is more important than avoiding violence.	-.04 (-1.80)	.01 (0.31)	.67 (20.01)	.05 (1.29)	-.02 (-0.77)	.07 (2.45)	-.02 (-0.77)
11. I am more likely to be violent when another person shows me up in public.	-.14 (-5.99)	.06 (2.21)	.76 (25.39)	.12 (3.64)	-.05 (-1.93)	-.02 (-1.00)	.01 (0.32)

12. The best lesson a man can teach his son is how to fight.	.09 (3.34)	.02 (0.80)	.68 (17.35)	-.04 (-1.17)	.02 (0.66)	.02 (0.60)	.07 (2.46)
13. It is important to fight when your gang's honour is threatened.	-.11 (-4.35)	.07 (2.38)	.78 (27.30)	.01 (0.48)	-.02 (-0.87)	.03 (1.20)	.003 (0.14)
14. I believe that you have to use violence to get through to some people.	.12 (4.47)	-.002 (-0.10)	.77 (22.51)	-.02 (-0.81)	.08 (3.50)	-.03 (-1.44)	.02 (0.84)
15. The best thing about being violent is that it makes the other person get into line.	.01 (0.41)	.06 (2.45)	.79 (27.51)	.01 (0.35)	.02 (1.09)	-.02 (-0.90)	.01 (0.72)
16. When your main business is crime, being violent is just part of the job.	.20 (6.19)	-.12 (-3.28)	.62 (13.94)	-.001 (-0.03)	-.05 (-1.41)	-.06 (-1.95)	-.07 (-2.36)
17. It's necessary to carry a gun or a knife if you live in a rough neighbourhood.	.45 (16.96)	0.17 (3.51)	.44 (8.70)	-.06 (-1.86)	.01 (0.46)	-.01 (-0.22)	.09 (3.44)
18. If a person hits you, you have to hit them back.	.27 (10.24)	.01 (0.27)	.48 (11.48)	.16 (3.83)	.02 (0.66)	-.02 (-0.99)	-.03 (-1.28)
19. If I assault or rob someone, chances are I'll get away with it.	-.22 (-7.48)	.01 (0.16)	.64 (14.46)	.08 (1.84)	.00 (0.02)	.04 (1.38)	-.02 (-0.90)
20. Violence is an important part of my culture, even if it is against the law.	-.18 (-5.76)	.03 (1.01)	.75 (22.33)	-.01 (-0.35)	.12 (4.27)	.03 (1.14)	-.004 (-0.17)
<hr/> Violent Evaluation Semantic Differential scales <hr/>							
1. Doing violence is: Very negative to Very positive	.02 (0.99)	.13 (4.22)	.01 (0.73)	-.05 (-2.16)	.91 (71.28)	.01 (0.61)	-.01 (-0.30)
2. Doing violence is: Extremely not fun to Extremely fun	-.05 (-2.33)	-.08 (-2.62)	.07 (2.06)	.12 (3.49)	.83 (48.51)	.025 (1.34)	-.001 (-0.08)
3. Doing violence is: Very bad to Very good	.07 (3.20)	.11 (3.64)	-.08 (-2.91)	.01 (0.45)	.91 (69.81)	-.001 (-0.07)	.003 (0.21)

5. Doing violence is: Very immoral to Very moral	.07 (3.58)	.01 (0.44)	-.002 (-0.08)	.001 (0.04)	.88 (59.46)	-.047 (-2.21)	.01 (0.81)
6. Doing violence is: Extremely not enjoyable to Extremely enjoyable	-.05 (-2.15)	-.05 (-2.11)	.11 (3.41)	.08 (2.72)	.84 (53.44)	.002 (0.13)	-.03 (-1.43)
Evaluation of Violence Questionnaire							
1. You hitting (for example, punching or kicking) a guy who hurts someone you care about.	.46 (13.96)	-.23 (-5.73)	-.01 (-0.50)	.77 (18.50)	.02 (0.96)	.01 (0.34)	-.04 (-2.46)
2. You hitting (for example, punching or kicking) a guy who steals from you.	.37 (15.22)	.06 (1.87)	-.16 (-4.87)	.78 (20.35)	.04 (1.76)	.03 (1.60)	-.02 (-1.09)
3. You hitting (for example, punching or kicking) a guy who runs a red light and almost hits you with his car.	.02 (1.08)	.06 (2.05)	.07 (1.97)	.68 (21.35)	.03 (1.09)	.01 (0.44)	.02 (0.98)
4. You hitting (for example, punching or kicking) a guy who makes you look stupid.	-.15 (-6.07)	.03 (1.14)	.08 (2.33)	.84 (32.45)	-.04 (-1.83)	.04 (1.61)	-.01 (-0.32)
5. You hitting (for example, punching or kicking) a guy who tries to make you look weak.	-0.09 (-4.12)	-.02 (-1.06)	.16 (5.25)	.80 (34.66)	.01 (0.67)	.03 (1.68)	-.01 (-0.32)
6. You hitting (for example, punching or kicking) a guy you hate.	-.04 (-1.76)	.01 (0.48)	-.01 (-0.23)	.83 (33.39)	.06 (2.38)	.05 (2.05)	-.01 (-0.25)
7. You threatening to physically hurt a guy who tries to hurt you.	.46 (17.48)	-.10 (-2.49)	-.01 (-0.24)	.69 (17.33)	.002 (0.08)	-.02 (-0.92)	-.03 (-1.25)
8. You threatening to physically hurt a guy who disrespects someone you care about.	.24 (9.40)	-.09 (-2.66)	.013 (0.47)	.80 (26.31)	.01 (0.28)	.00 (0.01)	-.04 (-1.89)
9. You threatening to physically hurt a guy who disrespects you.	-.004 (-0.21)	.07 (2.66)	.05 (1.62)	.81 (30.30)	.02 (0.77)	-.03 (-1.37)	.01 (0.58)
10. You threatening to physically hurt a guy who owes you money.	.02 (0.79)	.11 (3.75)	.01 (0.19)	.79 (27.46)	-.03 (-1.17)	-.05 (-1.91)	.05 (2.14)

11. You threatening to physically hurt a guy who keeps mouthing off.	-.02 (-1.11)	.03 (1.01)	.02 (0.73)	.85 (35.57)	.04 (1.80)	.01 (0.37)	.01 (0.63)
12. You threatening to physically hurt a guy who says bad stuff about you behind your back.	-.03 (-1.48)	.07 (2.91)	-.01 (-0.50)	.87 (32.65)	-.01 (-0.37)	-.01 (-0.37)	.04 (2.00)
13. You threatening to physically hurt a guy who makes you mad.	-.08 (-3.53)	.07 (2.68)	.05 (1.87)	.80 (34.76)	.03 (1.46)	-.02 (-1.07)	.01 (0.77)
13. You threatening to physically hurt a guy who acts tough.	-.03 (-1.35)	-.001 (-0.04)	.07 (2.19)	.82 (34.64)	.02 (0.74)	-.01 (-0.51)	.06 (3.11)
15. You using a weapon (for example, a baseball bat, knife, or gun) on a guy who has sex with your girlfriend/wife or boyfriend/husband.	.16 (5.60)	.03 (0.92)	.04 (0.96)	.62 (16.24)	-.03 (-0.84)	-.03 (-1.15)	.03 (1.22)
16. You using a weapon (for example, a baseball bat, knife, or gun) on a guy who wrecks your stuff on purpose.	.25 (9.75)	.04 (1.33)	.01 (0.28)	.67 (19.62)	.01 (0.35)	.001 (0.03)	.08 (3.34)
17. You using a weapon (for example, a baseball bat, knife, or gun) on a guy when you're scared.	.19 (6.66)	.003 (0.10)	.00 (-0.01)	.66 (18.61)	.03 (1.16)	-.08 (-3.06)	.13 (4.77)
<hr/> Violence Evaluation – Implicit Association Test <hr/>							
VE-IAT Parcel 1	.01 (0.80)	-.03 (-1.36)	.08 (2.40)	-.06 (-1.88)	-.03 (-1.41)	.80 (52.00)	.01 (0.65)
VE-IAT Parcel 2	.04 (2.01)	-.05 (-1.78)	.001 (0.31)	.03 (0.90)	.02 (0.87)	.72 (39.57)	.08 (3.69)
VE-IAT Parcel 3	-.01 (-0.43)	.04 (1.54)	-.04 (-1.10)	.01 (0.34)	.001 (0.04)	.78 (46.80)	.06 (2.91)
VE-IAT Parcel 4	-.03 (-1.78)	.06 (2.36)	-.02 (-0.89)	.01 (0.30)	.02 (1.18)	.79 (51.19)	.01 (0.34)

Personalized – Violence Evaluation – Implicit Association Test							
P-VE-IAT Parcel 1	.03 (1.82)	-.01 (-0.36)	-.02 (-0.91)	.10 (3.19)	-.04 (-2.14)	.03 (1.75)	.80 (54.86)
P-VE-IAT Parcel 2	-.03 (-1.45)	.03 (1.11)	-.021 (-0.93)	.04 (1.50)	.01 (-0.44)	.07 (3.22)	.78 (49.22)
P-VE-IAT Parcel 3	.003 (0.18)	-.02 (-0.96)	.04 (1.27)	-.02 (-0.72)	.00 (0.02)	.01 (0.69)	.78 (51.00)
P-VE-IAT Parcel 4	-.01 (-0.50)	-.02 (-0.80)	.04 (1.33)	-.03 (-1.26)	.02 (0.79)	.07 (3.25)	.77 (46.78)

Note. Factor loadings greater than .40 are bolded, along with significant standardized factor loadings. For the standardized score, the critical z-score was 3.82, $\alpha = 0.000066$. Bolded values indicated significant loading on the factor ($p < .0001$).

Table 88*Correlations Between Oblique (Geomin) Rotated Factors 1 Through 7 for the EFA**Conducted in Study 3C*

Factor	1	2	3	4	5	6	7
1	-						
2	.09*	-					
3	.23*	.67*	-				
4	.17*	.61*	.76*	-			
5	.26*	.30*	.47*	.47*	-		
6	-.03	.14*	.17*	.14*	.06*	-	
7	-.09*	.15*	.11*	.07*	.02	.45*	-

Note. Factor 1 = mostly cross-loading items and MCAA-R-V item 3. Factor 2 = remaining MCAA-R-V items, excluding MCAA-R-V items 5 and 7. Factor 3 = all CAVS items. Factor 4 = all EVQ items. Factor 5 = VESD items, excluding VESD item 4 (because of issues with multicollinearity). Factor 6 = four VE-IAT parcels. Factor 7 = four P-VE-IAT parcels.

* $p < .05$.

Overall, it appears that the 7-factor model fit these data best, with items from each measure of violent cognition separating into their own factor. Specifically, with the exception of a few items, most items from each measure loaded exclusively onto distinct factors. Factor 1 contained mainly cross-loadings, as well as an item from the MCAA-R-V that appears to be assessing a distinct cognitive construct from the other items within this measure (i.e., MCAA-R-V item 3). Accordingly, MCAA-R-V items loaded most highly onto Factor 2 (with the exception of MCAA-R-V items 3, 5, and 7), CAVS items loaded most strongly onto Factor 3, EVQ items loaded most strongly onto Factor 4, VESD items loaded most strongly onto Factor 5, VE-IAT items (or parcels) loaded most

strongly onto Factor 6, and P-VE-IAT items (or parcels) loaded most strongly onto Factor 7. These results suggest that each measure of violent cognition assesses a different cognitive construct regarding violence and may add complementary information when attempting to explain violent behaviour. These results are inconsistent with previous research conducted by my colleagues and I, as outlined above, in which items from the MCAA-R-V and CAVS (both designed to assess beliefs regarding violence) loaded onto the same factor, among a sample of 568 (consisting of 426 females and 133 males) undergraduate students, suggesting that they are assessing a similar cognitive construct (see Nunes et al., 2015). However, Nunes et al. (2015) also found that the MCAA-R-V and CAVS formed a distinct factor from the VESD (designed to assess explicit evaluative attitudes toward violence) among this same sample. Additionally, a recent study by Nunes, Pedneault, Hermann, and Fraser (2021) replicated these results among a sample of 342 males recruited online. They found that items from the EVQ (designed to assess explicit evaluative attitudes toward violence) formed a distinct factor from items contained in the CAVS but loaded onto the same factor as items from the MCAA-R-V (Nunes, Pedneault, Hermann, & Fraser, 2021). The discrepancy between the results of the current study and those outlined above may be due to increased power in the current study to discriminate small, but possibly important, differences between the violent cognitive constructs assessed by these measures, given that a much larger online sample of males was used ($N = 1,141$).

Given the results of the current study, it appears that items from the MCAA-R-V and CAVS may be assessing distinct beliefs regarding violence. Of note, authors of the MCAA-R-V suggest that the items contained within this measure represent *justifications*

and *rationalizations* regarding violence (Mills, 2007; Mills et al., 2002). Polaschek et al. (2004) state that the CAVS was developed and validated as a measure to assess beliefs regarding *criminal* violence and to be used on samples of males convicted of violent offences. Therefore, the statements within the CAVS may reflect a construct that is more consistent with cognitive distortions regarding violence that reflect a more *criminally violent* and *ingrained* belief system (e.g., CAVS item 12, “The best lesson a man can teach his son is how to fight”, CAVS item 16, “When your main business is crime, being violent is just part of the job”, and CAVS item 20 “Violence is an important part of my culture, even if it is against the law”, etc.). Next, items contained within the EVQ appear to reflect a construct that is consistent with explicit evaluative attitudes toward violence, given that items require respondents to appraise a given violent behaviour on 4-point evaluative scales (e.g., *Very negative* to *Very positive*, *Very unpleasant* to *Very pleasant*, and *Very bad* to *Very good*). As stated above, the EVQ was developed by Nunes, Pedneault, and Hermann (2021) to create an explicit measure of evaluative attitudes toward violence as an alternative to the more traditional measures such as semantic differential scales (e.g., the VESD). Nunes, Pedneault, and Hermann (2021) argued that the EVQ reduces ambiguity because it specifies the respondent as the person doing the violent behaviour rather than being the victim, and it provides more specific violent behaviours and contexts, some of which may be perceived as mitigating circumstances (e.g., provocation vs. no mention of provocation). These features would be expected to provide a more accurate and comprehensive assessment of explicit evaluative attitudes toward violence in comparison to scores on semantic differential scales, such as the VESD. Given that the EVQ items factored separately from the VESD items (as well as

from MCAA-R-V and CAVS items), this would suggest that they are assessing distinct constructs. Accordingly, the VESD items may reflect more societally accepted and/or general evaluative attitudes toward violence, rather than one's own personal evaluative attitudes, given that items are more ambiguous (i.e., VESD item 3, "Doing violence is" ...*very bad* to *very good*) and do not specify the respondent as the one doing the violence. Interestingly, items (or parcels) from the VE-IAT factored separately from items (or parcels) from the P-VE-IAT, suggesting that they are assessing distinct implicit cognitive constructs regarding violence. As outlined above, Olson and Fazio (2004) proposed that traditional IAT measures containing attribute (i.e., *Positive* and *Negative*) and concept (i.e., *Violence* and *Peace*) categories might more closely reflect societal attitudes (or as Olson and Fazio called them, *extrapersonal associations*) rather than one's own personal attitudes. Thus, Olson and Fazio (2004) argued that the personalized IAT procedure should be used, in which the categories of *I like* and *I dislike* replace the traditional attribute categories, such as *positive* and *negative* as used in the traditional IAT procedure, because attribute categories have greater potential for activating normative beliefs about the attitude under investigation. In line with this, the P-VE-IAT may assess a construct that more closely reflects *personalized* implicit evaluative attitudes toward violence, rather than more *general* evaluative attitudes toward violence, as may be the case regarding scores on the VE-IAT. Given that all violent cognition measures likely assess distinct cognitive constructs regarding violence, it is important to examine whether they are independently related to violent behaviour and together provide complementary information in explaining variance on outcomes assessing violent behaviour. This was accomplished by examining whether the factor scores associated with each factor (i.e., 1

through 7) independently, as well as incrementally, accounted for variance on the violent outcome measures (i.e., EVQ-Likelihood assessing likelihood of violence and AQ-PA assessing physical aggression).

Incremental Relationships Between Factors and Violent Behaviour

Multiple linear regressions were conducted to assess whether each of the seven factors identified in the EFA were incrementally related to violent behaviour. To accomplish this, the corresponding factor scores of each EFA factor (1 through 7) were entered in one step in a multiple linear regression. Two regression models were assessed: one predicting scores on the AQ-PA (i.e., physical aggression) and the other predicting scores on the EVQ-Likelihood (i.e., likelihood of violence). The factor scores pertaining to each factor were first assessed for univariate outliers and normality. These data were then examined to determine whether they met the assumptions underlying multiple linear regression, such as multicollinearity between predictors in the model, homoscedasticity of variances, linearity of association between the set of predictors and the outcome, and normality, homoscedasticity, and independence of residuals. Generally, these assumptions were upheld. As in the above studies, multivariate outliers were also examined for each regression model separately. In the event that multivariate outliers were found, they were excluded per analysis in an attempt to maximize power.

As seen in Table 89, factor scores corresponding to Factor 1 (i.e., consisting mainly of the cross-loaded items, as well as MCAA-R-V item 3) significantly predicted scores on the AQ-PA, such that a 1-unit increase in Factor 1 scores corresponded to a 1.00 unit increase in physical aggression, $b = 1.00$ $SE = .17$, $\beta = .11$, $t(1118) = 5.66$, $p < .001$, 95% CI = [0.62, 1.29], $sr^2 = .01$. Factor scores corresponding to Factor 2 (i.e.,

consisting of the remaining MCAA-R-V items, excluding items 3, 5, and 7) significantly predicted scores on the AQ-PA, such that a 1-unit increase in Factor 2 scores corresponded to a 0.78 unit increase in physical aggression, $b = 0.78$, $SE = .25$, $\beta = .10$, $t(1118) = 3.18$, $p = .002$, 95% CI = [0.30, 1.27], $sr^2 = .004$. Factor scores corresponding to Factor 3 (i.e., consisting of all CAVS items) significantly predicted scores on the AQ-PA, such that a 1-unit increase in Factor 3 scores corresponded to a 2.59 unit increase in physical aggression, $b = 2.59$, $SE = .27$, $\beta = .36$, $t(1118) = 9.50$, $p < .001$, 95% CI = [2.05, 3.12], $sr^2 = .03$. Factor scores corresponding to Factor 4 (i.e., consisting of all EVQ items) significantly predicted scores on the AQ-PA, such that a 1-unit increase in Factor 4 scores corresponded to a 1.82 increase in physical aggression, $b = 1.82$, $SE = .24$, $\beta = .25$, $t(1118) = 7.47$, $p < .001$, 95% CI = [1.34, 2.30], $sr^2 = .02$. Factor scores corresponding to Factor 5 (i.e., consisting of VESD items, excluding item 4 due to multicollinearity) significantly predicted scores on the AQ-PA, such that a 1-unit increase in Factor 5 scores corresponded to a 1.07 unit increase in physical aggression, $b = 1.07$, $SE = .19$, $\beta = .13$, $t(1118) = 5.59$, $p < .001$, 95% CI = [0.69, 1.44], $sr^2 = .01$. Factor scores corresponding to Factor 6 (i.e., consisting of all four VE-IAT parcels) were not significantly associated with scores on the AQ-PA, $b = 0.10$, $SE = .17$, $\beta = .01$, $t(1118) = 0.56$, $p = .57$, 95% CI = [-0.24, 0.44], $sr^2 = .00$. Last, factor scores corresponding to Factor 7 (i.e., consisting of all four P-VE-IAT parcels) were not significantly associated with scores on the AQ-PA, $b = -0.01$, $SE = .18$, $\beta = -.00$, $t(1118) = -0.07$, $p = .95$, 95% CI = [-0.37, 0.34], $sr^2 = .00$. The regression model including all 7 factors accounted for 60.5% of the variance in physical aggression, $R^2 = .605$, $F(7, 1118) = 244.437$, $p < .001$.

Table 89

Multiple Linear Regression Coefficients Examining the Incremental Relationships Between Factors 1 Through 7 and Physical Aggression Among Males from the Community Recruited Online in Study 3C

Variable	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>F</i>	<i>R</i> ²
						244.44***	.61
Constant	22.30***		.13	[22.03, 22.56]			
Factor 1	0.96***	.11	.17	[0.62, 1.29]	.01		
Factor 2	0.78**	.10	.25	[0.30, 1.27]	.00		
Factor 3	2.59***	.36	.27	[2.05, 3.12]	.03		
Factor 4	1.82***	.25	.24	[1.34, 2.30]	.02		
Factor 5	1.07***	.13	.19	[0.69, 1.44]	.01		
Factor 6	0.10	.01	.17	[-0.24, 0.44]	.00		
Factor 7	-0.01	-.00	.18	[-0.37, 0.34]	.00		

Note. *N* = 1,126. I examined whether each of the seven factors identified by the EFA were incrementally related to physical aggression (i.e., AQ-PA). I entered all Factors 1 through 7 into Model 1. Factor 1 = mostly cross-loading items and MCAA-R-V item 3. Factor 2 = remaining MCAA-R-V items, excluding MCAA-R-V items 3, 5, and 7. Factor 3 = all CAVS items. Factor 4 = all EVQ items. Factor 5 = VESD items, excluding VESD item 4 (because of issues with multicollinearity). Factor 6 = four VE-IAT parcels. Factor 7 = four P-VE-IAT parcels.

p* < .001, *p* < .001.

As seen in Table 90, factor scores corresponding to Factor 1 (i.e., consisting mainly of the cross-loaded items, as well as MCAA-R-V item 3) significantly predicted scores on the EVQ-Likelihood, such that a 1-unit increase in Factor 1 scores corresponded to a 0.08 unit increase in likelihood of violence, $b = 0.08$, $SE = .01$, $\beta = .10$, $t(1118) = 5.40$, $p < .001$, 95% CI = [1.86, 1.91], $sr^2 = .01$. Factor scores corresponding to Factor 2 (i.e., consisting of the remaining MCAA-R-V items, excluding items 3, 5, and 7) significantly predicted scores on the EVQ-Likelihood, such that a 1-unit increase in Factor 2 scores corresponded to a 0.17 unit increase in likelihood of violence, $b = 0.17$, $SE = .02$, $\beta = .22$, $t(1118) = 8.22$, $p < .001$, 95% CI = [0.13, 0.21], $sr^2 = .02$. Factor scores corresponding to Factor 3 (i.e., consisting of all CAVS items) significantly predicted scores on the EVQ-Likelihood, such that a 1-unit increase in Factor 3 scores corresponded to a 0.12 unit increase in likelihood of violence, $b = 0.12$, $SE = .02$, $\beta = .18$, $t(1118) = 5.47$, $p < .001$, 95% CI = [0.08, 0.17], $sr^2 = .01$. Factor scores corresponding to Factor 4 (i.e., consisting of all EVQ items) significantly predicted scores on the EVQ-Likelihood, such that a 1-unit increase in Factor 4 scores corresponded to a 0.32 unit increase in likelihood of violence, $b = 0.32$, $SE = .02$, $\beta = .46$, $t(1118) = 15.65$, $p < .001$, 95% CI = [0.28, 0.36], $sr^2 = .07$. Factor scores corresponding to Factor 5 (i.e., consisting of VESD items, excluding item 4 due to multicollinearity) were not significantly associated with scores on the EVQ-Likelihood, $b = -0.00$, $SE = .02$, $\beta = -.00$, $t(1118) = -0.10$, $p = .92$, 95% CI = [-0.03, 0.03], $sr^2 = .00$. Factor scores corresponding to Factor 6 (i.e., consisting of all four VE-IAT parcels) were marginally significantly predictive of scores on the EVQ-Likelihood, such that a 1-unit increase in Factor 6 scores corresponded to a 0.03 unit increase in likelihood of violence, $b = 0.03$, $SE = .01$, $\beta = .04$,

$t(1118) = 1.87, p = .06, 95\% \text{ CI} = [-0.00, 0.06], sr^2 = .001$. Last, factor scores corresponding to Factor 7 (i.e., consisting of all four P-VE-IAT parcels) were not significantly associated with scores on the EVQ-Likelihood, $b = 0.02, SE = .02, \beta = .02, t(1118) = 1.25, p = .21, 95\% \text{ CI} = [-0.01, 0.05], sr^2 = .00$. The regression model including all 7 factors accounted for 69.4% of the variance in likelihood of violence, $R^2 = .694, F(7, 1118) = 361.411, p < .001$.

Table 90

Multiple Linear Regression Coefficients Examining the Incremental Relationships Between Factors 1 Through 7 and Likelihood of Violence Among Males from the Community Recruited Online in Study 3C

Variable	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>F</i>	<i>R</i> ²
						361.41***	.69
Constant	1.88***		.01	[1.86, 1.91]			
Factor 1	0.08***	.10	.01	[0.05, 0.10]	.01		
Factor 2	0.17***	.22	.02	[0.13, 0.21]	.02		
Factor 3	0.12***	.18	.02	[0.08, 0.17]	.01		
Factor 4	0.32***	.46	.02	[0.28, 0.36]	.07		
Factor 5	-0.00	-.00	.02	[-0.03, 0.03]	.00		
Factor 6	0.03 ^a	.04	.01	[-0.00, 0.06]	.00		
Factor 7	0.02	.02	.02	[-0.01, 0.05]	.00		

Note. *N* = 1,126. I examined whether each of the seven factors identified by the EFA were incrementally related to likelihood of aggression (i.e., EVQ-Likelihood). I entered all Factors 1 through 7 into Model 1. Factor 1 = mostly cross-loading items and MCAA-R-V item 3. Factor 2 = remaining MCAA-R-V items, excluding MCAA-R-V items 3, 5, and 7. Factor 3 = all CAVS items. Factor 4 = all EVQ items. Factor 5 = VESD items, excluding VESD item 4 (because of issues with multicollinearity). Factor 6 = four VE-IAT parcels. Factor 7 = four P-VE-IAT parcels.

^amarginally significant at *p* = .062.

****p* < .001.

Variance Accounted for By EFA Factors

Hierarchical multiple linear regressions were conducted to assess the relative contribution each factor made to explaining variance in violent behaviour (i.e., physical aggression and likelihood of violence). Two hierarchical multiple linear regressions were conducted: one predicting scores on the AQ-PA (i.e., physical aggression) and the other predicting scores on the EVQ-Likelihood (i.e., likelihood of violence). Each factor was entered into the model in a separate step according to the strength of its bivariate relationship (i.e., Pearson's r correlation) to the outcome (see Tables A1 and A2 in Appendices AM and AN). Specifically, factors were entered in order starting with the most strongly related to the outcome entered in the first step and ending with the weakest related entered in the final step of the model. Once again, these data were screened for the following assumptions: multicollinearity between predictors in the model, homoscedasticity of variances, linearity of association between the set of predictors and the outcome, and normality, homoscedasticity, and independence of residuals. Generally, these assumptions were upheld. Multivariate outliers were also examined for each regression model separately. In the event that multivariate outliers were found, they were excluded per analysis in an attempt to maximize power.

Based on bivariate relationships (see Table A1 in Appendix AM), Factor 3 (i.e., consisting of the CAVS items) most strongly predicted scores on the AQ-PA and thus, was entered in the first step of the model, accounting for 55.0% of the variance in physical aggression (i.e., $R^2 = .550$, $p < .001$). Factor 4 scores (i.e., consisting of the EVQ items) accounted for significantly more variance (i.e., $R^2 = .585$) in physical aggression over and above Factor 3 scores (i.e., $\Delta R^2 = .04$, $p < .001$). Factor 2 scores (i.e., consisting

of MCAA-R-V items) accounted for significantly more variance (i.e., $R^2 = .587$) in physical aggression over and above Factor 3 and Factor 4 scores (i.e., $\Delta R^2 = .002$, $p = .04$). Factor 5 scores (i.e., consisting of VESD items) accounted for significantly more variance (i.e., $R^2 = .600$) in physical aggression over and above Factor 3, Factor 4, and Factor 2 scores (i.e., $\Delta R^2 = .01$, $p < .001$). Last, Factor 1 scores (i.e., consisting of mostly cross-loadings and MCAA-R-V item) accounted for significantly more variance (i.e., $R^2 = .612$) in physical aggression over and above Factor 3, Factor 4, Factor 2, and Factor 5 scores (i.e., $\Delta R^2 = .01$, $p < .001$). As is evidenced by these results, the factors representing factor scores for the explicit/self-report measures of violent cognitions are all incrementally contributing to the prediction of physical aggression. Given that all measures generally separated into their own factors, these results suggest that scores on the CAVS, EVQ, MCAA-R-V, and VESD are all contributing unique and complementary variance to the prediction of physical aggression (i.e., scores on the AQ-PA). Accordingly, the assessment of scores on these measures appears important for achieving a more comprehensive understanding of physical aggression.

Table 91

Hierarchical Multiple Linear Regression Coefficients Examining the Incremental Variance Explained in Physical Aggression by Factors Suggested in the EFA Among Males from the Community Recruited Online in Study 3C

Variable	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>F</i>	<i>R</i> ²	ΔR^2
Model 1						1374.87***	.550	-
Constant	22.38***		.14	[22.10, 22.66]				
Factor 3	5.41***	.74	.15	[5.12, 5.69]	.55			
Model 2						793.81***	.585	.036***
Constant	22.38***		.14	[22.11, 22.65]				
Factor 3	3.54***	.49	.24	[3.08, 4.00]	.08			
Factor 4	2.34***	.32	.24	[1.87, 2.80]	.04			
Model 3						532.21***	.587	.002*
Constant	22.38***	.	.14	[22.11, 22.65]				
Factor 3	3.28***	.45	.27	[2.75, 3.80]	.06			
Factor 4	2.21***	.30	.25	[1.73, 2.69]	.03			
Factor 2	0.52*	.07	.25	[0.03, 1.01]	.00			
Model 4						422.03***	.600	.014***
Constant	22.31***		.14	[22.05, 22.58]				
Factor 3	2.89***	.40	.27	[2.36, 3.42]	.04			
Factor 4	1.88***	.26	.25	[1.40, 2.37]	.02			
Factor 2	0.63*	.08	.25	[0.15, 1.12]	.00			
Factor 5	1.17***	.14	.19	[0.80, 1.55]	.01			
Model 5						353.60***	.612	.011***
Constant	22.33***		.13	[22.07, 22.59]				
Factor 3	2.67***	.37	.27	[2.14, 3.20]	.03			
Factor 4	1.87***	.25	.24	[1.39, 2.35]	.02			
Factor 2	0.76**	.10	.24	[0.28, 1.24]	.00			
Factor 5	0.99***	.12	.19	[0.62, 1.36]	.01			

Factor 1	0.95***	.11	.17	[0.62, 1.27]	.01
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Note. $N = 1,129$. I examined the variance accounted for by Factors 1 through 5 in physical aggression (i.e., AQ-PA). In Model 1, I entered Factor 3 as the predictor. In Model 2, I entered Factor 4 as the predictor. In Model 3, I entered Factor 2 as the predictor. In Model 4, I entered Factor 5 as the predictor. In Model 5, I entered Factor 1 as the predictor. Total scores on the AQ-PA were entered as the outcome. Factor 1 = mostly cross-loading items and MCAA-R-V item 3. Factor 2 = remaining MCAA-R-V items, excluding MCAA-R-V items 3, 5, and 7. Factor 3 = all CAVS items. Factor 4 = all EVQ items. Factor 5 = VESD items, excluding VESD item 4 (because of issues with multicollinearity).

* $p < .05$, ** $p < .001$, *** $p < .001$.

Based on bivariate relationships (see Table A2 in Appendix AN), Factor 4 (i.e., consisting of the EVQ items) most strongly predicted scores on the EVQ-Likelihood and thus, was entered in the first step of the model, accounting for 63.4% of the variance in likelihood of violence (i.e., $R^2 = .634$, $p < .001$). Factor 3 scores (i.e., consisting of the CAVS items) accounted for significantly more variance (i.e., $R^2 = .672$) in likelihood of violence over and above Factor 4 scores (i.e., $\Delta R^2 = .04$, $p < .001$). Factor 2 scores (i.e., consisting of MCAA-R-V items) accounted for significantly more variance (i.e., $R^2 = .689$) in likelihood of violence over and above Factor 4 and Factor 3 scores (i.e., $\Delta R^2 = .02$, $p < .001$). Factor 1 scores (i.e., consisting of mostly cross-loadings and MCAA-R-V item 3) accounted for significantly more variance (i.e., $R^2 = .696$) in likelihood of violence over and above Factor 4, Factor 3, and Factor 2 scores (i.e., $\Delta R^2 = .01$, $p < .001$). Last, Factor 6 scores (i.e., consisting of the four VE-IAT parcels) accounted for significantly more variance (i.e., $R^2 = .699$) in likelihood of violence over and above Factor 4, Factor 3, Factor 2, and Factor 1 scores (i.e., $\Delta R^2 = .002$, $p = .003$). As is evidenced by these results, the factors representing factor scores for the explicit measure of evaluative attitudes toward violence (i.e., EVQ), the self-report measures of beliefs regarding violence (i.e., CAVS and MCAA-R-V), and the implicit measure of evaluative attitudes toward violence (i.e., VE-IAT) are all incrementally contributing to the prediction of likelihood of violence. Given that all measures generally separated into their own factors, these results suggest that scores on the EVQ, CAVS, MCAA-R-V, and VE-IAT are all contributing unique and complementary variance to the prediction of likelihood of violence (i.e., scores on the EVQ-Likelihood). Accordingly, the assessment of scores on these measures appears important for achieving a more comprehensive

understanding of likelihood of violence. Importantly, Factor 6, representing scores on the VE-IAT, added incrementally to the prediction of likelihood of violence over and above all explicit/self-report measures of violent cognitions (i.e., excluding the VESD that was not included in this analysis given its non-significant relationship to likelihood of violence in the above multiple linear regression). This suggests that the assessment of implicit evaluative attitudes toward violence adds complementary information when predicting scores on a likelihood of violence measure over and above the assessment of other, more traditionally measured, explicit/self-report constructs of violent cognition.

Table 92

Hierarchical Multiple Linear Regression Coefficients Examining the Incremental Variance Explained in Likelihood of Violence by Factors Suggested in the EFA Among Males from the Community Recruited Online in Study 3C

Variable	<i>b</i>	β	<i>SE</i>	95% CI	<i>sr</i> ²	<i>F</i>	<i>R</i> ²	ΔR^2
Model 1						1950.08***	.634	-
Constant	1.88***		.01	[1.86, 1.90]				
Factor 4	0.54***	.80	.01	[0.52, 0.57]	.63			
Model 2						1156.93***	.672	.039***
Constant	1.88***		.01	[1.86, 1.90]				
Factor 4	0.35***	.52	.02	[0.32, 0.39]	.09			
Factor 3	0.23***	.34	.02	[0.19, 0.27]	.04			
Model 3						831.79***	.689	.017***
Constant	1.88***	.	.01	[1.86, 1.90]				
Factor 4	0.32***	.47	.02	[0.28, 0.36]	.07			
Factor 3	0.15***	.22	.02	[0.11, 0.19]	.01			
Factor 2	0.16***	.21	.02	[0.12, 0.19]	.02			
Model 4						644.72***	.696	.007***
Constant	1.88***		.01	[1.86, 1.90]				
Factor 4	0.31***	.46	.02	[0.28, 0.35]	.07			
Factor 3	0.13***	.19	.02	[0.09, 0.17]	.01			
Factor 2	0.17***	.22	.02	[0.13, 0.21]	.02			
Factor 1	0.07***	.09	.01	[0.04, 0.10]	.01			
Model 5						521.27***	.699	.002**
Constant	1.88***		.01	[1.86, 1.90]				
Factor 4	0.31***	.46	.02	[0.28, 0.35]	.07			
Factor 3	0.13***	.18	.02	[0.08, 0.17]	.01			
Factor 2	0.16***	.22	.02	[0.13, 0.20]	.02			
Factor 1	0.07***	.09	.01	[0.05, 0.10]	.01			

Factor 6	0.04**	.05	.01	[0.01, 0.18]	.00
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Note. $N = 1,130$. I examined the variance accounted for by Factors 1, 2, 3, 4, and 6 in likelihood of violence (i.e., EVQ-Likelihood). In Model 1, I entered Factor 4 as the predictor. In Model 2, I entered Factor 3 as the predictor. In Model 3, I entered Factor 2 as the predictor. In Model 4, I entered Factor 1 as the predictor. In Model 5, I entered Factor 6 as the predictor. Total scores on the EVQ-Likelihood were entered as the outcome. Factor 1 = mostly cross-loading items and MCAA-R-V item 3. Factor 2 = remaining MCAA-R-V items, excluding MCAA-R-V items 3, 5, and 7. Factor 3 = all CAVS items. Factor 4 = all EVQ items. Factor 6 = four VE-IAT parcels.

** $p < .001$, *** $p < .001$.

The results of this study, in conjunction with those observed in the above studies, suggest that there is some utility to assessing implicit evaluative attitudes toward violence when explaining violent behaviour. Of note, this construct may be most important for identifying whether someone would behave violently in the future given that scores on the implicit measures of evaluative attitudes toward violence were most consistently associated with scores on the measure of likelihood of violence. Specifically, more positive implicit evaluative attitudes toward violence were most consistently associated with greater likelihood of violence across all studies (i.e., male students, in-lab community men, and online community men), with the exception of Study 2, consisting of males convicted of violent offences. Also, implicit evaluative attitudes toward violence most consistently added incremental variance in the prediction of scores on a measure of likelihood of violence, over and above explicit/self-report violent cognitions, when examining the findings across studies. Future longitudinal research is needed to assess the relationship between scores on the VE-IAT and violent recidivism in order to confirm whether implicit evaluative attitudes toward violence predict actual instances of violent re-offending. Consistent with previous research (e.g., Hutchings et al., 2010; Maimone & Nunes, 2020; Mills et al., 2004; Nunes et al., 2015; Nunes, Pedneault, Hermann, & Fraser, 2021; Polaschek et al., 2004), more positive explicit evaluative attitudes toward violence and more violence-supportive beliefs were consistently associated with more violent behaviour on various violent outcomes across studies in the current dissertation, with larger effect sizes observed in comparison to those involving implicit evaluative attitudes toward violence. In addition, these results were more stable across studies than those involving implicit evaluative attitudes toward violence. The empirical and practical

implications of the results observed in the current dissertation will be further discussed below.

General Discussion

The current dissertation involved a retrospective, cross-sectional, and correlational, design and sought to examine the relationship between various cognitive constructs regarding violence, in particular implicit evaluative attitudes toward violence, and violent behaviour. These data were analyzed using a combination of descriptive statistics, correlations, and regression (i.e., multiple linear regression) analyses to assess the relationships between violent cognitions and violent behaviour. First, a Pre-test study was conducted to determine the optimal categories for the implicit measures of evaluative attitudes toward violence (i.e., VE-IAT, P-VE-IAT, and VE-RRT). Several categories were assessed (i.e., violence vs. peace or violence vs. non-violence, etc.) and frequencies were analyzed to determine which category was identified as the opposite of violence by the majority of participants. In addition, I examined whether various stimulus words relating to violence, peace, positive, or negative were easily classified into categories (see Appendix G for a list of potential categories and stimulus words). The implicit measures of evaluative attitudes toward violence were then created according to the results of the Pre-test. Second, Pearson's r correlations (as well as Spearman's rho correlations) were conducted to examine the bivariate relationships between violent cognitions (e.g., implicit evaluative attitudes toward violence, explicit evaluative attitudes toward violence, and general beliefs regarding violence), as well as the relationship between these constructs and indicators of violent behaviour, among all samples (i.e., male undergraduate students, in-lab male community participants, males convicted of violent offences, and males from the community that were recruited online). Overall, implicit evaluative attitudes toward violence were more strongly related to self-report beliefs

regarding violence than explicit evaluative attitudes toward violence. With the exception of Study 2 involving men convicted of violent offences, implicit evaluative attitudes toward violence were most consistently associated with likelihood of violence, such that more positive implicit evaluative attitudes toward violence were weakly associated with greater likelihood of violence. Overall, more positive explicit evaluative attitudes toward violence were moderately to strongly associated with more violence-supportive beliefs. In addition, more positive explicit evaluative attitudes toward violence, as well as more violence-supportive beliefs, were moderately to strongly associated with more violent behaviour as indicated on several outcomes. The magnitude of the relationships involving explicit evaluative attitudes toward violence and beliefs regarding violence were generally larger and more consistent in comparison to the magnitude of relationships involving implicit evaluative attitudes toward violence.

Third, regression analyses were also conducted to assess whether implicit evaluative attitudes toward violence explained incremental variance in violent behaviour over and above explicit/self-report violent cognitions, as well as whether implicit evaluative attitudes toward violence significantly moderated the relationships between explicit/self-report violent cognitions and violent behaviour. With the exception of Study 2 involving men convicted of violent offences, implicit evaluative attitudes toward violence most consistently explained additional incremental variance in likelihood of violence over and above explicit evaluative attitudes toward violence in male students and community members (online and in-lab), as well as beliefs regarding violence in male community members (online and in-lab). Implicit evaluative attitudes toward violence also added incremental variance in explaining physical aggression over and

above explicit evaluative attitudes toward violence in male community members that were recruited online. Results of the moderated regressions were less consistent; however, interactions between implicit evaluative attitudes toward violence and explicit/self-report violent cognitions were most consistently related to likelihood of violence, with the exception of Study 2 involving men convicted of violent offences. In Study 2, interactions between implicit evaluative attitudes toward violence and explicit/self-report violent cognitions (i.e., explicit evaluative attitudes toward violence and beliefs regarding violence) were most consistently and significantly associated with risk of violent recidivism. Examination of the simple slopes for the significant moderated regressions in Study 2 revealed effects that were consistent with my initial hypothesis; the relationships between explicit/self-report violent cognitions and risk of violent recidivism were strongest at high (more positive) and low (more negative) levels of implicit evaluative attitudes toward violence and weakest at more neutral levels of implicit evaluative attitudes toward violence. Examination of the simple effects for the significant moderated regressions in Studies 1, 3A, and 3B were less clear and, generally, did not follow this same pattern.

Fourth, an exploratory factor analysis (EFA) was conducted to assess the distinctiveness of items from the various violent cognition measures. In the EFA, I assessed the overlap of items from these measures. Items that clump together to form one factor are believed to assess similar (or the same) underlying cognitive construct and items that form separate clusters or factors are believed to assess distinct underlying cognitive constructs. This analysis was solely conducted on the combined samples from Studies 3A and 3B that involved similar, but distinct, male community participants who

were recruited online. Combining these samples allowed for adequate power to conduct the EFA analysis. Retention methods and fit indices suggested retaining a 7-factor model. Examination of the rotated factor loadings showed that items from each violent cognition measure (i.e., MCAA-R-V, CAVS, EVQ, VESD, VE-IAT, and P-VE-IAT) separated into their own factors with Factor 1 consisting mainly of cross-loaded items. These results suggest that each measure is assessing its own cognitive construct regarding violence. The following are the constructs hypothesized to be assessed by each measure: beliefs (i.e., rationalizations and justifications) regarding violence for MCAA-R-V items (excluding items 3, 5, and 7), cognitive distortions regarding violence (perhaps reflective of a more ingrained violent semantic network) for CAVS items, personalized (or person-specific) explicit evaluative attitudes toward violence for EVQ items, societally/culturally accepted explicit evaluative attitudes toward violence for VESD items (excluding item 4), societally/culturally accepted implicit evaluative attitudes toward violence for VE-IAT parcels, and personalized (or person-specific) implicit evaluative attitudes toward violence for P-VE-IAT parcels.

Fifth, multiple linear regressions were conducted to determine whether the factors found in the EFA analyses above (e.g., representing implicit evaluations of violence, general beliefs regarding violence, and explicit evaluations of violence) were incrementally related to indicators of violent behaviour (i.e., physical aggression and likelihood of violence). Specifically, for the multiple linear regressions, factor scores associated with each of the seven factors suggested from the EFA were entered into the model at once with the total scores for indicators of violent behaviour entered as the outcome. Separate regression analyses were conducted for each outcome. Hierarchical

multiple linear regressions were also conducted to assess the incremental variance in violent behaviour that was explained by each cognitive construct (or factor). When physical aggression was entered as the outcome, Factors 1 (mainly cross-loaded items), 2 (MCAA-R-V items), 3 (CAVS items), 4 (EVQ items), and 5 (VESD items) were significantly, incrementally related to this outcome. A hierarchical multiple linear regression revealed that Factors 1 to 5 incrementally accounted for significant variance in the prediction of scores on the measure of physical aggression. When likelihood of violence was entered as the outcome, Factors 1 (mainly cross-loaded items), 2 (MCAA-R-V items), 3 (CAVS items), and 4 (EVQ items) were significantly, incrementally related to this outcome, with Factor 6 (VE-IAT items [or parcels]) marginally significantly related. As above, a hierarchical multiple linear regression revealed that Factors 1, 2, 3, 4, and 6 incrementally accounted for significant variance in the prediction of scores on the measure of likelihood of violence.

As stated above, generally the effects observed quantifying the relationships between implicit evaluative attitudes toward violence and violent behaviour, were weak and substantially smaller in magnitude than those quantifying the relationships between explicit evaluative attitudes toward violence/beliefs regarding violence and violent behaviour. These results might suggest that implicit evaluative attitudes toward violence are less important in relation to violence in comparison to explicit/self-report violent cognitive constructs. However, as mentioned earlier, capturing implicit constructs is more difficult and many of the measures designed to assess these constructs are more unreliable given that they rely on unconscious mental processes. In addition, several considerations should be made when administering IAT measures to assess implicit

evaluative attitudes all of which could affect the resulting IAT effect. For instance, the particular concept categories (i.e., *violence* and *peace*) and attribute categories (i.e., *positive* and *negative*), stimuli (i.e., words or images), scoring algorithm, and general procedure (e.g., feedback vs. no feedback on error trials) can affect the results of IAT measures (e.g., relationships with constructs of interest). Due to this, it is expected that more diminished effects would be observed between implicit and related self-report/behavioural constructs. Additionally, it is reasonable to expect larger effect sizes between measures that are more procedurally and structurally similar (e.g., between self-report measures vs. between implicit and self-report measures). This could explain the smaller effect sizes observed between implicit measures of evaluative attitudes toward violence and self-report measures of violent behaviour. Therefore, the small effect sizes observed regarding implicit evaluative attitudes toward violence may not reflect a lack of importance regarding this construct but may be more reflective of the structurally different procedure and mental processes underlying this construct.

Few studies to date have assessed multiple implicit measures of evaluative attitudes toward violence within a single study and, to the best of my knowledge, no studies have administered a traditional IAT (Greenwald et al., 1998), personalized IAT (Olson & Fazio, 2004), and Relational Responding Task (De Houwer et al., 2015) to assess implicit evaluative attitudes toward violence within one study as was done in the current dissertation. As stated above, De Houwer et al. (2015) argued that traditional IAT measures capture associations between concepts (i.e., *violence* and *good*) while ignoring how those concepts are related to one another (also see Hughes et al., 2012). For example, the two propositional beliefs, “violence is good” and “me doing violence is

good”, both associate the two concepts of “violence” and “good”, but they represent a different type of relation between these concepts. Further, these two propositional statements might be differentially related to behaviour (De Houwer et al., 2015). Accordingly, IAT measures designed to assess implicit evaluative attitudes toward violence and thus, that contain categories associated with these propositions (e.g., *violence*, *non-violence*, *good*, and *bad*), may not be able to differentiate between these two different propositional statements (De Houwer et al., 2015). In addition, different participants may associate the two concepts of “violence” and “good” in accordance with different propositional beliefs and thus, the same IAT measure may activate different implicit associations among different participants. If this is the case, this would produce more ambiguity when completing traditional IAT procedures, resulting in smaller effect sizes quantifying the relationships between scores on these measures and related constructs. De Houwer et al. (2015) proposed the RRT as an alternative to traditional IAT procedures, in which participants are instructed to respond in accordance with a particular implicit belief/association. Specifically, instead of words, the RRT presents full statements in the center of a computer screen (e.g., “I like myself”). For example, in an RRT designed to assess implicit self-esteem, during one type of critical block, participants would be instructed to respond *as if* they believe they are good, by selecting the response “true” when statements are in line with this belief (e.g., I like myself) and “not true” when statements are not in line with this belief (e.g., I dislike myself). In the second type of critical block, participants would be instructed to respond *as if* they believe they are bad, by selecting the response “true” when statements are in line with this belief (e.g., I dislike myself) and “not true” when statements are not in line with this

belief (e.g., I like myself). Differences in response times between the two types of blocks is calculated to provide an index, in line with the IAT-scoring algorithm suggested by Greenwald et al. (2003). In the current study, the RRT was modified to assess implicit evaluative attitudes toward violence (i.e., VE-RRT) by having participants evaluate violent statements presented in the middle of the computer screen (e.g., “You hitting a guy who steals from you is positive”). Small and mostly null effects were observed regarding relationships between scores on the VE-RRT and the other constructs of interest. It is unclear why this measure was unable to capture implicit evaluative attitudes toward violence when it has outperformed other implicit measures in prior empirical studies. For instance, Tibboel et al. (2017) found that scores on an RRT measure reflected a greater implicit desire for smoking after participants were deprived of nicotine in comparison to scores on this same RRT measure completed directly after participants had smoked; however, no differences were observed in scores on a traditional IAT measure nor on a personalized IAT measure. Of note, in the current dissertation, the 17 statements within the EVQ were used as the stimuli for the VE-RRT, creating a quite lengthy procedure. Many participants stated that they were fatigued following its completion, which may have led to greater likelihood of what Carpenter et al. (2019) describe as “button mashing” (p. 22), which is “when participants indiscriminately press buttons at high speed to skip past the IAT [or in this case the VE-RRT]” (p. 22). Also, there was no way of knowing whether participants actually read the full statements presented in the centre of the computer screen or just scanned the statements for the positive and negative attribute words to more quickly categorize them as ‘True’ or ‘False’. Relatedly, a personalized version of the IAT procedure was administered in the current dissertation, in

line with Olson and Fazio's (2004) suggestions. These authors proposed that traditional IATs containing attribute categories, such as 'positive' and 'negative', have greater potential for activating societal beliefs regarding the construct under investigation, rather than one's own evaluative attitudes. Thus, they proposed the P-IAT in which personalized categories of '*I like*' and '*I dislike*' replace the traditional attribute categories of '*positive*' and '*negative*'. The P-VE-IAT seemed to perform similarly to the VE-IAT (i.e., consisting of the traditional IAT procedure containing attribute categories of '*positive*' and '*negative*') across studies in the current dissertation, and even sometimes outperformed the VE-IAT. Regardless, future studies should administer a hybrid implicit measure combining the procedure of more traditional IAT measures with that of the RRT. For instance, in this hybrid implicit procedure, RRT-like statements related to concept categories of *violence* and *peace*, in which the respondent is the one doing the action described (e.g., "You hitting a guy who steals from you is..."), as well as statements related to evaluative attribute categories, such as *positive* and *negative*, would be presented in the centre of the computer screen. As in the traditional IAT, participants would then sort these statements into categories of 'VIOLENT or positive' and 'PEACEFUL or negative' or 'VIOLENT or negative' and 'PEACEFUL or positive'. This type of procedure would be less ambiguous regarding the associations made between 'violence' and 'good', as it specifies the respondent as the one doing the violence.

Although the current studies add to the sparse literature to date regarding the assessment of implicit evaluative attitudes toward violence, they are not without their limitations. As mentioned above, the methodology used across studies in the current dissertation was retrospective, cross-sectional, and correlational in nature; thus, I was not

able to establish whether higher scores on the various measures of violent cognitions caused more violent behaviour or vice versa. Nor was I able to establish whether higher scores on these measures predicted future instances of violence. Further, Study 2, consisting of males convicted of violent offences, was underpowered as only 42 participants were recruited. This likely affected the ability to find significant effects between the constructs of interest and, in particular, for relationships involving implicit evaluative attitudes toward violence. Future studies should seek to replicate the results of Study 2 using larger samples of males convicted of violent offences, as well as examine the relationships between these constructs and real instances of violent re-offending. Additionally, future empirical research should make use of true experimental designs in which implicit evaluative attitudes toward violence are manipulated in-lab, after which an examination of the change in this construct (i.e., as a result of the manipulation) can be conducted to determine whether this change corresponds to changes in indicators of violent behaviour (e.g., self-report measures such as the VBS, EVQ-Likelihood, AQ-PA, and/or VBVQ). This would establish a causal link between more positive implicit evaluative attitudes toward violence and greater violent behaviour. Relatedly, Jeon et al. (2017) examined whether scores on an IAT measure administered to assess implicit evaluative attitudes toward violence could be changed through administering an evaluative conditioning (EC) task. Specifically, these authors used EC to change lower scores on the IAT measure, corresponding to more positive evaluative attitudes toward violence, into higher scores on the IAT measure, corresponding to more negative implicit evaluative attitudes toward violence, by pairing *violence*-related and *peace*-related target words—identical to the target-concept words used in their IAT measure—with negatively

and positively valenced images (i.e., conditioning pairs). Filler pairs were also used for which words related to seven different neutral themes of items (i.e., animals, fruit, country, city, sports, home appliances, and clothing) and other neutral words (selected from a Korean dictionary and pilot tested on 70 undergraduate students as being congruent with a *neutral* category) were paired with neutral images. The images paired with the violence-related, peace-related, and neutral target words were randomly selected from positive/negative/neutral image sets on the Geneva Affective Picture Database (Dan-Glauser & Scherer, 2011). The EC used in this study was created in the form of a go/no go task (see Houben et al., 2012) during which participants were either instructed to press the space key in the “go” trials or to not press the space key in the “no-go” trial when they saw items corresponding to a particular theme. The treatment condition contained eight conditioning pairs in which violence-related target words were paired with negatively valenced images and eight conditioning pairs in which peace-related target words were paired with positively valenced images. The treatment condition also contained 16 filler pairs in which the neutral words were paired with the neutral valence images. In the control condition, only the filler pairs (i.e., neutral words paired with neutral images) were presented in each block without any conditioning pairs. The authors reported significantly more negative implicit evaluative attitudes toward violence at post-manipulation among adolescents in the treatment condition who had committed at least one violent school act ($N = 50$); however, no differences were observed in implicit evaluative attitudes toward violence between pre- and post-manipulation for those in the control condition. These results suggest that the EC treatment condition was successful at improving violent adolescents’ implicit evaluative

attitudes toward violence by making them more negative post-manipulation. Future empirical research could replicate these results by administering the EC manipulation conducted by Jeon et al. (2017) to manipulate scores on implicit measures of evaluative attitudes toward violence and assess whether the change produced from the manipulation corresponds to change on measures of violent behaviour.

Relatedly, future research should examine the impact of simulated provocation on the relationship between implicit evaluative attitudes toward violence and self-reported violent behaviour (e.g., likelihood of violence). Implicit evaluative attitudes toward violence are believed to be immediately activated in the presence of an attitude object and are then acted on or changed depending on whether there is opportunity to deliberate (Fazio, 1990). In a situation in which there is no opportunity to deliberate, initially activated implicit evaluative attitudes are believed to more likely affect behaviour (Fazio, 1990). Given this, it seems reasonable to expect that violence-provoking scenarios would strengthen the observed association between implicit evaluative attitudes toward violence and self-reported violent behaviour. This is in line with arguments made by Sprunger and Eckhardt (2017) in which they argue that one would expect the relationship between implicit evaluative attitudes toward violence and violent behaviour (i.e., in their study the outcome was aggression toward a dating partner) to be strengthened when one is provoked (i.e., given a scenario outlining a violence-provoking interaction) because of the presence of violent cues that are relevant to one's implicit evaluative attitudes toward violence. Ajzen (1996) further argued that when implicit evaluative attitudes are activated by salient cues, they are believed to more strongly influence behaviour and are thus, more predictive of behaviour in this case. Sprunger and Eckhardt (2017) put forth the

importance of assessing the impact of aggression-provoking scenarios on the relationship between implicit evaluative attitudes toward aggression and self-reported likelihood of aggression toward a dating partner to further understand how implicit evaluative attitudes toward aggression are implicated in the perpetration of aggression toward a romantic (or dating) partner. This translates to the realm of violence, in which there is importance in assessing the impact of violence-provoking scenarios on the relationship between implicit evaluative attitudes toward violence and self-reported likelihood of violence to better understand how implicit evaluative attitudes toward violence are implicated in the perpetration of violence.

As stated above, the aim of the current dissertation was to gain a better understanding of violent cognitions, in particular implicit evaluative attitudes toward violence, their assessment, and their role in violent behaviour. Although this project does not directly inform practice, it increases precision and clarity in the conceptualization and measurement of cognitive constructs regarding violence and facilitates advances in understanding the cognitive underpinnings of violence. This will help facilitate further improvements in the assessment of violent cognitions. In addition, developing a better theoretical understanding of cognitions regarding violence, the distinction between implicit and explicit evaluation and other aspects of cognitions regarding violence, and the development of different assessment measures may lead to more effective correctional policies and practices in the future. More specifically, the findings of the current project contribute to refining methods of assessment of attitudes towards violence, which may in turn improve the effectiveness and efficiency of future treatment

and management of violent behaviour in forensic/correctional mental health settings and in the community.

Although the current dissertation advances our understanding of cognitions regarding violence, many questions still remain. For instance, the following questions remain unanswered: (a) Are implicit evaluative attitudes toward violence functionally important for understanding the cycle of offence involved in general violence? (b) To what extent can one's implicit evaluative attitudes toward violence be changed and does this change correspond to a change in violent behaviour? (c) What is the functional link between various cognitive constructs regarding violence? and last, (d) Do more positive implicit evaluative attitudes toward violence predict actual instances of future violence? These questions, among others, are beyond the scope of this dissertation; nonetheless, the consistency of results across Studies 1 and 3 highlights the importance of further assessing these constructs. Although small effects were observed, they were generally consistent across somewhat demographically different samples and modes of administration. In addition, implicit evaluative attitudes toward violence explained incremental variance in violent outcomes, especially likelihood of behaving violently. Alone, this construct may not explain much of behaviour, but combined with other cognitive constructs it may advance our understanding of what factors lead to the commission of future violent behaviour and may aid in identifying those who are more likely to behave violently.

In terms of the generally null results concerning implicit evaluative attitudes toward violence in Study 2, involving males convicted of violent offences, perhaps this construct is no longer important once one has been involved in extensive violence (i.e., it

no longer predicts whether one will be violent or not). This is related to the assertion that implicit evaluative attitudes are more stable and resistant to change in comparison to explicit evaluative attitudes (Fazio, 1990; Gawronski & Bodenhausen, 2006). This may be reflected in the similar scores observed on implicit measures of evaluative attitudes toward violence across all studies suggesting that males convicted of violent offences hold similar implicit evaluative attitudes toward violence than men from the general community, and to a lesser extent, male undergraduate students. Therefore, perhaps implicit evaluative attitudes toward violence, combined with additional violent cognitive constructs, can better discern who will be violent before it occurs extensively, but once one has a long history of violence, it no longer adds incrementally to the prediction of violence. This is subsequently reflected when comparing the hierarchical regressions across samples. Importantly, at least marginally significant, moderated regressions were observed in Study 2 suggesting that implicit evaluative attitudes toward violence moderate the relationship between explicit evaluative attitudes toward violence and violent behaviour (i.e., in particular risk of violent recidivism). In addition, the pattern of simple slopes was consistent with my initial hypothesis that the strength of one's implicit evaluative attitudes toward violence would influence the strength of the relationship between one's explicit evaluative attitudes toward violence and violent behaviour. Therefore, among those who have extensive histories of violence, perhaps understanding the strength of their implicit evaluative attitudes toward violence will aid in understanding the link between reported explicit evaluative attitudes toward violence and risk of violent recidivism once released into the community. In conclusion, it is clear that no single cognitive construct alone explains all of violence. It is an interconnected

network of constructs that influence and ultimately lead to these outcomes. The challenge, and ultimate goal, is untangling this network and deriving a *best* estimate based on an optimal combination of factors.

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Appendix A

Coding Form Used to Code Violent Histories for Study 2 Among Males Convicted of Violent Offences

I. BASIC INFORMATION

Date the file was coded (mm/dd/yyyy) [CODEDATE]	____/____/____
---	----------------

II. BASIC OFFENDER DEMOGRAPHIC VARIABLES

1. ____/____/____ ODOB: Offender's Date of Birth (mm/dd/yyyy)

2. ____ AGE: Offender's Current Age

3. ____ GENDER: Offender's Gender (1 = Male; 2 = Female)

4. ____ ETHNICITY: Offender's Ethnicity

1 = Caucasian/White/European

2 = Black

3 = Indigenous

4 = Asian

5 = East Indian

6 = Hispanic/Latino

7 = Arab

8 = Other (specify) _____

5. ____ EMPLOY: Employed at Time of Index? (0 = No; 1 = Yes; specify: _____)

6. HEIGHT ____ cm

7. TRANSLATE: Need for a Translator: YES NO

8. HOMELANG: Home Language:

English

Other (specify) _____

9. **PREFLANG:** Preferred Language:

English Other (specify) _____

10. **SENTLENGTH:** Length of Aggregate Sentence for Index Offence(s) (write in years, months, and/or days).

11. **LEARNDIS:** Any evidence of a learning disability (code YES or NO, if MAYBE, specify _____) _____

12. ____/____/____ **IAD:** Institutional Admit Date (date admitted to home institution) (mm/dd/yyyy)

13. ____/____/____ **SRD:** STU Referral Date (date referred to the STU) (mm/dd/yyyy)

14. ____/____/____ **SAD:** STU Admit Date (date admitted to the STU) (mm/dd/yyyy)

15. ____/____/____ **EXECD:** Execution Date (mm/dd/yyyy)

16. ____/____/____ **IWED:** Initial Warrant Execution Date (mm/dd/yyyy)

17. ____/____/____ **FWED:** Final Warrant Expiry Date (mm/dd/yyyy)

18. ____/____/____ **PED:** Parole Eligibility Date (mm/dd/yyyy)

19. ____/____/____ **DPD:** Discharge Possible Date (mm/dd/yyyy)

20. ____/____/____ **SDD:** STU Discharge Date (date discharged from the STU) (mm/dd/yyyy)

III. OTIS VARIABLES

OTIS available? [OTIS]		Date on OTIS [OTISDATE] (mm/dd/yyyy)	
------------------------	--	---	--

A) EDUCATION

Highest grade completed (#; use "at least" number)		
Completed high school or equivalent (check one below AND circle 'Yes' or 'No') ☐ High School Diploma ☐ Equivalent (i.e., GED)	Yes	No
Took college courses?	Yes	No
Completed college?	Yes	No
Took undergraduate university courses?	Yes	No
Completed undergraduate university degree?	Yes	No
Took graduate (MA, PhD) courses?	Yes	No
Completed graduate degree?	Yes	No

B) MARITAL STATUS

Marital status on date of index offence

- Indicate the category that best describes the subject's marital status **on the date he committed the index offence**.
- If the index offence includes more than one offence, indicate his marital status on the date of the first of these.
 - 1 = single (i.e., not loving with a romantic partner for at least 1 year)
 - 2 = common-law relationship (living together at least 1 year)
 - 3 = married
 - 4 = separated/divorced from wife
 - 5 = separated from common-law wife
 - 6 = widower
 - 7 = same-sex relationship (living together/married at least 1 year)
 - 8 = other; specify

C) SYMPTOMS AND PHYCHIATRIC DIAGNOSES

ADHD. Any symptoms of ADHD? YES NO

TRAUMA. Any trauma symptoms? YES NO

PSYCDIAGNOSIS. List all psychiatric diagnoses _____

D) LSI-OR Risk Scores (Coded from OTIS) (LSI-OR; Andrews, Bonta, & Wormith, 1995)

LSI/OR.COMPLETED (yes/no) _____ **DATE.LSI/OR.COMPLETED** (mm/dd/yyyy) ____/____/____

i) LSI/OR Subscale Scores	ii) LSI/OR Total Risk Scores
<p>_____ LSI/OR.CH.SCORE: Criminal History total subscale score.</p> <p>_____ LSI/OR.EE.SCORE: Education/Employment total subscale score.</p> <p>_____ LSI/OR.FM.SCORE: Family/Marital total subscale score.</p> <p>_____ LSI/OR.LR.SCORE: Leisure/recreation total subscale score.</p> <p>_____ LSI/OR.CO.SCORE: Companions total subscale score.</p> <p>_____ LSI/OR.PA.SCORE: Procriminal Attitude/Orientation total subscale score.</p> <p>_____ LSI/OR.SA.SCORE: Alcohol/Drug Problem (Substance Abuse) total subscale score.</p> <p>_____ LSI/OR.AP.SCORE: Antisocial Pattern total subscale score.</p>	<p>_____ LSI/OR.COLUMN.A: Total score for LR + CO + SA + PA + AP subscales.</p> <p>_____ LSI/OR.COLUMN.B: Total score for CH + EE + FM subscales.</p> <p>_____ LSI/OR.TOTAL: Total score for all LS/OR items (43 items).</p> <p>_____ LSI/OR.RISK/NEED: LSI/OR score-based Risk/Need level. 1 = Scores 0 – 4 (Very Low Risk) 2 = Scores 5 – 10 (Low Risk) 3 = Scores 11 – 19 (Medium Risk) 4 = Scores 20 – 29 (High Risk) 5 = Scores 30 – 43 (Very High Risk)</p>

IV. CPIC VARIABLES

CPIC available? [CPIC]		Date on CPIC [CPICDATE] (mm/dd/yyyy)	
------------------------	--	---	--

1. INDEX CONVICTIONS

Only consider index offences that resulted in conviction in your coding below (categories are mutually exclusive).

Index offence convictions	Number	Date of offence (mm/dd/yyyy)	Date of charge/arrest (mm/dd/yyyy)	Date of conviction (mm/dd/yyyy)
Sex offence convictions		1 st : Most recent:	1 st : Most recent:	1 st : Most recent:
Violent (non-sexual) offence convictions		1 st : Most recent:	1 st : Most recent:	1 st : Most recent:
Non-violent (non-sexual) offence convictions		1 st : Most recent:	1 st : Most recent:	1 st : Most recent:

VICTIM SUMMARY INFORMATION FOR INDEX VIOLENT (NON-SEXUAL) CONVICTION

Any violent offence victims?	YES NO
Number of adult male victims	
Number of adult female victims	
Number of IPV victims	
Number of adolescent victims	
Number of child victims	
Relationship with victims	

2. PRIOR CONVICTIONS AND PRIOR CHARGES

For prior convictions, only consider prior offences that resulted in conviction in your coding below (categories are mutually exclusive).

For prior charges, only consider prior charges that did not result in a conviction in your coding below.

Prior offence CONVICTIONS	Number	Date of 1 st conviction (mm/dd/yyyy)	Prior offence CHARGES	Number	Date of 1 st charge (mm/dd/yyyy)
Sex offence convictions			Sex offence charges		
Violent (non-sexual) offence convictions			Violent (non-sexual) offence charges		
Non-violent (non-sexual) offence convictions			Non-violent (non-sexual) offence charges		

VICTIM SUMMARY INFORMATION FOR PRIOR VIOLENT (NON-SEXUAL) CONVICTIONS AND CHARGES

CONVICTIONS	Circle 'yes' or 'no'	CHARGES	Circle 'yes' or 'no'
Any violent offence victims?	YES NO	Any violent offence victims?	YES NO
Any adult male victims	YES NO	Any adult male victims	YES NO
Any adult female victims	YES NO	Any adult female victims	YES NO
Any IPV victims	YES NO	Any IPV victims	YES NO
Any adolescent victims	YES NO	Any adolescent victims	YES NO
Any child victims	YES NO	Any child victims	YES NO
Relationship with victims		Relationship with victims	

3. ANY INSTITUTIONAL MISCONDUCTS

Any prior institutional misconducts?	NO	YES (List Number _____)
		Any evidence that one or more were violent? YES (est. # _____) NO

4. NATURE OF VIOLENT INDEX OFFENCES, PRIOR CHARGES, AND PRIOR CONVICTIONS

Nature of Violent Offence for...	Index Offences	Prior Convictions	Prior Charges
	Indicate Number		
Aggravated assault			
Arson			
Assault			
Assault with a weapon			
Assault causing bodily harm			
Assault peace/police officer			
Attempted abduction			
Attempted child stealing			
Attempted robbery			
Compelling the commission of an offence			
Criminal harassment			
Uttering threats			
Cruelty to animals			
False imprisonment			
Felonies assault			
Forcible confinement			
Give noxious substance (alcohol, narcotics, or other stupeficient in order to impair a victim)			
Grand theft person ("Grand theft person" is a variation on robbery and may be counted as non-sexual violence)			
Juvenile non-sexual violence sentencing occasions count on this item			
Kidnapping			
Manslaughter			
Murder			
Robbery			
Armed robbery			
Robbery with violence			
Threatening			
Using/pointing a weapon/firearm in the commission of an offence			
Violation of a domestic violence order (restraining order; a conviction for)			
Wounding			

OFFENDER TREATMENT PARTICIPATION DURING OR BEFORE SENTENCE FOR INDEX OFFENCE(S)[illegible]

V. SCREENING MEASURES (Coded from excel sheets)**A) MEASURES OF CRIMINAL ATTITUDES AND ASSOCIATES (MCAA; Mills & Kroner, 1999)****I. MCAA PRE-TREATMENT SCORES****PRE.MCAA.COMPLETED (yes/no) _____****DATE.MCAA.PRE.COMPLETED (mm/dd/yyyy) ____/____/____**

This questionnaire has two parts (Part A and Part B). The first part asks some questions about your friends and acquaintances. The second part is a series of statements for which you can respond by showing whether you agree or disagree with the statement. There are no right or wrong answers. Please answer all the questions.

Part A

This part asks the assessee to consider the 4 adults you spend the most time with, in the community, when you answer Part A.

Number of Criminal Friends

Criminal Friends Index

Part B

1. ___ **MCAAB1. It's understandable to hit someone who insults you. [V]**
2. ___ **MCAAB2. Stealing to survive is understandable.**
3. ___ **MCAAB3. I am not likely to commit a crime in the future.**
4. ___ **MCAAB4. I have a lot in common with people who break the law.**
5. ___ **MCAAB5. There is nothing wrong with beating up a child molester. [V]**
6. ___ **MCAAB6. A person is right to take what is owed them, even if they have to steal it.**
7. ___ **MCAAB7. I would keep any amount of money I found.**
8. ___ **MCAAB8. None of my friends have committed crimes.**
9. ___ **MCAAB9. Sometimes you have to fight to keep your self-respect. [V]**
10. ___ **MCAAB10. I should be allowed to decide what is right and wrong.**
11. ___ **MCAAB11. I could see myself lying to the police.**
12. ___ **MCAAB12. I know several people who have committed crimes.**
13. ___ **MCAAB13. Someone who makes you very angry deserves to be hit. [V]**
14. ___ **MCAAB14. Only I should decide what I deserve.**
15. ___ **MCAAB15. In certain situations I would try to outrun the police.**
16. ___ **MCAAB16. I would not steal, and I would hold it against anyone who does.**
17. ___ **MCAAB17. People who get beat up usually had it coming. [V]**
18. ___ **MCAAB18. I should be treated like anyone else no matter what I've done.**
19. ___ **MCAAB19. I would be open to cheating certain people.**
20. ___ **MCAAB20. I always feel welcomed around criminal friends.**
21. ___ **MCAAB21. It's all right to fight someone if they stole from you. [V]**
22. ___ **MCAAB22. It's wrong for a lack of money to stop you from getting things.**
23. ___ **MCAAB23. I could easily tell a convincing lie.**

24. ___ **MCAAB24.** Most of my friends don't have criminal records.
25. ___ **MCAAB25. It's not wrong to hit someone who puts you down. [V]**
26. ___ **MCAAB26.** A hungry man has the right to steal.
27. ___ **MCAAB27.** Rules will not stop me from doing what I want.
28. ___ **MCAAB28.** I have friends who have been to jail.
29. ___ **MCAAB29. Child molesters get what they have coming. [V]**
30. ___ **MCAAB30.** Taking what is owed you is not really stealing.
31. ___ **MCAAB31.** I would not enjoy getting away with something wrong.
32. ___ **MCAAB32.** None of my friends has ever wanted to commit a crime.
33. ___ **MCAAB33. It's not wrong to fight to save face. [V]**
34. ___ **MCAAB34.** Only I can decide what is right and wrong.
35. ___ **MCAAB35.** I would run a scam if I could get away with it.
36. ___ **MCAAB36.** I have committed a crime with friends.
37. ___ **MCAAB37. Someone who makes you really angry shouldn't complain if they get hit. [V]**
38. ___ **MCAAB38.** A person should decide what they deserve out of life.
39. ___ **MCAAB39.** For a good reason, I would commit a crime.
40. ___ **MCAAB40.** I have friends who are well known to the police.
41. ___ **MCAAB41. There is nothing wrong with beating up someone who asks for it. [V]**
42. ___ **MCAAB42.** No matter what I've done, it's only right to treat me like everyone else.
43. ___ **MCAAB43.** I will not break the law again.
44. ___ **MCAAB44. It is reasonable to fight someone who cheated you. [V]**
45. ___ **MCAAB45.** A lack of money should not stop you from getting what you want.
46. ___ **MCAAB46.** I would be happy to fool the police.

SUBSCALE TOTAL SCORES

___ **MCAAB.VIOL.** Violence subscale for MCAA-Part B

Total MCAA score

**(sum of Part A and
Part B items)**

**Total MCAA Part B
score**

**(sum of Part B
items 1 to 46)**

- ___ **MCAAB.ANTI.** Antisocial Intent subscale for MCAA-Part B
- ___ **MCAAB.ENTITLE.** Entitlement subscale for MCAA-Part B
- ___ **MCAAB.ASSOC.** Associates subscale for MCAA-Part B

II. MCAA POST-TREATMENT SCORES

Part B

POST.MCAA.COMPLETED (yes/no) _____

DATE.MCAAR.POST.COMPLETED (mm/dd/yyyy) ____/____/____

(If date is not available, use their discharge date)

1. ____ MCAAB1. It's understandable to hit someone who insults you. [V]
2. ____ MCAAB2. Stealing to survive is understandable.
3. ____ MCAAB3. I am not likely to commit a crime in the future.
4. ____ MCAAB4. I have a lot in common with people who break the law.
5. ____ MCAAB5. There is nothing wrong with beating up a child molester. [V]
6. ____ MCAAB6. A person is right to take what is owed them, even if they have to steal it.
7. ____ MCAAB7. I would keep any amount of money I found.
8. ____ MCAAB8. None of my friends have committed crimes.
9. ____ MCAAB9. Sometimes you have to fight to keep your self-respect. [V]
10. ____ MCAAB10. I should be allowed to decide what is right and wrong.
11. ____ MCAAB11. I could see myself lying to the police.
12. ____ MCAAB12. I know several people who have committed crimes.
13. ____ MCAAB13. Someone who makes you very angry deserves to be hit. [V]
14. ____ MCAAB14. Only I should decide what I deserve.
15. ____ MCAAB15. In certain situations I would try to outrun the police.
16. ____ MCAAB16. I would not steal, and I would hold it against anyone who does.
17. ____ MCAAB17. People who get beat up usually had it coming. [V]
18. ____ MCAAB18. I should be treated like anyone else no matter what I've done.
19. ____ MCAAB19. I would be open to cheating certain people.
20. ____ MCAAB20. I always feel welcomed around criminal friends.
21. ____ MCAAB21. It's all right to fight someone if they stole from you. [V]
22. ____ MCAAB22. It's wrong for a lack of money to stop you from getting things.
23. ____ MCAAB23. I could easily tell a convincing lie.

24. ___ **MCAAB24.** Most of my friends don't have criminal records.
25. ___ **MCAAB25. It's not wrong to hit someone who puts you down. [V]**
26. ___ **MCAAB26.** A hungry man has the right to steal.
27. ___ **MCAAB27.** Rules will not stop me from doing what I want.
28. ___ **MCAAB28.** I have friends who have been to jail.
29. ___ **MCAAB29. Child molesters get what they have coming. [V]**
30. ___ **MCAAB30.** Taking what is owed you is not really stealing.
31. ___ **MCAAB31.** I would not enjoy getting away with something wrong.
32. ___ **MCAAB32.** None of my friends has ever wanted to commit a crime.
33. ___ **MCAAB33. It's not wrong to fight to save face. [V]**
34. ___ **MCAAB34.** Only I can decide what is right and wrong.
35. ___ **MCAAB35.** I would run a scam if I could get away with it.
36. ___ **MCAAB36.** I have committed a crime with friends.
37. ___ **MCAAB37. Someone who makes you really angry shouldn't complain if they get hit. [V]**
38. ___ **MCAAB38.** A person should decide what they deserve out of life.
39. ___ **MCAAB39.** For a good reason, I would commit a crime.
40. ___ **MCAAB40.** I have friends who are well known to the police.
41. ___ **MCAAB41. There is nothing wrong with beating up someone who asks for it. [V]**
42. ___ **MCAAB42.** No matter what I've done, it's only right to treat me like everyone else.
43. ___ **MCAAB43.** I will not break the law again.
44. ___ **MCAAB44. It is reasonable to fight someone who cheated you. [V]**
45. ___ **MCAAB45.** A lack of money should not stop you from getting what you want.
46. ___ **MCAAB46.** I would be happy to fool the police.

SUBSCALE TOTAL SCORES

___ **MCAAB.VIOL.** Violence subscale for MCAA-Part B

Total MCAA score

**(sum of Part A and
Part B items)**

**Total MCAA Part B
score**

**(sum of Part B
items 1 to 46)**

- ___ **MCAAB.ANTI.** Antisocial Intent subscale for MCAA-Part B
- ___ **MCAAB.ENTITLE.** Entitlement subscale for MCAA-Part B
- ___ **MCAAB.ASSOC.** Associates subscale for MCAA-Part B

B) CRIMINAL SENTIMENTS SCALE–MODIFIED (CSS–M; SHIELDS & SIMOURD, 1991)

I. CSS PRE-TREATMENT SCORES

PRE.CSSM.COMPLETED (yes/no) _____

DATE.CSSM.PRE.COMPLETED (mm/dd/yyyy) ____/____/____

___ **LAW.TOTAL.** Attitudes towards the law

___ **COURT.TOTAL.** Attitudes towards the courts

___ **POLICE.TOTAL.** Attitudes towards the police

___ **TLV.TOTAL.** Tolerance towards law violations

___ **ICO.TOTAL.** Identification with criminal others

___ **LCP.TOTAL.** Law, Courts, Police total score. Higher score indicated pro-criminal attitudes (Law + Courts + Police)

___ **CSS.TOTAL.COPIED.** Total score for CSS copied directly from the excel sheet (calculated by summing the CSSM items)

___ **CSS.TOTAL.CALCULATED.** Total score for CSS (calculated by subtracting the combine scores on TLV & ICO scales from the LCP scale)

II. CSS POST-TREATMENT SCORES

POST.CSSM.COMPLETED (yes/no) _____

DATE.CSSM.POST.COMPLETED (mm/dd/yyyy) ____/____/____
(if date is not available, use their discharge date)

___ **LAW.TOTAL.** Attitudes towards the law

___ **COURT.TOTAL.** Attitudes towards the courts

___ **POLICE.TOTAL.** Attitudes towards the police

___ **TLV.TOTAL.** Tolerance towards law violations

___ **ICO.TOTAL.** Identification with criminal others

___ **LCP.TOTAL.** Law, Courts, Police total score. Higher score indicated pro-criminal attitudes (Law + Courts + Police)

___ **CSS.TOTAL.COPIED.** Total score for CSS copied directly from the excel sheet (calculated by summing the CSSM items)

___ **CSS.TOTAL.CALCULATED.** Total score for CSS (calculated by subtracting the combine scores on TLV & ICO scales from the LCP scale)

VI. RISK SCALE CODING (VRAG AND VRAG-REVISED)**A) VIOLENCE RISK APPRAISAL GUIDE (VRAG; Quinsey, Harris, Rice, & Cormier, 2006)
(PLEASE SCORE THE FOLLOWING ITEMS FROM FILE INFORMATION)****1. ___ Lived with both biological parents to age 16 (except for death of parent)**

Score no if offender did not live continuously with both biological parents until age 16 except for death of one or both parents. In case of death of parent(s), score as for yes.

Yes = -2, No = +3

2. ___ Elementary school maladjustment (up to and including eighth grade)

No problems = -1

Slight or moderate discipline or attendance problems = +2

Severe (i.e., frequent or serious) behaviour or attendance problems (e.g., truancy or disruptive behaviour that persisted over several years or resulted in expulsion) = +5

3. ___ History of alcohol problems

Allot one point for each of the following: alcohol abuse in biological parent, teenage alcohol problem, adult alcohol problem, alcohol involved in a prior offence, alcohol involved in the index offense.

0 points = -1, 1 or 2 points = 0, 3 points = +1, 4 or 5 points = +2

4. ___ Marital status at the time of index offense

Ever married (or lived with common law in the same home for at least 6 months) = -2

Never married = +1

5. ___ Criminal history score for convictions or charges for nonviolent offenses before index offense (from the Cormier-Lang system shown on Page 33)

Score 0 = -2

Score 1 or 2 = 0

Score 3 or above = +3

6. ____ **Failure on conditional release (include parole violations or revocation, breach of or failure to comply with recognizance or probation, bail violation; and any new charges, including the index offense, while on a conditional release)**

No = 0, Yes = +3

7. ____ **Age at index offense (at most recent birthday)**

$\geq 39 = -5$

$34 - 38 = -2$

$28 - 33 = -1$

$27 = 0$

$\leq 26 = +2$

8. ____ **Victim injury (index offense only and most serious is scored)**

Death = -2

Hospitalized = 0

Treated and released = +1

None or slight (includes no victim) = +2

9. ____ **Any female victim (for index offense)**

Yes = -1, No (includes no victim) = +2

10. ____ **Meets DSM-III criteria for any personality disorder**

No = -2, Yes = +3

11. ____ **Meets DSM-III criteria for schizophrenia**

Yes = -3, No = +1

12. ____ Hare Psychopathy Checklist–Revised score (PCL–R; Hare, 2003)

$\leq 4 = -5$

5–9 = –3

10–14 = –1

15–24 = 0

25–34 = +4

$\geq 35 = +12$

VRAG Score _____

VRAG Category _____

B) VIOLENCE RISK APPRAISAL GUIDE–REVISED (VRAG–R; Harris, Rice, Quinsey, & Cormier, 2015)
(PLEASE SCORE THE FOLLOWING ITEMS FROM FILE INFORMATION)

1. ____ Lived with both biological parents to age 16 (except for death of parent)

Score no if offender did not live continuously with both biological parents until age 16 except for death of one or both parents. In case of death of parent(s), score as for yes.

Yes = –2, No = +2

2. ____ Elementary school maladjustment (up to and including eighth grade)

No problems = –3

Slight or moderate discipline or attendance problems = +1

Severe (i.e., frequent or serious) behaviour or attendance problems (e.g., truancy or disruptive behaviour that persisted over several years or resulted in expulsion) = +4

3. ____ History of alcohol problems

Allot one point for each of the following that can be answered yes: alcohol problem before age 18, illegal drug problem before age 18, alcohol involved in a prior offense, illegal drug involved in a prior offense, alcohol involved in current offense, illegal drug involved in current offense (*current offense means index offense here*).

The item may be scored as long as at least one item can be scored. If fewer than 6 are scored, prorate to a score out of 6. That is, take the raw total, divide by the number of items scored, and then multiply by 6; for example, an assessee has information to score “alcohol involved in current offense” (No), and “illegal drug involved in current offense” (Yes). So he scores 1 out of 2 = .5. Thus, his score out of 6 is $.5 \times 6 = 3$. If rounding is required, round to the nearest whole number. Convert then to VRAG–R item score:

< 3 points = –2, 3 points = 0, 4 points = +1, > 4 points = +4

4. ____ Marital status at the time of index offense

Ever married (or lived with common law in the same home for at least 6 months) = –1

Never married = +1

5. **___ Criminal history score for convictions or charges for nonviolent offenses before index offense (from the Cormier-Lang system shown on Page 33)**

Score of 0 = -3

Score of 1 or 2 = -1

Score of 3 up to and including 8 = +1

Score of 9 up to and including 17 = +3

Score of 18 or above = +5

6. **___ Failure on conditional release (include parole violations or revocation, breach of or failure to comply with recognizance or probation, bail violation, and any new charges, including the index offense, while on a conditional release)**

No = -2, Yes = +4

7. **___ Age at index offense (at most recent birthday)**

> 45 = -7

39 - 45 = -4

34 - 38 = -2

31 - 33 = -1

26 - 30 = +1

< 26 = +2

8. **___ Criminal history score for convictions or charges for violent offenses before index offense (from the Cormier-Lang system shown on Page 34)**

Score of 0 = -2

Score of 1 up to and including 4 = +2

Score of 5 up to and including 18 = +3

Score of over 18 = +4

9. **___ Number of prior admissions (of one day or more) to correctional institutions (youth detention center, jail, federal or provincial correctional facility) for offenses before the index offense.** Do not count transfers from one facility to another, or overnight stays in jail unless part of a sentence or presentence custody.

0 = -2
 1 = +2
 2 = +3
 3 or 4 = +4
 > 4 = +6

10. **___ Conduct disorder (before age 15)**

Pertaining to behavior before age 15, score 1 point for each of the following: repeated truancy, school suspension or expulsion, delinquency brought to the attention of juvenile court, running away from home at least twice, persistent lying, repeated sexual intercourse within a casual relationship, repeated drunkenness or substance abuse, thefts, vandalism, school grades markedly below expectations in relation to estimated or known IQ, chronic violations at home and/or school other than truancy, involvement in fights. Then convert to VRAG-R item score as follows:

0 points = -2
 1 point = 0
 > 1 point and < 5 points = +4
 > 4 points = +5

11. **___ Sex offending history**

Consider entire history up to and including index offence, and count all offenses for which there is convincing evidence whether it resulted in a charge or conviction or not.

No known hands-on sex offenses	= -2
All known hands-on sex offence(s) exclusively against children under age 14	= -1
Committed hands-on sex offense(s) but not known to fit another category here	= +2
At least one hands-on sex offense against a female victim 14 or older	= +3

12. ____ Antisociality

Score Facet 4 of Psychopathy Checklist – Revised (PCLR – R; prorated as per PCL – R manual if missing 1 item). If missing more than 1 item, score Antisociality as missing. The PCL – R Facet 4 items are: Poor Behavioural Controls, Early Behavioral Problems, Juvenile Delinquency, Revocation of Conditional Release, and Criminal Versatility which are scored as 0, 1, or 2, yielding a facet score between 0 and 10. Scoring criteria for these items are available in Hare (2003). Then convert to Antisociality score as follows:

Facet 4 score of 0	= -6
Facet 4 score ≥ 1 and < 2.5	= -3
Facet 4 score ≥ 2.5 and < 3.5	= +2
Facet 4 score ≥ 3.5 and < 7.5	= +3
Facet 4 score ≥ 7.5	= +6

VRAG-R Score _____

VRAG-R Category _____

CORMIER – LANG CRIMINAL HISTORY SCORES FOR NONVIOLENT OFFENSES¹

Instructions: Include ALL ARRESTS for ALL COUNTS for the following criminal offenses, including juvenile offenses. Write down the number of times the offender has been arrested (or the number of separate counts charged, whichever is highest) for each type of offense. Multiply that number by the weight in the column on the right and write that number in the blank. Total all of the resulting scores to obtain the total Cormier-Lang Criminal History Score.

Offense	Arrests/Charges	Weight	Score
Robbery (bank, store).....		X 7 =	.....
Robbery (purse snatching)		X 3 =	.....
Arson and fire setting (church, house, barn)		X 5 =	.....
Arson and fire setting (garbage can).....		X 1 =	.....
Threatening with a weapon		X 3 =	.....
Threatening (uttering threats).....		X 2 =	.....
Theft over * (includes car theft and possession stolen prop)		X 5 =	.....
Mischief to public or private property over *		X 5 =	.....
Break and enter and commit indictable offense (burglary)		X 2 =	.....
Theft under *(includes possession stolen goods under)		X 1 =	.....
Mischief to public or private property under * (also public)		X 1 =	.....
Break and enter (includes break and enter with intent)		X 1 =	.....
Fraud (extortion, embezzlement)		X 5 =	.....
Fraud (forged check, impersonation)		X 1 =	.....
Possession of a prohibited or restricted weapon		X 1 =	.....
Procuring a person for, or living on the avails of prostitution		X 1 =	.....
Trafficking in narcotics.....		X 1 =	.....
Dangerous driving, impaired driving (including DWI).....		X 1 =	.....
Obstructing peace officer (including resisting arrest).....		X 1 =	.....
Causing a disturbance.....		X 1 =	.....
Wearing a disguise with the intent to commit an offense.....		X 1 =	.....
Indecent exposure.....		X2 =	.....

TOTAL CORMIER – LANG NONVIOLENT SCORE

¹ Roughly equivalent to larceny versus grand larceny, based on the value of the stolen property. In 1997, the critical value was \$1000.

CORMIER – LANG CRIMINAL HISTORY SCORES FOR VIOLENT OFFENSES²

Instructions: Include ALL ARRESTS for ALL COUNTS for the following violent criminal offenses, including juvenile offenses. Write down the number of times the offender has been arrested (or the number of separate counts charged, which ever is highest) for each type of offense. With the exception of attempted murder, all attempted offenses are scored the same as the offense itself. Multiply that number by the weight in the column on the right and write that number in the blank. Total all of the resulting scores to obtain the total Cormier-Lang Violent Criminal History Score.

Offense Arrests/Charges Weight Score

Homicide (murder, manslaughter, criminal negligence w/death)	_____	X 28 =	_____
Attempted murder, causing bodily harm with intent to wound	_____	X 7 =	_____
Kidnapping, abduction, and forcible confinement	_____	X 6 =	_____
Aggravated assault, choking, administering a noxious thing	_____	X 6 =	_____
Assault causing bodily harm.....	_____	X 5 =	_____
Assault with a weapon.....	_____	X 3 =	_____
Assault, assaulting a police officer	_____	X 2 =	_____
Aggravated sexual assault, sexual assault causing bodily harm	_____	X 15 =	_____
Sexual assault with weapon	_____	X 12 =	_____
Sexual assault, gross indecency (vaginal, anal or oral penetration)	_____	X 10 =	_____
Sexual assault (attempted rape, indecent assault)	_____	X 6 =	_____
Gross indecency (offender fellates or performs cunnilingus on victim)	_____	X 6 =	_____
Sexual assault (sexual interference, invitation to sexual touching).	_____	X 2 =	_____
Armed robbery (bank, store)	_____	X 8 =	_____
Robbery with violence	_____	X 5 =	_____
Armed robbery (not a bank or store)	_____	X 4 =	_____

TOTAL CORMIER – LANG VIOLENT SCORE.....

² Please see attached scoring guide for additional information about the Cormier-Lang System

***Source:** American Psychological Association; Quinsey, Harris, Rice and Cormier, 2nd Edition (2006); *Violent Offenders: Appraising and Managing Risk*; APA, Washington D.C.

**Cormier-Lang System for Quantifying
Criminal History**

GROUP 1

Homicide (murder, manslaughter, criminal negligence causing death)	28
Attempted murder, causing bodily harm with intent to wound	7
Kidnapping, abduction, and forcible confinement	6
Aggravated assault, choking, administering a noxious thing	6
Assault causing bodily harm	5
Assault with a weapon	3
Assault, assaulting a peace officer	2
Aggravated sexual assault, sexual assault causing bodily harm	15
Sexual assault with weapon	12
Sexual assault, gross indecency (vaginal or anal penetration; victim Forced to fellate offender)	10
Sexual assault (attempted rape, indecent assault)	6
Gross indecency (offender fellates or performs cunnilingus on victim)	6
Sexual assault (sexual interference, invitation to sexual touching)	2
Armed robbery (bank, store)	8
Robbery with violence	5
Armed robbery (not a bank or store)	4

GROUP 2

Robbery (bank, store)	7
Robbery (purse snatching)	3
Arson and fire setting (church, house, barn)	5
Arson and fire setting (garbage can)	1
Threatening with a weapon	3
Threatening (uttering threats)	2
Theft over* (includes car theft and possession of stolen property over)	5
Mischief to public or private property over*	5
Break and enter and commit an indictable offense (burglary)	2
Theft under* (includes possession of stolen goods under)	1
Mischief to public or private property under* (includes public mischief)	1
Break and enter (includes breaking and entering with intent to commit an offense)	1
Fraud (extortion, embezzlement)	5
Fraud (forged check, impersonation)	1
Possession of a prohibited or restricted weapon	1
Procuring a person for, or living on the avails or prostitution	1
Trafficking in narcotics	1
Dangerous driving, impaired driving (driving while intoxicated)	1
Obstructing peace officer (including resisting arrest)	1
Causing a disturbance	1
Wearing a disguise with the intent to commit an offense	1
Indecent exposure	2

***Source:** American Psychological Association; Quinsey, Harris, Rice and Cormier, 2nd Edition (2006); *Violent Offenders: Appraising and Managing Risk*; APA, Washington D.C.

Appendix B

Qualtrics' Partner for Panel Participants – Commonly Asked Questions and Responses

Please describe your survey invitation process. What is the proposition people are offered to take part in individual surveys? What information about the project itself is given in the process? Apart from direct invitations to specific surveys (or to a router), what other means of invitation to surveys are respondents exposed to? You should note that not all invitations to participate take the form of emails.

In addition to sending survey invites through email, we also serve up invitations directly to the respondent's account homepage. In exchange for their time and opinions, panel members receive cash rewards. We never offer sweepstakes or points.

Below is a screenshot of a typical Qualtrics panel survey invitation:

The reward amount and Survey Length will vary from survey to survey.

Please describe the (various) incentives that respondents are offered for taking part in your surveys. How does this differ by sample source, by interview length, by respondent characteristics?

Sample Strategies offers cash incentives only. Incentive amount is based on audience, length of interview and incidence rate.

Please describe the ‘opt-in for market research’ processes for all your online sample sources.

For validity of respondents and quality purposes, we use the double opt-in methodology to recruit our panel members.

Step 1: Respondents need to complete a registration survey which is a detailed online registration form.

Step 2: Respondents who fill the form then have to click on an activation link which is sent to them through email immediately after registration.

Please provide a link to your Privacy Policy. How is your Privacy Policy provided to your respondents?

Privacy policy is displayed at the time of registration. Respondents, who agree, read and understand these policies are permitted to become our members. Link to our privacy policy is below.

Sample Strategies fully operates within the local and national laws within all markets where operations are undertaken. Sample Strategies requires all clients to adhere to the same standard of accepted behavior when undertaking any activity using our panel.

Sample Strategies adheres to, and exceeds minimum standards with respect to privacy, data protection, and child safety in all markets in which operations are conducted. Sample Strategies follows ESOMAR and other industry body guidelines with respect to these issues.

Appendix C

Qualtrics Invitation Template

The first line will say, ‘Congratulations, you qualify for a research survey surrounding (Topic) and are eligible for compensation depending on the quality of your responses. Please answer all questions as honestly as possible. Thank you!’ The topic is determined by the Project Managers. If the study is on Psychology, for example, it would be labeled as such. The ‘Incentive’ is determined by the panel partnership and will be presented by them, and the length of the survey will also be included. If the panel partner believes there are any other notes that are needed, they will include them at the bottom.

Appendix D**Quality Control Questions for Pre-test Sample****QC1 (Please select "Good".)**

Response options: *Peace, Peaceful, Positive, Good, or Non-violent*

QC2 (Please select "Non-Violent".)

Response scale: *Violent, Neither, Non-violent*

QC3 (Please select "Neither".)

Response scale: *Violent, Neither, Non-violent*

QC4 (Please select "Positive".)

Response scale: *Positive, Neither, Negative*

QC5 (Please select "Negative".)

Response scale: *Positive, Neither Negative*

Appendix E

Demographic Questions for Pre-test Sample

Questions and Response Options:

1. What is your biological sex? [Gender]
 - 1 = Male
 - 2 = Female
 - 3 = Transgender
 - 4 = Non-binary
 - 5 = Other

2. Who are you most sexually attracted to? [SexOrient]
 - 1 = Women
 - 2 = Men
 - 3 = Both women and men
 - 4 = Other

3. How old are you (years)? [Age]
 - 1 = 17 or younger
 - 2 = 18-21
 - 3 = 22-23
 - 4 = 24-29
 - 5 = 30-34
 - 6 = 35-39
 - 7 = 40-49
 - 8 = 50-59
 - 9 = 60 or older

4. In which country do you currently reside? [Country]
 - 1 = USA
 - 2 = Canada
 - 3 = Other

5. What is your ethnicity (**select all that apply**)? [Ethnicity]
 - 1 = White
 - 2 = Black
 - 3 = Indigenous
 - 4 = Asian
 - 5 = Pacific Islander
 - 6 = Hispanic/Latino(a)
 - 7 = Other

6. What is the highest level of education that you have (**completed**)? [Education]
 - 1 = High school
 - 2 = Community college
 - 3 = Undergraduate degree
 - 4 = Master's degree
 - 5 = Doctoral degree
 - 6 = Other

7. What is your current relationship status? [RelStat]
 - 1 = Single
 - 2 = In a romantic relationship
 - 3 = Living with a romantic partner
 - 4 = Married
 - 5 = Separated/divorced/widowed

Appendix F**Opposite of Violence Questions for Pre-test Study**

- 1) What is the opposite of violence?**
- 2) What is the opposite of violent?**
- 3) Which of the following do you feel best represents the opposite of violence?**

Peace, Peaceful, Positive, Good, non-violent.

- 4) Which of the following do you feel best represents the opposite of violent?**

Peace, Peaceful, Positive, Good, non-violent.

Appendix G

Categories and Stimulus Words for the Pre-test Study

Stimuli ratings for violent and non-violent words.

Please rate whether the following words are “violent” or “non-violent”:

1) ATTACK		
Violent	Neither	Non-violent
2) HIT		
Violent	Neither	Non-violent
3) HURT		
Violent	Neither	Non-violent
4) KILL		
Violent	Neither	Non-violent
5) MURDER		
Violent	Neither	Non-violent
6) STAB		
Violent	Neither	Non-violent
7) STRANGLE		
Violent	Neither	Non-violent
8) THREATEN		
Violent	Neither	Non-violent
9) AGGRESSIVE		
Violent	Neither	Non-violent
10) FIGHT		
Violent	Neither	Non-violent
11) BRAWL		
Violent	Neither	Non-violent
12) ASSAULT		
Violent	Neither	Non-violent
13) PUNCH		
Violent	Neither	Non-violent
14) INJURE		
Violent	Neither	Non-violent
15) SMACK		
Violent	Neither	Non-violent
16) SCRAP		
Violent	Neither	Non-violent
17) BEAT UP		
Violent	Neither	Non-violent
18) KICK		
Violent	Neither	Non-violent

19) CHOK		
Violent	Neither	Non-violent
20) SHOVE		
Violent	Neither	Non-violent
21) TORTURE		
Violent	Neither	Non-violent
22) SMOTHER		
Violent	Neither	Non-violent
23) VIOLENCE		
Violent	Neither	Non-violent
24) VIOLENT		
Violent	Neither	Non-violent
25) CALM		
Violent	Neither	Non-violent
26) PEACE		
Violent	Neither	Non-violent
27) QUIET		
Violent	Neither	Non-violent
28) REST		
Violent	Neither	Non-violent
29) SLEEP		
Violent	Neither	Non-violent
30) TRANQUIL		
Violent	Neither	Non-violent
31) WHISPER		
Violent	Neither	Non-violent
32) CUDDLE		
Violent	Neither	Non-violent
33) LAUGH		
Violent	Neither	Non-violent
34) TALK		
Violent	Neither	Non-violent
35) LOVE		
Violent	Neither	Non-violent
36) TRUST		
Violent	Neither	Non-violent
37) CALM DOWN		
Violent	Neither	Non-violent
38) PEACEFUL		
Violent	Neither	Non-violent
39) COMPROMISE		
Violent	Neither	Non-violent
40) AGREE		
Violent	Neither	Non-violent
41) RECONCILIATION		
Violent	Neither	Non-violent

42) GIVE IN		
Violent	Neither	Non-violent
43) MAKE PEACE		
Violent	Neither	Non-violent
44) SERENITY		
Violent	Neither	Non-violent
45) HARMONY		
Violent	Neither	Non-violent
46) PATIENCE		
Violent	Neither	Non-violent
47) PLEASANT		
Violent	Neither	Non-violent
48) PASSIVE		
Violent	Neither	Non-violent
49) CANCER		
Violent	Neither	Non-violent
50) DISASTER		
Violent	Neither	Non-violent
51) POLLUTION		
Violent	Neither	Non-violent
52) POVERTY		
Violent	Neither	Non-violent
53) SICKNESS		
Violent	Neither	Non-violent
54) UGLY		
Violent	Neither	Non-violent
55) VOMIT		
Violent	Neither	Non-violent
56) STINK		
Violent	Neither	Non-violent
57) POISON		
Violent	Neither	Non-violent
58) ILL		
Violent	Neither	Non-violent
59) DECEITFUL		
Violent	Neither	Non-violent
60) DISEASE		
Violent	Neither	Non-violent
61) MEAN		
Violent	Neither	Non-violent
62) EVIL		
Violent	Neither	Non-violent
63) ROTTEN		
Violent	Neither	Non-violent
64) HONEST		
Violent	Neither	Non-violent

65) JOKE		
Violent	Neither	Non-violent
66) LAUGH		
Violent	Neither	Non-violent
67) LUCKY		
Violent	Neither	Non-violent
68) JOY		
Violent	Neither	Non-violent
69) NICE		
Violent	Neither	Non-violent
70) LAUGHTER		
Violent	Neither	Non-violent
71) HONEST		
Violent	Neither	Non-violent
72) LOVE		
Violent	Neither	Non-violent
73) PRESENT		
Violent	Neither	Non-violent
74) HOPE		
Violent	Neither	Non-violent
75) HEALTH		
Violent	Neither	Non-violent
76) GIFTED		
Violent	Neither	Non-violent
77) HAPPY		
Violent	Neither	Non-violent
78) VACATION		
Violent	Neither	Non-violent
79) SMILE		
Violent	Neither	Non-violent
80) RAINBOW		
Violent	Neither	Non-violent
81) SUNSHINE		
Violent	Neither	Non-violent
82) PARADISE		
Violent	Neither	Non-violent
83) FREEDOM		
Violent	Neither	Non-violent
84) BEAUTIFUL		
Violent	Neither	Non-violent
85) GOOD		
Violent	Neither	Non-violent
86) ACCIDENT		
Violent	Neither	Non-violent

Stimuli:

Violent: Attack, hit, hurt, kill, murder, stab, strangle, threaten, aggression, aggressive, fight, brawl, assault, punch, injure, smack, scrap, beat up, kick, choke, shove, torture, smother, violence, violent.

Non-violent: Calm, peace, peaceful, quiet, rest, sleep, tranquil, whisper, cuddle, laugh, talk, love, trust, calm down, peaceful, compromise, agree, reconciliation, give in, make peace, serenity, harmony, patience, placid, pleasant, passive.

Negative: Accident, cancer, disaster, pollution, poverty, sickness, ugly, vomit, stink, poison, ill, deceitful, disease, mean, rotten, evil.

Positive: Beautiful, good, honest, joke, laugh, lucky, joy, nice, laughter, love, happy, present, hope, health, gifted, vacation, rainbow, smile, sunshine, paradise, freedom.

Stimuli ratings for positive and negative words.

Please rate whether the following words are “positive” or “negative”:

1) ATTACK		
Positive	Neither	Negative
2) HIT		
Positive	Neither	Negative
3) HURT		
Positive	Neither	Negative
4) KILL		
Positive	Neither	Negative
5) MURDER		
Positive	Neither	Negative
6) STAB		
Positive	Neither	Negative
7) STRANGLE		
Positive	Neither	Negative
8) THREATEN		
Positive	Neither	Negative
9) AGGRESSIVE		
Positive	Neither	Negative
10) FIGHT		
Positive	Neither	Negative
11) BRAWL		
Positive	Neither	Negative
12) ASSAULT		

Positive	Neither	Negative
13) PUNCH		
Positive	Neither	Negative
14) INJURE		
Positive	Neither	Negative
15) SMACK		
Positive	Neither	Negative
16) SCRAP		
Positive	Neither	Negative
17) BEAT UP		
Positive	Neither	Negative
18) KICK		
Positive	Neither	Negative
19) CHOKE		
Positive	Neither	Negative
20) SHOVE		
Positive	Neither	Negative
21) TORTURE		
Positive	Neither	Negative
22) SMOTHER		
Positive	Neither	Negative
23) VIOLENCE		
Positive	Neither	Negative
24) VIOLENT		
Positive	Neither	Negative
25) CALM		
Positive	Neither	Negative
26) PEACE		
Positive	Neither	Negative
27) QUIET		
Positive	Neither	Negative
28) REST		
Positive	Neither	Negative
29) SLEEP		
Positive	Neither	Negative
30) TRANQUIL		
Positive	Neither	Negative
31) WHISPER		
Positive	Neither	Negative
32) CUDDLE		
Positive	Neither	Negative
33) LAUGH		
Positive	Neither	Negative
34) TALK		
Positive	Neither	Negative
35) LOVE		

Positive	Neither	Negative
36) TRUST		
Positive	Neither	Negative
37) CALM DOWN		
Positive	Neither	Negative
38) PEACEFUL		
Positive	Neither	Negative
39) COMPROMISE		
Positive	Neither	Negative
40) AGREE		
Positive	Neither	Negative
41) RECONCILIATION		
Positive	Neither	Negative
42) GIVE IN		
Positive	Neither	Negative
43) MAKE PEACE		
Positive	Neither	Negative
44) SERENITY		
Positive	Neither	Negative
45) HARMONY		
Positive	Neither	Negative
46) PATIENCE		
Positive	Neither	Negative
47) PLEASANT		
Positive	Neither	Negative
48) PASSIVE		
Positive	Neither	Negative
49) CANCER		
Positive	Neither	Negative
50) DISASTER		
Positive	Neither	Negative
51) POLLUTION		
Positive	Neither	Negative
52) POVERTY		
Positive	Neither	Negative
53) SICKNESS		
Positive	Neither	Negative
54) UGLY		
Positive	Neither	Negative
55) VOMIT		
Positive	Neither	Negative
56) STINK		
Positive	Neither	Negative
57) POISON		
Positive	Neither	Negative
58) ILL		

Positive	Neither	Negative
59) DECEITFUL		
Positive	Neither	Negative
60) DISEASE		
Positive	Neither	Negative
61) MEAN		
Positive	Neither	Negative
62) EVIL		
Positive	Neither	Negative
63) ROTTEN		
Positive	Neither	Negative
64) HONEST		
Positive	Neither	Negative
65) JOKE		
Positive	Neither	Negative
66) LAUGH		
Positive	Neither	Negative
67) LUCKY		
Positive	Neither	Negative
68) JOY		
Positive	Neither	Negative
69) NICE		
Positive	Neither	Negative
70) LAUGHTER		
Positive	Neither	Negative
71) HONEST		
Positive	Neither	Negative
72) LOVE		
Positive	Neither	Negative
73) PRESENT		
Positive	Neither	Negative
74) HOPE		
Positive	Neither	Negative
75) HEALTH		
Positive	Neither	Negative
76) GIFTED		
Positive	Neither	Negative
77) HAPPY		
Positive	Neither	Negative
78) VACATION		
Positive	Neither	Negative
79) SMILE		
Positive	Neither	Negative
80) RAINBOW		
Positive	Neither	Negative
81) SUNSHINE		

Positive	Neither	Negative
82) PARADISE		
Positive	Neither	Negative
83) FREEDOM		
Positive	Neither	Negative
84) BEAUTIFUL		
Positive	Neither	Negative
85) GOOD		
Positive	Neither	Negative
86) ACCIDENT		
Positive	Neither	Negative

Stimuli:

Violent: Attack, hit, hurt, kill, murder, stab, strangle, threaten, aggression, aggressive, fight, brawl, assault, punch, injure, smack, scrap, beat up, kick, choke, shove, torture, smother, violence, violent.

Non-violent: Calm, peace, peaceful, quiet, rest, sleep, tranquil, whisper, cuddle, laugh, talk, love, trust, calm down, peaceful, compromise, agree, reconciliation, give in, make peace, serenity, harmony, patience, placid, pleasant, passive.

Negative: Accident, cancer, disaster, pollution, poverty, sickness, ugly, vomit, stink, poison, ill, deceitful, disease, mean, rotten, evil.

Positive: Beautiful, good, honest, joke, laugh, lucky, joy, nice, laughter, honest, love, happy, present, hope, health, gifted, vacation, rainbow, smile, sunshine, paradise, freedom.

Appendix H

Consent Form for Community Qualtrics Panel (Pre-test)

A consent form tells you what we want you to do as a participant and allows you to make a choice about whether you want to be involved in the study or not. Consent forms also list any potential bad outcomes and they tell you who to contact in case you have any questions or concerns after the research is finished or in case you have any questions or concerns that cannot be answered by the researcher.

Present study: Identifying Violent Words and Behaviour Study

Research personnel. This study is being done by Sacha Maimone (PhD student, Department of Psychology, Carleton University, 613-520-2600, ext 2649; sachamaimone@cmail.carleton.ca) along with Dr. Kevin Nunes (Associate Professor, Department of Psychology, Carleton University, 613-520-2600, ext 1545; kevin.nunes@carleton.ca).

Concerns. If you have any questions or concerns about this study, please contact Kevin Nunes. If you have any concerns about the ethics of the study, please contact Dr. Andy Adler, Chair, Carleton University Research Ethics Board-B (by phone at [613-520-2600](tel:613-520-2600) ext. 4085 or via email at ethics@carleton.ca).

Purpose. The purpose of this study is to identify the words that people often categorize as violent, non-violent, positive, or negative. We will use these words in measures of attitudes towards violence.

Task requirements. In this anonymous online survey, you will be asked to put words into groups, such as “violent” and “non-violent”. The survey takes about 20 minutes.

Benefits/compensation. You will be compensated for your time. The amount and conditions of compensation are outlined in your agreement with the company managing this survey panel.

Potential risk/discomfort. Given that some of the questions ask you to read and think about violence, some people may find this distressing. You are free to stop the survey at any time, not complete it, or refuse to answer any of the questions. At the end of the survey you will be given contact information for local support services that you may contact if you need or want help.

Anonymity/confidentiality. Participants are known to Qualtrics for the purposes of compensation, but their identifiers will not be linked to the survey data that the research team has access to. Therefore, we will not record any personal information in the survey and no other information that could be used to identify you can be matched with your survey answers. In other words, we will not be able to link your answers to your identity and we will not know who said what. IP addresses or any other information that could identify you will **NOT** be collected. The information you provide will be used only for research and teaching purposes.

Your data will be stored and protected by Qualtrics servers located in Toronto, but may be disclosed via a court order or data breach. The data for this study will be removed from the

Qualtrics server after six months and will be stored on password protected computers and data keys in the Aggressive Cognitions and Behaviour Research (ACBR) Lab at Carleton University and will be accessible only to those working on this project and related future research. The data will be analyzed only by members of the ACBR lab and may be used in future publications, presentations, or future research conducted by members of this lab.

Right to withdraw. Whether you decide to do this study or not is your choice. At any point during the study, you have the right to not complete certain questions without loss of payment, or to withdraw; however, you would not receive payment if you choose to withdraw from the survey or if your responses are deemed inadequate (i.e., if you complete the survey too quickly, answer all items with the same response, or skip the majority of questions). An option to withdraw from the survey will be given at the bottom of each page of the survey. If you wish to withdraw at any point, select the withdraw option and we will not use your data, but note that you cannot withdraw your data after you have finished the survey because we will not be able to find which answers were yours. Responses from participants who choose to withdraw will not be included in the final downloaded dataset or examined/analyzed in any way.

This study has received clearance by the Carleton University Research Ethics Board - B (CUREB-B Clearance # 108541).

I understand that the information I provide is confidential, and will never be revealed to anyone except under the following circumstances: If I disclose information about plans which may result in actual or potential harm to myself or others and/or information concerning any unknown emotional, physical or sexual abuse of children, the researcher is required to report this information to the appropriate authorities.

Click “I Agree” to show that you understand the information above and would like to participate in this study or “I Disagree” if you do not want to do the survey.

Appendix I

Debriefing Form for Community Qualtrics Panel (Pre-test)

Thank you very much for participating in this study. We hope the following information addresses any questions you may have.

Importance of This Research to the Academic Community:

The aim of this study was to identify words that most clearly represent different categories, such as violent, non-violent, positive, and negative. The words that are most consistently categorized will be used in a later study to assess individuals' beliefs about violence. In addition, we wanted to determine what participants believe is the opposite of violence so that we can use the clearest label for that category in our future research.

Importance of This Research to the General Public:

In order for us to learn more about why violent behaviour occurs, we need to have good measures of the things we think cause violence. An important first step in developing good measures is making sure they are as clear as possible. The results of the current study will allow us to identify the clearest words for use in our new measures.

Additional Resources if You Want to Learn More:

Below is a short list of articles that provide information about violence and the use of words to assess violence. All of the articles are available through Google Scholar (<http://scholar.google.ca/schhp?hl=en&tab=ws>). The link for each article is also provided below each reference.

Violence in general:

Anderson, C. A., & Bushman, B. J. (2002). Human aggression. *Annual Review of Psychology*, 53, 27-51. doi: 10.1146/annurev.psych.53.100901.135231
<https://deepblue.lib.umich.edu/bitstream/handle/2027.42/83427/2003.AndersonHuesmann.AggressionInSageHandbook.pdf?sequence=1&isAllowed=y>

Using words to examine violence:

Bluemke, M., & Zumbach, J. (2012). Assessing aggressiveness via reaction times online. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace*, 6(1). doi: [10.5817/CP2012-1-5](https://doi.org/10.5817/CP2012-1-5)
<http://www.cyberpsychology.eu/view.php?cisloclanku=2012042902&article=1>

Who to Contact if You Have Questions:

Please direct any questions about this research to Sacha Maimone (PhD student, Department of Psychology, Carleton University, 613-520-2600, ext. 2649; sachamaimone@cmail.carleton.ca) or Dr. Kevin Nunes (Associate Professor, Department of Psychology, Carleton University, 613-520-2600, ext 1545; kevin.nunes@carleton.ca). Also, if you have any questions or concerns about this study, please contact Sacha Maimone or Dr. Kevin Nunes. If you have any ethical concerns with the study, please contact Dr. Andy Adler, Chair, Carleton University Research Ethics Board-B (by phone at [613-520-2600](tel:613-520-2600) ext. 4085 or via

email at ethics@carleton.ca).

Mental Health Resources if You Found this Study Emotionally Draining:

If you experience any distress (e.g., feel sad or mad) as a result of this study, please refer to the information provided below for crisis hotlines and other support services:

Mental Health Today: <http://www.mental-health-today.com/resources/toll.htm>

Suicide prevention lifeline: 1-800-273-8255 (TALK) www.suicidepreventionlifeline.org/

Some resources in Canada: <http://www1.carleton.ca/health/emergencies-and-crisis/emergency-numbers/>

List of resources by country: <https://www.suicideforum.com/crisis-lines-sites/>

Thank you very for making this research possible

Appendix J

SONA Recruitment for Student Sample (Study 1)

Study Name: Is Violent Thinking Related to Violent Behaviour?

Description: You will be asked to complete a series of questionnaires some of which will ask you to report on your past behaviour and beliefs.

Eligibility: Heterosexual male undergraduate students, 18 years of age or older, who understand written English.

Benefits to Participating:

Participants will receive a 1.0% raise in their course grade for participation.

Potential Negative Consequences to Participating:

Because some of the questions ask about violent behaviour, some people may find them embarrassing or otherwise disturbing. For example, some questions ask whether you have ever assaulted someone. Note that the conflict situations contain swearing and violence, which may cause distress for some participants. You are free to refuse to answer any of the questions or stop the survey at any time without penalty. The debriefing form at the end of the study provides contact information for local support services that you may contact if you need or want help. In addition, nobody will be able to connect your responses with your identity. You can refuse to participate, skip any questions you do not wish to answer, or stop participating at any time. If you do participate and become disturbed by the study, you will be directed to various sources of support.

Duration: 45 minutes

Percentage: 1.0%

Researcher: Sacha Maimone

E-mail: sachamaimone@cmail.carleton.ca

Kevin Nunes

E-mail: kevin.nunes@carleton.ca

Where: Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University in A403 Loeb.

Participant Sign-Up Deadline: 24 hours before study is to occur.

Participant Cancellation Deadline: 24 hours before study is to occur.

This study has received clearance by the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640).

Appendix K

Recruitment Poster for Community Sample in Study 1

V.1 06/15/2019

MALE PARTICIPANTS NEEDED

for a study that looks at how violent thinking is related to violent behaviour.

**If interested or for more information
please call/text 613-291-9639
or email sachamaimone@cmail.carleton.ca**

Can I participate?

- Participants must be heterosexual, **male, 18 years or older**, and must understand written English

.....

Where will it take place?

- Carleton University** (1125 Colonel By Drive),
Loeb Building room A403

.....

How long will it take?

- The study will take about 45 minutes to complete

Get \$20 for participating!

You will be asked to complete a series of questionnaires.

Some of the questions ask about violent behaviour, so some people may find them embarrassing or disturbing. For example, some questions ask whether you have ever assaulted someone. Also, some questions describe conflict situations that contain swearing and violence.

During the study...

- You are free to refuse to participate or refuse to answer any questions without penalty.
- You can skip questions or stop participating at any time.

Important things to know...

- The study is anonymous - no one can connect your answers to your identity.
- You will be offered contact information for support services to use if you want or need help.
- This study has received clearance by the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640) and the Royal Ottawa Research Ethics Board (REB #2018006).

Appendix L**Quality Control Questions for Study 1****QC1.Demographics (Please select ‘No’.)**

Response options: *1 = No, 2 = Yes*

QC2.MCAA-R-V (Please select ‘Agree’.)

Response options: *1 = Disagree, 2 = Somewhat disagree, 3 = Somewhat agree, 4 = Agree*

QC3.VESD (Please select ‘Wrong’.)

Response options:

- 1 = Very wrong*
- 2 = Wrong*
- 3 = Somewhat wrong,*
- 4 = Neutral*
- 5 = Somewhat right,*
- 6 = Right*
- 7 = Very right*

QC4.VBS (Please select ‘Three times’.)

Response options:

- 0 = Never*
- 1 = Once*
- 2 = Twice*
- 3 = Three times*
- 4 = Four times*
- 5 = Five times*
- 6 = Six times*
- 7 = Seven times*
- 8 = Eight times*
- 9 = Nine times or more*

QC5.EVQLikelihood (Please select ‘A bit unlikely’.)

Response options: *1 = Very unlikely, 2 = A bit unlikely, 3 = A bit likely, 4 = Very likely*

Appendix M**Demographic Questions for Student Sample (Study 1)****Instructions:**

The following questions ask about your language skills, age, ethnicity, education, biological sex, sexual orientation, and marital status.

PRESS THE SPACEBAR TO BEGIN

Questions and Response Options:

1. What is your biological sex? [Gender]
 - 1 = Male
 - 2 = Female
 - 3 = Other
2. What is your ethnicity? [Ethnicity]
 - 1 = White
 - 2 = Black
 - 3 = Indigenous
 - 4 = Asian
 - 5 = Pacific Islander
 - 6 = Hispanic/Latino
 - 7 = Other
3. Who are you most sexually attracted to? [SexOrient]
 - 1 = Women
 - 2 = Men
 - 3 = Both women and men equally
 - 4 = Other
4. How old are you (years)? [Age]
 - 1 = 17 or younger
 - 2 = 18-21
 - 3 = 22-23
 - 4 = 24-29
 - 5 = 30-34
 - 6 = 35-39
 - 7 = 40-49
 - 8 = 50-59
 - 9 = 60 or older

5. What is the highest level of education you have completed? [Education]
 - 1 = High school (or equivalent)
 - 2 = Community college
 - 3 = Undergraduate degree
 - 4 = Masters degree
 - 5 = Doctoral degree

6. What is your current relationship status? [RelStat]
 - 1 = Single
 - 2 = In a romantic relationship
 - 3 = Living with a romantic partner
 - 4 = Married
 - 5 = Separated/divorced/widowed

7. Do you speak English fluently? [English1]

1 = No	2 = Yes
--------	---------
8. Do you understand written English? [English2]

1 = No	2 = Yes
--------	---------
9. Do you understand spoken English? [English3]

1 = No	2 = Yes
--------	---------

Appendix N**Demographic Questions for Community Samples (In-Lab and Online)
(Study 1 and Studies 3A and 3B)****Instructions:**

The following questions ask about your language skills, age, ethnicity, education, biological sex, sexual orientation, and marital status.

PRESS THE SPACEBAR TO BEGIN (only for Study 1 because was on E-prime)

Questions and Response Options:

8. What is your biological sex? [Gender]
 - 1 = Male
 - 2 = Female
 - 3 = Other
9. What is your ethnicity? [Ethnicity]
 - 1 = White
 - 2 = Black
 - 3 = Indigenous
 - 4 = Asian
 - 5 = East Indian
 - 6 = Hispanic/Latino
 - 7 = Arab
 - 8 = Other
10. Who are you most sexually attracted to? [SexOrient]
 - 1 = Women
 - 2 = Men
 - 3 = Both women and men equally
 - 4 = Other
11. How old are you (years)? [Age]
 - 1 = 17 or younger
 - 2 = 18-21
 - 3 = 22-23
 - 4 = 24-29
 - 5 = 30-34
 - 6 = 35-39
 - 7 = 40-49
 - 8 = 50-59
 - 9 = 60 or older

12. What is the highest grade you have completed? [HighSchool]

- 1 = No schooling completed (includes pre-school)
- 2 = Kindergarten to grade 6
- 3 = Grade 7
- 4 = Grade 8
- 5 = Grade 9
- 6 = Grade 10
- 7 = Grade 11
- 8 = Grade 12
- 9 = Grade 13

13. What is the highest level of education you have completed? [Education]

- 0 = Did not complete high school
- 1 = High school (or equivalent)
- 2 = Community college
- 3 = Undergraduate degree
- 4 = Master's degree
- 5 = Doctoral degree
- 6 = Other

14. What is your current employment status? [Employment]

- 1 = Full-time employed
- 2 = Part-time employed
- 3 = Not employed (Includes homemaker, unable to work, etc.)
- 4 = Military
- 5 = Full-time student
- 6 = Part-time student
- 7 = Retired
- 8 = Other

15. What is your current relationship status? [RelStat]

- 1 = Single
- 2 = In a romantic relationship
- 3 = Living with a romantic partner
- 4 = Married
- 5 = Separated/divorced/widowed

16. Do you speak English fluently? [English1]

1 = No 2 = Yes

17. Do you understand written English? [English2]

1 = No 2 = Yes

18. Do you understand spoken English? [English3]

1 = No 2 = Yes

Appendix O

Measures of Criminal Attitudes and Associates – Revised – Violence Scale (MCAA-R-V; Mills, 2007)

Part B- Violence scale items

Part B of this questionnaire consists of a series of statements for which you can respond by showing whether you agree or disagree with the statement. There are no right or wrong answers and you are free to skip or not answer any questions if you wish.

	Disagree	Somewhat Disagree	Somewhat Agree	Agree
1. It's none of my business if I saw a someone being robbed. (R)	1	2	3	4
5. It's understandable to hit someone who insults you. (R)	1	2	3	4
9. Sometimes a person may have to carry a weapon to protect themselves. (R)	1	2	3	4
13. Sometimes you have to fight to keep your self-respect. (R)	1	2	3	4
17. It is reasonable to expect a fight from someone you cheated. (R)	1	2	3	4
21. Ignoring a store being robbed is not wrong. (J)	1	2	3	4
25. There is nothing wrong with beating up a child molester. (J)	1	2	3	4
29. It's not wrong to fight to save face. (J)	1	2	3	4
33. Someone who makes you very angry deserves to be hit. (J)	1	2	3	4
37. It's all right to fight someone if they stole from you. (J)	1	2	3	4

Note. (R) = Rationalization items. (J) = Justification items.

Appendix P

Violent Evaluation Relational Responding Task (VE-RRT)

Violent Evaluation Relational Responding Task Adapted from De Houwer, Heider, Spruyt, Roets, & Hughes (2015)

Sentence stimuli:

#	Item
1	It is not negative for you to hit a guy who hurts someone you care about.
2	You hitting a guy who steals from you is positive.
3	It is pleasant for you to hit a guy who runs a red light and almost hits you with his car.
4	You hitting a guy who makes you look stupid is good.
5	It is pleasant for you to hit a guy who tries to make you look weak.
6	You hitting a guy you hate is not bad.
7	It is not bad for you to threaten to physically hurt a guy who tries to hurt you.
8	You threatening to physically hurt a guy who disrespects someone you care about is positive.
9	It is pleasant for you to threaten to physically hurt a guy who disrespects you.
10	You threatening to physically hurt a guy who owes you money is good.
11	It is good for you to threaten to physically hurt a guy who keeps mouthing off.
12	You threatening to physically hurt a guy who says bad stuff about you behind your back is not bad.
13	It is not unpleasant for you to threaten to physically hurt a guy who makes you mad.
14	You threatening to physically hurt a guy who acts tough is positive.
15	It is pleasant for you to use a weapon on a guy who has sex with your girlfriend/wife or boyfriend/husband.
16	You using a weapon on a guy who wrecks your stuff on purpose is positive.
17	It is good for you to use a weapon on a guy when you're scared.
18	You hitting a guy who hurts someone you care about is not positive.
19	It is not positive for you to hit a guy who steals from you.
20	You hitting a guy who runs a red light and almost hits you with his car is unpleasant.
21	It is bad for you to hit a guy who makes you look stupid.
22	You hitting a guy who tries to make you look weak is unpleasant.
23	It is bad for you to hit a guy you hate.
24	You threatening to physically hurt a guy who tries to hurt you is not good.
25	It is not positive for you to threaten to physically hurt a guy who disrespects someone you care about.
26	You threatening to physically hurt a guy who disrespects you is unpleasant.
27	It is bad for you to threaten to physically hurt a guy who owes you money.
28	You threatening to physically hurt a guy who keeps mouthing off is bad.
29	It is negative for you to threaten to physically hurt a guy who says bad stuff about you behind your back.
30	You threatening to physically hurt a guy who makes you mad is not pleasant.

31	It is not positive for you to threaten to physically hurt a guy who acts tough.
32	You using a weapon on a guy who has sex with your girlfriend/wife or boyfriend/husband is unpleasant.
33	It is negative for you to use a weapon on a guy who wrecks your stuff on purpose.
34	You using a weapon on a guy when you're scared is bad.

Word stimuli:

#	Item
1	right
2	correct
3	exact
4	truth
5	okay
6	wrong
7	untrue
8	error
9	incorrect
10	mistake

Example of word synonym trials (in Block 1, Block 3, and Block 5):

Example of sentence trials:

Example of sentence trials when participant is instructed to respond ‘as if’ doing violence is good, positive, and/or pleasant (in Block 2 and Block 3):

Example of sentence trials when participant is instructed to respond ‘as if’ doing violence is bad, negative, and/or unpleasant (in Block 4 and Block 5):

Note that the order of presentation for Blocks 2 and 3 and Blocks 4 and 5 are counterbalanced such that roughly half of participants receive Blocks 2 and 3 first and roughly half receive Blocks 4 and 5 first.

Appendix Q**Violent Evaluation Semantic Differential (VESD) Items**

Instructions: The next set of questions ask about how you view violence.

Item and Response Scales:

Doing violence is:

- 1 = Very negative
- 2 = Negative
- 3 = Somewhat negative
- 4 = Neutral
- 5 = Somewhat positive
- 6 = Positive
- 7 = Extremely positive

- 1 = Extremely not enjoyable
- 2 = Not enjoyable
- 3 = Somewhat not enjoyable
- 4 = Neutral
- 5 = Somewhat enjoyable
- 6 = Enjoyable
- 7 = Extremely enjoyable

- 1 = Very bad
- 2 = Bad
- 3 = Somewhat bad
- 4 = Neutral
- 5 = Somewhat good
- 6 = Good
- 7 = Very good

- 1 = Extremely not fun
- 2 = Not fun
- 3 = Somewhat not fun
- 4 = Neutral
- 5 = Somewhat fun
- 6 = Fun
- 7 = Extremely fun

- 1 = Very wrong
- 2 = Wrong
- 3 = Somewhat wrong
- 4 = Neutral
- 5 = Somewhat right
- 6 = Right
- 7 = Very right

- 1 = Very immoral
- 2 = immoral
- 3 = Somewhat immoral
- 4 = Neutral
- 5 = Somewhat moral
- 6 = Moral
- 7 = Very moral

Appendix R

Evaluation of Violence Questionnaire (EVQ)

Instructions: Please rate how you think or feel about each of the following statements. For example, how good or bad would punching someone be?

RESPONSE SCALES:

Very negative, A bit negative, A bit positive, Very positive
 Very unpleasant, A bit unpleasant, A bit pleasant, Very pleasant
 Very bad, A bit bad, A bit good, Very good

#	Item	Response scale
1	You hitting (for example, punching or kicking) a guy who hurts someone you care about.	negative vs. positive
2	You hitting (for example, punching or kicking) a guy who steals from you.	negative vs. positive
3	You hitting (for example, punching or kicking) a guy who runs a red light and almost hits you with his car.	unpleasant vs. pleasant
4	You hitting (for example, punching or kicking) a guy who makes you look stupid.	bad vs. good
5	You hitting (for example, punching or kicking) a guy who tries to make you look weak.	unpleasant vs. pleasant
6	You hitting (for example, punching or kicking) a guy you hate.	bad vs. good
7	You threatening to physically hurt a guy who tries to hurt you.	bad vs. good
8	You threatening to physically hurt a guy who disrespects someone you care about.	negative vs. positive
9	You threatening to physically hurt a guy who disrespects you.	unpleasant vs. pleasant
10	You threatening to physically hurt a guy who owes you money.	bad vs. good
11	You threatening to physically hurt a guy who keeps mouthing off.	bad vs. good
12	You threatening to physically hurt a guy who says bad stuff about you behind your back.	negative vs. positive
13	You threatening to physically hurt a guy who makes you mad.	unpleasant vs. pleasant
14	You threatening to physically hurt a guy who acts tough.	negative vs. positive
15	You using a weapon (for example, a baseball bat, knife, or gun) on a guy who has sex with your girlfriend/wife or boyfriend/husband.	unpleasant vs. pleasant
16	You using a weapon (for example, a baseball bat, knife, or gun) on a guy who wrecks your stuff on purpose.	negative vs. positive
17	You using a weapon (for example, a baseball bat, knife, or gun) on a guy when you're scared.	bad vs. good

Appendix S

Violent Behaviour Scale (VBS)

Instructions: You will now be asked some questions about your past behaviour.

Response Scale:

0=Never

1=Once

2=Twice

3=Three times

4=Four times

5=Five times

6=Six times

7=Seven times

8=Eight times

9=Nine times or more

From when you were 16-years old to today, how many times have you:	
1. Started a physical fight with someone?	
2. Threatened to physically hurt someone?	
3. Hit someone with the intention of hurting them?	
4. Thrown objects such as rocks or bottles at someone with the intention of hurting them?	
5. Used a weapon or force to make someone give you money or items?	
6. Injured someone on purpose (e.g., left bruises, caused visible bleeding or broken bones, etc.)?	
7. Ever been arrested for a violent offence (e.g., assault)?	
8. Ever been convicted of a violent offence (e.g., assault)?	

Appendix T

Violent Behaviour Vignette Questionnaire (VBVQ)

INSTRUCTIONS

Please read the hypothetical situations described below and imagine that these situations were happening to you. Say what you would do if you were in that situation by choosing one of the response options.

RESPONSE OPTIONS

What do you do?

1. Report it to someone – Report what he's doing (or what he did) to someone like the manager, police, or security, and ask them to deal with the problem
2. Talk it out – Without insulting him, say something to let him know you're not okay with what he's doing (or what he did) and to try to work things out peacefully
3. Insult him – Say something insulting to him, like swearing at him or calling him a name
4. Joke about it – Joke about it to yourself or other people around you
5. Shove him
6. Hit, punch, kick, or tackle him
7. Threaten to hurt him
8. Ignore it – Don't do or say anything about it
9. Leave – Go somewhere else to get away from the person or situation

VIGNETTE 1 – OBNOXIOUS ROOMMATE

You're living in a house with a few people. One of your roommates always takes your food and drinks from the fridge without asking, he never cleans up after himself, and he often comes home late at night making a lot of noise, which wakes you up. He's never apologized to you for any of this.

One night, at about four in the morning, he comes home drunk. This wakes you up. You go into the kitchen and you see that he's grabbing your beer and food from the fridge.

1. Report it to someone:

You go to your other roommate who holds the lease for the house, and you tell him what's been going on and ask him to deal with the problem. He says he'll deal with it tomorrow and falls back asleep. You leave his room. Your drunk roommate turns on the TV and puts the volume up loud.

2. Talk it out:

You say, "Come on, man. It's the middle of the night and you woke me up. You're making a lot of noise and you're eating my food and drinking my beer. That's not what we do. You gotta stop taking my stuff and try to keep it down so I can sleep."

He tells you to "shut the fuck up" and turns the TV on loud while eating your food and finishing off your beer.

3. Insult him:

You say, "What the fuck do you think you're doing making so much noise and stealing all my shit? Stop being such an asshole, leave my stuff alone, and quiet the fuck down so I can get some sleep! Fucking douche bag."

He tells you to "shut the fuck up" and turns the TV on loud while eating your food and finishing off your beer.

4. Joke about it:

You jokingly say, "No, no, don't apologize. I didn't want to sleep. I didn't want to eat any of my food. You go ahead and enjoy it. You deserve it for being such a great roommate."

He tells you to "shut the fuck up" and turns the TV on loud while eating your food and finishing off your beer.

5. Shove him:

You push him.

He shoves you back.

6. Hit, punch, kick, or tackle him:

You hit him.

He hits you back.

7. Threaten to hurt him:

You say, "What the fuck do you think you're doing? You looking for a beating? I'm gonna kick the shit out of you if you don't leave my stuff alone and shut the fuck up."

He laughs at you and says, "Yeah right. Let's see what you got, bitch. I'm gonna knock you the fuck out."

8. Ignore it:

You go back to your bed.

You hear him banging around in the kitchen some more. A few minutes later he turns on the TV and puts the volume up loud.

9. Leave:

You decide to go to a friend's place for the rest of the night. As you're getting ready to leave, he laughs and says, "you better keep it down or you're gonna to wake everybody up".

SCENE 2 – LINE CUTTER

You're at the store. There is a long line-up and you're close to the back of it and it's moving slow. You have been waiting in line for a while when a guy with a shopping cart full of items cuts right in front of you in the line.

1. Report it to someone:

You tell the store manager. The guy tells the store manager that you're lying. After the store manager leaves, the guy calls you a pussy.

2. Talk it out:

You say, "Whoa, buddy, you just cut in front of me. I'm in line here."

He turns and looks at you and then turns back, ignoring you. He starts talking to someone on his cell phone, complaining about the long lines and saying that he just cut in front of some pussy in line.

3. Insult him:

You say, "Hey asshole! What the hell are you doing? Get to the back of the line!"

He tells you to "go fuck yourself" and stays where he is.

4. Joke about it:

You jokingly say to the other people in line, "Can you believe this guy?"

He tells you to "go fuck yourself" and stays where he is.

5. Shove him:

You push him.

He shoves you back.

6. Hit, punch, kick, or tackle him:

You hit him.

He hits you back.

10. Threaten to hurt him:

You say, "Hey asshole! What the hell are you doing? Get to the back of the line or I'm gonna knock you out!"

He laughs at you and says, "What are you gonna do? You wanna go? I'm gonna fuckin crush you."

7. Ignore it:

You don't say or do anything. He starts talking to someone on his cell phone, complaining about the long lines and saying that he just cut in front of some pussy in line and the guy didn't do anything about it.

8. Leave:

You decide to move to another line. As you're leaving, he starts talking to someone on his cell phone, saying that he just cut in front of some pussy in line and now he's running away.

SCENE 3 – BEER BUMP

You're at a bar when out of nowhere a guy bumps into you and spills beer on your shirt. He says "get out of my way" and starts to walk back to his table.

1. **Report it to someone:**

You tell the bar manager and ask him to deal with the guy. The bar manager says there's nothing he can do about it. You go back to the spot in the bar where you were before.

2. **Talk it out:**

You say, "You spill your beer on me and act like it's my fault? Come on. That's not right." He says, "Stop crying about it and get the fuck out of here before I give you something real to cry about."

3. **Insult him:**

You say, "Hey! You're a fuckin' asshole!" He says, "What the hell did you say? Get the fuck out of here before you get hurt."

4. **Joke about it:**

You jokingly say to the people around you, "Did you see that? What's up with that guy? I guess some people just can't handle their beer." He sees you looking in his direction while you're joking and he gives you the finger.

5. **Shove him:**

You push him.
He shoves you back.

6. **Hit, punch, kick, or tackle him:**

You hit him.
He hits you back.

7. **Threaten to hurt him:**

You say, "Hey, what's your problem? You wanna get punched in the head?" He says, "Alright asshole, let's go. I'm gonna crack your fuckin head open."

8. **Ignore it:**

You don't say or do anything.
He starts talking to someone at his table, points back at you, and starts laughing.

9. **Leave:**

You decide to leave the bar. As you're leaving, he starts talking to someone at his table, points back at you, and starts laughing.

SCENE 4 – BEER RUN

You're at a party. A guy there is going out to buy some beer. You ask him to get some beer for you too and give him \$25. When he returns hours later, he says he doesn't have your beer or your money.

1. Report it to someone:

You tell the guy who's hosting the party and ask him to deal with the problem.

The host says there's nothing he can do about it, and then gets called away by someone else.

2. Talk it out:

You say, "What happened with my beer? I'm gonna need my beer or my money back."

He says, "Well, you're shit out of luck. You're not getting any money and you're not getting any beer."

3. Insult him:

You say, "Listen, I don't care if your mom needs that money for crack. Give me back my money, you piece of shit."

He says, "What the fuck did you just say? You'll shut your fucking mouth and get out of here if you know what's good for you."

4. Joke about it:

You jokingly say to the people around you, "What just happened here? Did this guy seriously just steal \$25 from me? Who is this guy?"

He says, "What the fuck did you just say? You'll shut your fucking mouth and get out of here if you know what's good for you."

5. Shove him:

You push him.

He shoves you back.

6. Hit, punch, kick, or tackle him:

You hit him.

He hits you back.

7. Threaten to hurt him:

You say, "Give me my money back or I'll beat the shit out of you."

He says, "What the fuck did you just say? Let's go pussy. I'm gonna knock your fuckin teeth in."

8. Ignore it:

You don't say or do anything.

He starts talking to some other people at the party about what he did, points over at you, and starts laughing.

9. Leave:

You decide to leave the party. As you're leaving, he starts talking to some other people at the party about what he did, points over at you, and starts laughing.

SCENE 5 - THREAT

You're at a party. A guy walks up to you and says, "You got ten seconds to get out of here or I'm gonna to kick the shit out of you."

1. **Report it to someone:**

You tell the guy who's hosting the party and ask him to deal with the problem.

The host tells you to just stay away from the guy, and then gets called away by someone else.

2. **Talk it out:**

You say, "Whoa, take it easy. You don't even know me and this isn't your house. How about you just enjoy the party and don't worry about me?"

He moves closer to you and says, "Clock's ticking, shithead. Better run away while you still can."

3. **Insult him:**

You say to him, "How small is your dick that you need to be acting like that? Go somewhere else and grow a dick."

He moves closer to you and says, "We'll see how funny you are when I'm kicking your head in. Clock's ticking, shithead. Better run away while you still can."

4. **Joke about it:**

You jokingly say to the people around you, "Wow, this guy is really not making me feel welcome at this party. Gotta talk to the host about getting a new greeter."

He moves closer to you and says, "We'll see how funny you are when I'm kicking your head in. Clock's ticking, shithead. Better run away while you still can."

5. **Shove him:**

You push him.

He shoves you back.

6. **Hit, punch, kick, or tackle him:**

You hit him.

He hits you back.

7. **Threaten to hurt him:**

You say, "Settle the fuck down and go somewhere else before I take your fucking head off."

He moves closer to you and says, "Wrong choice, bitch. Let's go. I'm gonna fuck you up."

8. **Ignore it:**

You don't say or do anything.

He moves closer to you and says, "Clock's ticking, shithead. Better run away while you still can."

9. **Leave:**

You decide to leave the party.

As you're leaving, he says, "Only a few seconds left – better run, pussy!"

SCENE 6 – UNWANTED GUEST

You're at a party. There is a guy at the party who is bothering people and won't leave. Everyone seems to want this guy to leave. He is bothering the woman who is hosting the party. She asks him to leave but he refuses and continues to be a jerk.

1. **Report it to someone:**

You tell another guy at the party and ask him to deal with the problem.

He says there's nothing he can do about it, and then gets called away by someone else.

2. **Talk it out:**

You say to him, "Hey, bud, she wants you to leave. It's her place, so her call, right? And you don't seem to be liking the party anyway. You should go."

He looks at you, laughs, and says, "Why is this guy talking to me? Who does this fucking guy think he is? Shut up and get away from me."

3. **Insult him:**

You say to him, "Hey, douche bag, she wants you to leave. Stop being such a dick and get the fuck out of here."

He looks at you, laughs, and says, "Why is this guy talking to me? Who does this fucking guy think he is? Shut up and get away from me, pussy, before I smack you in the head."

4. **Joke about it:**

You jokingly say to the people around you, "Who made the mistake of inviting this guy to the party?"

He looks at you and says, "You got something to say there, pussy?"

5. **Shove him:**

You push him.

He shoves you back.

6. **Hit, punch, kick, or tackle him:**

You hit him.

He hits you back.

7. **Threaten to hurt him:**

You say to him, "Hey, douche bag, she wants you to leave. Stop being such a dick and get out of here, or I'll throw you out."

He looks at you, laughs, and says, "You're gonna throw me out? You?! Go for it. I'm gonna beat the shit out of you."

8. **Ignore it:**

You don't say or do anything.

He continues bothering the host and other people, and the host keeps telling him to leave.

9. **Leave:**

You decide to leave the party.

As you're leaving, he continues bothering the host and other people, and the host keeps telling him to leave.

SCENE 7 – OBNOXIOUS GUY IN LINE

You're waiting in line in the store. The person behind you is talking to his friend really loudly and rudely. He is standing very close to you and he keeps bumping you with his arms as he moves around while talking to his friend.

1. **Report it to someone:**

You tell the store manager. The store manager asks the guy to be more quiet. The guy says okay, and the store manager leaves. The guy taps you on the shoulder and asks, "You gonna go cry to your mother next?" and starts laughing with his friend and goes right back into talking loudly and rudely and getting in your space.

2. **Talk it out:**

You say to him, "Come on, man, what are you doing? You gotta stop talking like that and give me some room."

He laughs at you and says, "Oh yeah, well, you gotta turn around and mind your own fucking business."

3. **Insult him:**

You say to him, "What are you doing, asshole? Back the fuck up and save your stupid fucking stories for out in the parking lot when you and your buddy are jackin each other off."

He says, "Nobody's talking to you, pussy. Shut the fuck up, turn around, and mind your own fucking business, if you know what's good for you."

4. **Joke about it:**

You jokingly say to the people around you, "Nice way to talk in the store with women and children around. Real classy."

He says, "Nobody's talking to you, pussy. Shut the fuck up and mind your own fucking business."

5. **Shove him:**

You tell him to shut up and push him.

He shoves you back.

6. **Hit, punch, kick, or tackle him:**

You tell him to shut up and hit him.

He hits you back.

7. **Threaten to hurt him:**

You say, "What are you doing, asshole? Back the fuck up and save your stupid fucking stories for out in the parking lot when you and your buddy are jackin each other off. Bump into me one more time and I'll kick your ass."

He says, "What are you gonna do, pussy? I'm gonna smash your fuckin face in."

8. **Ignore it:**

You don't say or do anything.

The guy says something about you to his friend and they both start laughing.

9. **Leave:**

You decide to leave.

As you're leaving, the guy says something about you to his friend and they both start laughing.

SCENE 8 – INTIMATE PARTNER VIOLENCE

You are at a party. You notice a couple at the party fighting, and the guy seems to be very angry at the woman. He starts yelling at her and calling her names, and accusing her of cheating on him. Then the guy slaps the woman in the face.

1. **Report it to someone:**

You call the police and report it. They say they'll send an officer later and hang up.

2. **Talk it out:**

You say to him, "Did you really just slap her? That's really messed up, man. You gotta leave."

He says, "Fuck off and mind your own business. You should worry about what your own slutty bitch is doing right now."

3. **Insult him:**

You say to him, "What kind of fuckin psycho hits a woman? What's your fucking problem, man? Leave her alone, you piece of shit."

He says, "Fuck off and mind your own business. You should worry about what your own slutty bitch is doing right now."

4. **Joke about it:**

You say to the people around you, "Did everybody see that? Who hits a woman? What's wrong with this psycho?"

He says, "Fuck off and mind your own business. You should worry about what your own slutty bitch is doing right now."

5. **Shove him:**

You push him.

He shoves you back.

6. **Hit, punch, kick, or tackle him:**

You hit him.

He hits you back.

7. **Threaten to hurt him:**

You say to him, "What the fuck are you doing? Leave her alone or I will beat the living shit out of you."

He says, "Fuck off and mind your own business. I'm gonna knock you out as soon as I'm done with this whore."

8. **Ignore it:**

You don't say or do anything.

He continues to yell at her and he hits her again.

9. **Leave:**

You decide to leave.

As you're leaving, he continues to yell at her and he hits her again.

SCENE 9 - INTERLOPER

You're at a bar standing beside your girlfriend/wife when a guy walks up to her, puts his arm around her, and starts trying to pick her up. He acts like you aren't even there.

1. Report it to someone:

You tell the bar manager and ask him to deal with the guy. The bar manager says there's nothing he can do about it. The guy tells your girlfriend/wife that you're a loser and asks her to dance.

2. Talk it out:

You say to him, "Buddy, what are you doing? You know she's with me. Go talk to someone else."

He ignores you, steps between you and your girlfriend/wife, turns his back to you, tells her that you're a loser, and asks her to dance.

3. Insult him:

You say to him, "Are you a fucking idiot? What's wrong with you? Get the fuck out of here and find your own woman."

He ignores you, steps between you and your girlfriend/wife, turns his back to you, tells her that you're a loser, and asks her to dance.

4. Joke about it:

You jokingly say, "That's right. Come over here and hit on the girl who's with someone already. Real fuckin' smart."

He ignores you, steps between you and your girlfriend/wife, turns his back to you, tells her that you're a loser, and asks her to dance.

5. Shove him:

You push him.

He shoves you back.

6. Hit, punch, kick, or tackle him:

You hit him.

He hits you back.

7. Threaten to hurt him:

You say to him, "Are you a fucking idiot? What's wrong with you? Start showing some fuckin' respect or I'll kick the shit out of you."

He says, "Yeah, what are you gonna do? I'll fucking punch you out. Listen, you're gonna go get some drinks for the lady and me, and then stay the fuck out of our way."

8. Ignore it:

You don't say or do anything.

He steps between you and your girlfriend/wife, turns his back to you, tells her that you're a loser, and asks her to dance.

9. Leave:

You decide to leave.

As you and your girlfriend/wife are leaving, the guy says to your girlfriend/wife, "Don't leave with that loser. You're too hot for that guy. You can do so much better."

SCENE 10 – DISRESPECTING YOUR GIRLFRIEND/WIFE

You're at a bar. You overhear a guy talking about your girlfriend/wife. He is saying that she looks like a real slut and that she probably loves to suck cock. He says he bets he can get her to give him a blowjob in the washroom.

1. **Report it to someone:**

You tell the bar manager and ask him to deal with the guy. The guy tells the bar manager that you're lying. After the bar manager leaves, the guy says that you'll probably want to give him a blowjob too.

2. **Talk it out:**

You say, "That's my girlfriend you're talking about. Come on, man, have some respect." He says, "Hey relax man – just kidding around." But a few seconds later, he says, "Spits or swallows? I bet she swallows."

3. **Insult him:**

You say, "What's your fucking problem, man? I think maybe you're the cocksucker. Go jam a dick in your mouth already and shut the fuck up." He says, "Hey, relax man. Don't worry. I don't want to keep her. She can still go home with you after she blows me a few times."

4. **Joke about it:**

You jokingly say to nobody in particular, "Classy place. I like the energy. This creepy guy over here talking shit about the women. Nice touch. Makes you feel welcome. Well done." He says, "Spits or swallows? I bet she swallows."

5. **Shove him:**

You push him.
He shoves you back.

6. **Hit, punch, kick, or tackle him:**

You hit him.
He hits you back.

7. **Threaten to hurt him:**

You say, "Hey asshole! Watch your fucking mouth! That's my girlfriend you're talking about. If I hear you talking like that again, I'll kick your ass." He says, "Yeah, you wanna go? I'm gonna stomp your fucking face and then your lady's gonna blow me in your car."

8. **Ignore it:**

You don't say or do anything.
He says, "Spits or swallows? I bet she swallows."

9. **Leave:**

You decide to leave.
As you and your girlfriend/wife are leaving, he says, "Spits or swallows? I bet she swallows."

Appendix U

Evaluation of Violence Questionnaire – Likelihood Version (EVQ – Likelihood) (Version for Study 1 and Studies 3A and 3B)

Instructions: Please indicate how likely or unlikely you would be to do each of the following things.

RESPONSE SCALES: Very unlikely, A bit unlikely, A bit likely, Very likely

#	Item
1	How likely would you be to hit (for example, punching or kicking) a guy who hurts someone you care about?
2	How likely would you be to hit (for example, punching or kicking) a guy who steals from you?
3	How likely would you be to hit (for example, punching or kicking) a guy who runs a red light and almost hits you with his car?
4	How likely would you be to hit (for example, punching or kicking) a guy who makes you look stupid?
5	How likely would you be to hit (for example, punching or kicking) a guy who tries to make you look weak?
6	How likely would you be to hit (for example, punching or kicking) a guy you hate?
7	How likely would you be to threaten to physically hurt a guy who tries to hurt you?
8	How likely would you be to threaten to physically hurt a guy who disrespects someone you care about?
9	How likely would you be to threaten to physically hurt a guy who disrespects you?
10	How likely would you be to threaten to physically hurt a guy who owes you money?
11	How likely would you be to threaten to physically hurt a guy who keeps mouthing off?
12	How likely would you be to threaten to physically hurt a guy who says bad stuff about you behind your back?
13	How likely would you be to threaten to physically hurt a guy who makes you mad?
14	How likely would you be to threaten to physically hurt a guy who acts tough?
15	How likely would you be to use a weapon (for example, a baseball bat, knife, or gun) on a guy who has sex with your girlfriend/wife or boyfriend/husband?
16	How likely would you be to use a weapon (for example, a baseball bat, knife, or gun) on a guy who wrecks your stuff on purpose?
17	How likely would you be to use a weapon (for example, a baseball bat, knife, or gun) on a guy when you're scared?

Appendix V

Consent Form for Student Sample (Study 1)

A consent form tells you what we want you to do as a participant and allows you to decide whether you want to be involved in the study or not. Consent forms also list any potential bad outcomes and they tell you who to contact in case you have any questions or concerns after the research is finished or in case you have any questions or concerns that cannot be answered by the researcher.

Present study: Is Violent Thinking Related to Violent Behaviour?

Eligibility: Heterosexual male undergraduate students, 18 years of age or older, who understand written English.

Funding: The current project is funded by a University Medical Research Fund (UMRF), through the Royal Ottawa's Institute of Mental Health Research.

Research personnel. This study is being done by Sacha Maimone (PhD student, Department of Psychology, Carleton University, 613-520-2600, ext 2649; sachamaimone@cmail.carleton.ca) along with Dr. Kevin Nunes (Associate Professor, Department of Psychology, Carleton University, 613-520-2600, ext 1545; kevin.nunes@carleton.ca), Dr. Michael Seto (Michael.Seto@theroyal.ca; co-investigator and responsible site investigator; director of forensic research unit/forensic rehabilitation research at the Royal), and Dr. AG Ahmed (AG.ahmed@theroyal.ca; co-investigator; psychiatrist/associate chief of the Integrated Forensic Program at the Royal Ottawa Health Care Group and the Brockville Mental Health Center).

Concerns. If you have any questions or concerns about this study, please contact Dr. Kevin Nunes. If you have any concerns about the ethics of the study, please contact Dr. Bernadette Campbell, Chair, Carleton University Research Ethics Board-B (by phone at [613-520-2600](tel:613-520-2600) ext. [4085](tel:613-520-2600) or via email at ethics@carleton.ca).

Purpose. The categorization tasks included in the survey, as well as some of the questionnaires you will complete, were designed to measure how positively or negatively participants view violence. We are trying to determine whether men who have been violent view violence more positively than men who have not engaged in violence.

Task requirements. You will complete a 45-minute session in a private room at Carleton University. You will be asked to complete some word matching tasks and surveys, some of which will ask about prior violence and future propensity for violence. The word matching tasks are designed to measure how people think about violence.

Benefits/compensation. You will receive 1.0% credit for being involved in this study.

Potential risk/discomfort. Because some of the questions ask about violence, some people may find them embarrassing or disturbing. For instance, some questions ask if you have ever assaulted someone. In addition, you will be presented with several provocative scenarios and

asked to choose how you would respond in these scenarios. Some of the scenarios contain vulgar language that may be perceived as offensive; however, you are free to stop the survey at any time, not complete it, or refuse to answer any of the questions **without loss of credit**. Also, full credit (1.0%) will be granted for starting the survey, whether or not you answer all the questions or finish it.

Anonymity/confidentiality. Data will be kept confidential. An assigned participant number will be used to link participants to their data. Only the participant number, rather than names, will be indicated on the data to protect confidentiality. Identifying information will be stored separately from the data. All identifying information will be destroyed after all participants have been compensated. A copy of the dataset will be kept indefinitely in the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University, stored on password protected computers and back-up hard drives.

Members of the ACBR lab may analyze these data for future research projects to be presented at conferences and published in journals. Presentations involving these data may also be done at the Royal Ottawa by a member of the research team (i.e., Sacha Maimone) to provide updates and further inform other researchers and treatment staff at the Royal Ottawa. As stated above, the data will be confidential and thus, no identifying information will be included in future research (i.e., publications and presentations) involving these data.

Right to withdraw. Whether you decide to do this study or not is your choice. At any point during the study, you have the right to not complete certain questions, or to withdraw without loss of credit. Also, full credit (1.0%) will be granted for starting the survey, whether or not you answer all the questions or finish it. If you wish to withdraw at any point, please inform the member of the research team responsible for administering the study and we will not use your data. Please note that it is not possible to withdraw your data after you have finished the survey because we will not be able to find which responses were yours.

This study has received clearance by the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640).

Do you agree to participate in the current study? Please circle your answer below:

Yes

No

Researcher's name _____

Date _____

Appendix W

Nature Scenes Presented After the Study in an Attempt to Enhance Mood

(Mood Stabilizing Images)

Appendix X

Debriefing Form for Student Sample (Study 1)

Debriefing Form: Is Violent Thinking Related to Violent Behaviour?

Thank you very much for participating in this study. We hope the information below addresses any questions you may have.

Anonymity/confidentiality:

Data will be kept confidential. An assigned participant number will be used to link participants to their data. Only the participant number, rather than names, will be indicated on the data to protect confidentiality. Identifying information will be stored separately from the data. All identifying information will be destroyed after all participants have been compensated. A copy of the dataset will be kept indefinitely in the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University, stored on password protected computers and back-up hard drives.

Members of the ACBR lab may analyze these data for future research projects to be presented at conferences and published in journals. Presentations involving these data may also be given at the Royal Ottawa by a member of the research team (i.e., Sacha Maimone) to provide updates and further inform other researchers and treatment staff at the Royal Ottawa. As stated above, the data will be confidential and thus, no identifying information will be included in future research (i.e., publications and presentations) involving these data.

Importance of This Research to the Academic Community:

The categorization tasks (i.e., the Implicit Association Tests [IATs] and the Relational Responding Task), as well as some of the measures you answered, were designed to measure how positively or negatively you view violence. We are trying to see whether men who have been violent view violence more positively than men who have not engaged in violence. We are also interested in seeing whether the categorization tasks you answered are able to detect these differences and whether there is a relationship between the tasks and measures that were answered.

Importance of This Research to the General Public:

Violence has many negative outcomes for victims and the public in general. It is believed that violent cognitions play a central, and perhaps causal, role in violence. Therefore, finding more out about how people think about violence and establishing better ways of assessing this may help us to better understand why men behave violently.

Additional Resources if You Want to Learn More:

To learn more about the IAT, visit Anthony Greenwald's (the creator of the procedure)

website at <http://faculty.washington.edu/agg/> or read:

- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, 74, 1464-1480.

Also, visit the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University at <https://carleton.ca/acbrlab/> and relevant conference/poster presentations from the ACBR lab:

- [Maimone, S., Nunes, K. L., Balemba, S., Pettersen, C., Clermont, M., Staddon, M., & Frank, C. \(2015, June\). Exploring the relationship and direction of influence between attitudes, outcome expectancies, and violent behaviour. In K. L. Nunes \(Chair\), Violent cognitions. Symposium conducted at the 3rd North American Correctional and Criminal Justice Psychology Conference, Ottawa, Ontario, Canada.](#)
- [Hermann, C. A., Nunes, K. L., Ennis, L., Maimone, S., & Choy, A. \(2014, July\). Four approaches to measuring attitudes towards violence: Beliefs, explicit evaluation, outcome expectancies, and implicit evaluation. Poster presented at the 21st World Meeting of the International Society for Research on Aggression, Atlanta, Georgia.](#)
- [Nunes, K. L., & Hermann, C. A. \(2013, January\). Thinking clearly about violent cognitions: Exploratory factor analysis of scales designed to measure attitudes towards violence. Poster presented at the 14th Annual Meeting of the Society for Personality and Social Psychology, New Orleans, Louisiana.](#)

Who to Contact if You Have Questions:

Please direct any questions about this research to Sacha Maimone (PhD student, Department of Psychology, Carleton University, 613-520-2600, ext. 2649; sachamaimone@cmail.carleton.ca) or Dr. Kevin Nunes (Associate Professor, Department

of Psychology, Carleton University, 613-520-2600, ext 1545; kevin.nunes@carleton.ca). Also, if you have any questions or concerns about this study, please contact Sacha Maimone or Dr. Kevin Nunes. If you have any ethical concerns with the study, please contact Dr. Bernadette Campbell, Chair, Carleton University Research Ethics Board-B (by phone at [613-520-2600](tel:613-520-2600) ext. 4085 or via email at ethics@carleton.ca).

Mental Health Resources if You Found this Study Emotionally Draining:

If you feel any distress (e.g., feel sad or mad) as a result of this study, please visit the links below for a list of crisis hotlines and other resources:

Mental Health Today: +44(0)1273-434-943; E-mail: info@mentalhealthtoday.co.uk

<https://www.mentalhealthtoday.co.uk/about-mental-health-today>

Suicide prevention lifeline: 1-800-273-8255 (TALK) www.suicidepreventionlifeline.org/

Some resources in Canada: <http://www1.carleton.ca/health/emergencies-and-crisis/emergency-numbers/>

- Mental Health Crisis Services **(613)722-6914**
1-866-996-0991
- Good2Talk **1-866-925-5454**
- Distress Center of Ottawa and Region **(613)741-6433**
- Men & Healing **(613)482-9363**
- Aboriginal Suicide Prevention Lifeline **1-800-273-8255**
1-800-799-4889
TTY

List of resources by country: <https://www.suicideforum.com/crisis-lines-sites/>

This study has received clearance by the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640).

Thank you very much for making this research possible.

Appendix Y

Consent Form for Community Sample (Study 1)

A consent form tells you what we want you to do as a participant and allows you to make a decision about whether you want to be involved in the study or not. Consent forms also list any potential bad outcomes and they tell you who to contact in case you have any questions or concerns after the research is finished or in case you have any questions or concerns that cannot be answered by the researcher.

Present study: Is Violent Thinking Related to Violent Behaviour?

Eligibility: Heterosexual males, 18 years of age or older, who understand written English

Funding: The current project is funded by a University Medical Research Fund (UMRF), through the Royal Ottawa's Institute of Mental Health Research.

Research personnel. This study is being done by Sacha Maimone (PhD student, Department of Psychology, Carleton University, 613-520-2600, ext 2649; sachamaimone@cmail.carleton.ca) along with Dr. Kevin Nunes (Associate Professor, Department of Psychology, Carleton University, 613-520-2600, ext 1545; kevin.nunes@carleton.ca), Dr. Michael Seto (Michael.Seto@theroyal.ca; co-investigator and responsible site investigator; director of forensic research unit/forensic rehabilitation research at the Royal), and Dr. AG Ahmed (AG.ahmed@theroyal.ca; co-investigator; psychiatrist/associate chief of the Integrated Forensic Program at the Royal Ottawa Health Care Group and the Brockville Mental Health Center).

Concerns. If you have any questions or concerns about this study, please contact Kevin Nunes. If you have any concerns about ethics of the study, please contact Dr. Natasha Artemeva, Chair, Carleton University Research Ethics Board-B (by phone at [613-520-2600](tel:613-520-2600) ext. 4085 or via email at ethics@carleton.ca).

Purpose. The categorization tasks included in the survey, as well as some of the questionnaires you will complete, were designed to measure how positively or negatively participants view violence. We are trying to determine whether men who have been violent view violence more positively than men who have not engaged in violence.

Task requirements. You will complete a 45-minute session in a private room at Carleton University. You will be asked to complete some word matching tasks and surveys, some of which will ask about prior violence and future propensity for violence. The word matching tasks are designed to measure how people think about violence.

Benefits/compensation. You will receive \$20 for being involved in this study.

Potential risk/discomfort. Because some of the questions ask about violence, some people may find them embarrassing or disturbing. For instance, some questions ask if you have ever assaulted someone. In addition, you will be presented with several provocative

scenarios and asked to choose how you would respond in these scenarios. Some of the scenarios contain vulgar language that may be perceived as offensive; however, you are free to stop the survey at any time, not complete it, or refuse to answer any of the questions **without loss of payment**. Also, full payment (\$20) will be granted for starting the survey, whether or not you answer all the questions or finish it.

Anonymity/confidentiality. Data will be kept confidential. An assigned participant number will be used to link participants to their data. Only the participant number, rather than names, will be indicated on the data to protect confidentiality. Identifying information will be stored separately from the data. All identifying information will be destroyed after all participants have been compensated. A copy of the dataset will be kept indefinitely in the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University, stored on password protected computers and back-up hard drives.

Members of the ACBR lab may analyze these data for future research projects to be presented at conferences and published in journals. Presentations involving these data may also be done at the Royal Ottawa by a member of the research team (i.e., Sacha Maimone) to provide updates and further inform other researchers and treatment staff at the Royal Ottawa. As stated above, the data will be confidential and thus, no identifying information will be included in future research (i.e., publications and presentations) involving these data.

Right to withdraw. Whether you decide to do this study or not is your choice. At any point during the study, you have the right to not complete certain questions, or to withdraw without loss of payment. Also, full payment (\$20) will be granted for starting the survey, whether or not you answer all the questions or finish it. If you wish to withdraw at any point, please inform the member of the research team responsible for administering the study and we will not use your data. Please note that it is not possible to withdraw your data after you have finished the survey because we will not be able to find which responses were yours.

This study has received clearance by the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640), the Royal Ottawa Research Ethics Board (REB #2018006), and the Ministry of Community Safety and Correctional Services Research Ethics Board.

I understand that the information I provide is confidential, and will never be revealed to anyone except under the following circumstances: If I disclose information about plans which may result in actual or potential harm to myself or others and/or information concerning any unknown emotional, physical or sexual abuse of children, the researcher is required to report this information to the appropriate authorities.

Circle "I Agree" to show that you understand the information above and would like to participate in this study or "I Disagree" if you do not want to do the survey.

I Agree

I disagree

Researcher's name _____ Date _____

Appendix Z

Debriefing Form for Community Sample (Study 1)

Debriefing Form: Is Violent Thinking Related to Violent Behaviour?

Thank you very much for participating in this study. We hope the information below addresses any questions you may have.

Anonymity/confidentiality:

Data will be kept confidential. An assigned participant number will be used to link participants to their data. Only the participant number, rather than names, will be indicated on the data to protect confidentiality. Identifying information will be stored separately from the data. All identifying information will be destroyed after all participants have been compensated. A copy of the dataset will be kept indefinitely in the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University, stored on password protected computers and back-up hard drives.

Members of the ACBR lab may analyze these data for future research projects to be presented at conferences and published in journals. Presentations involving these data may also be given at the Royal Ottawa by a member of the research team (i.e., Sacha Maimone) to provide updates and further inform other researchers and treatment staff at the Royal Ottawa. As stated above, the data will be confidential and thus, no identifying information will be included in future research (i.e., publications and presentations) involving these data.

Importance of This Research to the Academic Community:

The categorization tasks (i.e., the Implicit Association Tests [IATs] and an Evaluative Priming Task), as well as some of the measures you answered, were designed to measure how positively or negatively you view violence. We are trying to see whether men who have been violent view violence more positively than men who have not engaged in violence. We are also interested in seeing whether the categorization tasks you answered are able to detect these differences and whether there is a relationship between the tasks and measures that were answered.

Importance of This Research to the General Public:

Violence has many negative outcomes for victims and the public in general. It is believed that violent cognitions play a central, and perhaps causal, role in violence. Therefore, finding more out about how people think about violence and establishing better ways of assessing this may help us to better understand why men behave violently.

Additional Resources if You Want to Learn More:

To learn more about the IAT, visit Anthony Greenwald's (the creator of the procedure)

website at <http://faculty.washington.edu/aggg/> or read:

- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, 74, 1464-1480.

Also, visit the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University at <https://carleton.ca/acbrlab/> and

Relevant conference/poster presentations from the ACBR lab:

- [Maimone, S., Nunes, K. L., Balemba, S., Pettersen, C., Clermont, M., Staddon, M., & Frank, C. \(2015, June\). Exploring the relationship and direction of influence between attitudes, outcome expectancies, and violent behaviour. In K. L. Nunes \(Chair\), Violent cognitions. Symposium conducted at the 3rd North American Correctional and Criminal Justice Psychology Conference, Ottawa, Ontario, Canada.](#)
- [Hermann, C. A., Nunes, K. L., Ennis, L., Maimone, S., & Choy, A. \(2014, July\). Four approaches to measuring attitudes towards violence: Beliefs, explicit evaluation, outcome expectancies, and implicit evaluation. Poster presented at the 21st World Meeting of the International Society for Research on Aggression, Atlanta, Georgia.](#)
- [Nunes, K. L., & Hermann, C. A. \(2013, January\). Thinking clearly about violent cognitions: Exploratory factor analysis of scales designed to measure attitudes towards violence. Poster presented at the 14th Annual Meeting of the Society for Personality and Social Psychology, New Orleans, Louisiana.](#)

Who to Contact if You Have Questions:

Please direct any questions about this research to Sacha Maimone (PhD student, Department of Psychology, Carleton University, 613-520-2600, ext. 2649; sachamaimone@cmail.carleton.ca) or Dr. Kevin Nunes (Associate Professor, Department

of Psychology, Carleton University, 613-520-2600, ext 1545; kevin.nunes@carleton.ca). Also, if you have any questions or concerns about this study, please contact Sacha Maimone or Dr. Kevin Nunes. If you have any ethical concerns with the study, please contact Dr. Natasha Artemeva, Chair, Carleton University Research Ethics Board-B (by phone at [613-520-2600](tel:613-520-2600) ext. 4085 or via email at ethics@carleton.ca).

Mental Health Resources if You Found this Study Emotionally Draining:

If you feel any distress (e.g., feel sad or mad) as a result of this study, please visit the links below for a list of crisis hotlines and other resources:

Mental Health Today: +44(0)1273-434-943; E-mail: info@mentalhealthtoday.co.uk

<https://www.mentalhealthtoday.co.uk/about-mental-health-today>

Suicide prevention lifeline: 1-800-273-8255 (TALK) www.suicidepreventionlifeline.org/

Some resources in Canada: <http://www1.carleton.ca/health/emergencies-and-crisis/emergency-numbers/>

- Mental Health Crisis Services **(613)722-6914**
1-866-996-0991
- Good2Talk **1-866-925-5454**
- Distress Center of Ottawa and Region **(613)741-6433**
- Men & Healing **(613)482-9363**
- Aboriginal Suicide Prevention Lifeline **1-800-273-8255**
1-800-799-4889
TTY

List of resources by country: <https://www.suicideforum.com/crisis-lines-sites/>

This study has received clearance by the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640), the Royal Ottawa Research Ethics Board (REB #2018006), and the Ministry of Community Safety and Correctional Services Research Ethics Board.

Thank you very much for making this research possible.

Appendix AA

Study Recruitment Poster for Males Convicted of Violent Offences (Study 2)

Study Name: Is Violent Thinking Related to Violent Behaviour?

Description: You will be asked to complete a series of questionnaires some of which will ask you to report on your past behaviour and beliefs.

Eligibility: Heterosexual, male offenders, age 18 years or older, who understand written English, and who have been charged/convicted of violent (but not sexually violent) offense(s), or non-violent offense(s).

Potential Negative Consequences to Participating:

Because some of the questions ask about violent behaviour, some people may find them embarrassing or otherwise disturbing. For example, some questions ask whether you have ever assaulted someone. Note that the conflict situations contain swearing and violence, which may cause distress for some participants. You are free to refuse to answer any of the questions or stop the survey at any time without penalty. The debriefing form at the end of the study provides contact information for local support services that you may contact if you need or want help. In addition, nobody will be able to connect your responses with your identity. You can refuse to participate, skip any questions you do not wish to answer, or stop participating at any time. If you do participate and become disturbed by the study, you will be directed to various sources of support. In addition, your official institutional files will be accessed following completion of the survey in order to obtain an index for prior violence from official records (e.g., number of prior violent convictions; number of prior misconducts in the institution).

Duration: 45 minutes

Researcher: Sacha Maimone

Phone: (613)864-0992

E-mail: sachamaimone@cmail.carleton.ca

Kevin Nunes

Phone: (613)520-2600, ext 1545

E-mail: kevin.nunes@carleton.ca

Where: The Secure Treatment Unit (STU) in Brockville, ON, Room (TBD).

This study has received clearance by the Royal Ottawa Health Care Group (REB#2018006) and the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640).

Appendix AB

Quality Control Questions for Study 2

QC1.Demographics (Please select 'No'.)

Response options: 0 = *No*, 2 = *Yes*

QC2.MCAA-R-V (Please select 'Agree'.)

Response options: 1 = *Disagree*, 2 = *Somewhat disagree*, 3 = *Somewhat agree*, 4 = *Agree*

QC3.VESD (Please select 'Wrong'.)

Response options:

1 = *Very wrong*

2 = *Wrong*

3 = *Somewhat wrong*,

4 = *Neutral*

5 = *Somewhat right*,

6 = *Right*

7 = *Very right*

QC5.EVQLikelihood (Please select 'A bit unlikely'.)

Response options: 1 = *Very unlikely*, 2 = *A bit unlikely*, 3 = *A bit likely*, 4 = *Very likely*

Appendix AC

Demographic Questions for Males Convicted of Violent Offences (Study 2)

19. What is your biological sex? [Gender]

- 1 = Male
- 2 = Female
- 3 = Other

20. What is your ethnicity? [Ethnicity]

- 1 = White
- 2 = Black
- 3 = Indigenous
- 4 = Asian
- 5 = East Indian
- 6 = Hispanic/Latino
- 7 = Arab
- 8 = Other

21. Who are you most sexually attracted to? [SexOrient]

- 1 = Women
- 2 = Men
- 3 = Both women and men equally
- 4 = Other

22. How old are you (years)? [Age]

- 1 = 17 or younger
- 2 = 18-21
- 3 = 22-23
- 4 = 24-29
- 5 = 30-34
- 6 = 35-39
- 7 = 40-49
- 8 = 50-59
- 9 = 60 or older

23. What is the highest level of education you have completed? [Education]

- 1 = Did not complete high school
- 2 = High school (or equivalent)
- 3 = Community college
- 4 = Undergraduate degree
- 5 = Master's degree
- 6 = Doctoral degree
- 7 = Other

24. Before being convicted of your most recent offence(s), what was your employment status? [Employment]

- 1 = Full-time employed
- 2 = Part-time employed
- 3 = Not employed (Includes homemaker, unable to work, etc.)
- 4 = Military
- 5 = Full-time student
- 6 = Part-time student
- 7 = Retired
- 8 = Other

25. What is your current relationship status? [RelStat]

- 1 = Single
- 2 = In a romantic relationship
- 3 = Living with a romantic partner
- 4 = Married
- 5 = Separated/divorced/widowed

26. Do you speak English fluently? [English1]

0 = No 1 = Yes

27. Do you understand written English? [English2]

0 = No 1 = Yes

28. Do you understand spoken English? [English3]

0 = No 1 = Yes

29. Are you currently serving your sentence for any sexual offences?

- 0 = None
- 1 = 1
- 2 = 2
- 3 = 3
- 4 = 4
- 5 = 5-9
- 6 = 10-14
- 7 = 15-19
- 8 = 20-29
- 9 = 30 or more

30. How many violent (non-sexual) offences (for example, assault, robbery, making threats) against an adult male are you currently serving a sentence for?

- 0 = None
- 1 = 1
- 2 = 2
- 3 = 3
- 4 = 4
- 5 = 5-9
- 6 = 10-14
- 7 = 15-19

8 = 20-29

9 = 30 or more

31. How many violent (non-sexual) offences (for example, assault, robbery, making threats) against a child, adolescent, and/or an adult female are you currently serving a sentence for?

0 = None

1 = 1

2 = 2

3 = 3

4 = 4

5 = 5-9

6 = 10-14

7 = 15-19

8 = 20-29

9 = 30 or more

32. How many non-violent (non-sexual) offences (for example, theft, break and enter, drug possession) are you currently serving a sentence for?

0 = None

1 = 1

2 = 2

3 = 3

4 = 4

5 = 5-9

6 = 10-14

7 = 15-19

8 = 20-29

9 = 30 or more

33. Not counting the offence(s) that you're in jail for now, have you ever been charged for and/or convicted of any sexual offences?

0 = None

1 = 1

2 = 2

3 = 3

4 = 4

5 = 5-9

6 = 10-14

7 = 15-19

8 = 20-29

9 = 30 or more

34. Not counting the offence(s) that you're in jail for now, how many violent (non-sexual) offences (for example, assault, robbery, making threats) against an adult male have you been charged for and/or convicted of?

0 = None

1 = 1

2 = 2

3 = 3

4 = 4

5 = 5-9

6 = 10-14

7 = 15-19

8 = 20-29

9 = 30 or more

35. Not counting the offence(s) that you're in jail for now, how many violent (non-sexual) offences (for example, assault, robbery, making threats) against a child, adolescent, and/or adult female have you been charged for and/or convicted of?

0 = None

1 = 1

2 = 2

3 = 3

4 = 4

5 = 5-9

6 = 10-14

7 = 15-19

8 = 20-29

9 = 30 or more

36. Not counting the offence(s) that you're in jail for now, how many non-violent (non-sexual) offences (for example, theft, break and enter, drug possession) have you been charged for and/or convicted of?

0 = None

1 = 1

2 = 2

3 = 3

4 = 4

5 = 5-9

6 = 10-14

7 = 15-19

8 = 20-29

9 = 30 or more

37. Did you hurt your most recent victim?
 0 = No, he/she had little or no injuries
 1 = Yes, he/she died
 2 = Yes, he/she was hospitalized
 3 = Yes, he/she was treated by a doctor/medical professional/at the hospital and released
 4 = There was no victim
38. Did you live with your biological parents to age 16 or older?
 1 = Yes, both parents
 2 = Yes, just my mother
 3 = Yes, just my father
 4 = No, neither of my parents
39. At the time of your most recent offence, what was your relationship status?
 1 = Single
 2 = In a romantic relationship but not living together
 3 = Living with a romantic partner for less than 6 months
 4 = Living with a romantic partner for 6 months or more
 5 = Married
 6 = Separated/divorced/widowed
40. Have you ever been married?
 0 = Never
 1 = Once
 2 = Twice
 3 = 3 times
 4 = 4 times
 5 = 5 times
 6 = 6 times
 7 = 7 times
 8 = 8 times
 9 = 9 or more times
41. Were you ever suspended or expelled from school between grades 1 to 8?
 0 = Never
 1 = Once
 2 = Twice
 3 = 3 times
 4 = 4 times
 5 = 5 times
 6 = 6 times
 7 = 7 times

8 = 8 times

9 = 9 or more times

42. Were you ever admitted to a correctional institution (For example, a youth detention centre, jail, federal or provincial correctional facility) for any of your prior offences?

0 = Never

1 = Once

2 = Twice

3 = 3 times

4 = 4 times

5 = 5 times

6 = 6 times

7 = 7 times

8 = 8 times

9 = 9 or more times

43. How many times have you been sent back to jail because you violated the conditions of your bail, probation, parole, statutory release, or other type of conditional release?

0 = Never

1 = Once

2 = Twice

3 = 3 times

4 = 4 times

5 = 5 times

6 = 6 times

7 = 7 times

8 = 8 times

9 = 9 or more times

44. Have you ever taken any treatment programs for violent offending since your most recent offence?

0 = None

1 = 1 program

2 = 2 programs

3 = 3 programs

4 = 4 programs

5 = 5 programs

6 = 6 programs

7 = 7 programs

8 = 8 programs

9 = 9 or more programs

45. Does your most recent offence involve a female victim?
0 = No
1 = Yes
46. Does either of your biological parents have a history of alcohol abuse?
0 = No
1 = Yes
47. Did you ever have problems with alcohol before the age of 18?
0 = No
1 = Yes
48. Did you ever have problems with alcohol as an adult (i.e., 18 years of age or older)?
0 = No
1 = Yes
49. Did you ever have problems with illegal drugs (e.g., marijuana, cocaine, prescription drugs for which you did not have a prescription, etc.) before the age of 18?
0 = No
1 = Yes
50. Did you ever consume alcohol just before and/or during a previous offence?
0 = No
1 = Yes
51. Did you ever take illegal drugs (e.g., marijuana, cocaine, prescription drugs for which you did not have a prescription, etc.) just before and/or during a previous offence?
0 = No
1 = Yes
52. Did you consume alcohol just before and/or during your most recent offence(s)?
0 = No
1 = Yes
53. Did you take illegal drugs (e.g., marijuana, cocaine, prescription drugs for which you did not have a prescription, etc.) just before and/or during your most recent offence(s)?
0 = No
1 = Yes

54. Were you ever diagnosed with a learning disability?

0 = No

1 = Yes

55. Were you ever diagnosed with a personality disorder (for example, antisocial personality disorder, borderline personality disorder, narcissistic personality disorder, etc.)?

0 = No

1 = Yes

56. Were you ever diagnosed with schizophrenia?

0 = No

1 = Yes

Appendix AD

Evaluation of Violence Questionnaire – Likelihood Version (EVQ – Likelihood) (Version for Study 2)

Instructions: Please indicate how likely or unlikely you would be to do each of the following things if you were in these situations.

RESPONSE SCALES: Very unlikely, A bit unlikely, A bit likely, Very likely

#	Item
1	If you were in this situation how likely would you be to hit (for example, punching or kicking) a guy who hurts someone you care about?
2	If you were in this situation how likely would you be to hit (for example, punching or kicking) a guy who steals from you?
3	If you were in this situation how likely would you be to hit (for example, punching or kicking) a guy who runs a red light and almost hits you with his car?
4	If you were in this situation how likely would you be to hit (for example, punching or kicking) a guy who makes you look stupid?
5	If you were in this situation how likely would you be to hit (for example, punching or kicking) a guy who tries to make you look weak?
6	If you were in this situation how likely would you be to hit (for example, punching or kicking) a guy you hate?
7	If you were in this situation how likely would you be to threaten to physically hurt a guy who tries to hurt you?
8	If you were in this situation how likely would you be to threaten to physically hurt a guy who disrespects someone you care about?
9	If you were in this situation how likely would you be to threaten to physically hurt a guy who disrespects you?
10	If you were in this situation how likely would you be to threaten to physically hurt a guy who owes you money?
11	If you were in this situation how likely would you be to threaten to physically hurt a guy who keeps mouthing off?
12	If you were in this situation how likely would you be to threaten to physically hurt a guy who says bad stuff about you behind your back?
13	If you were in this situation how likely would you be to threaten to physically hurt a guy who makes you mad?
14	If you were in this situation how likely would you be to threaten to physically hurt a guy who acts tough?
15	If you were in this situation how likely would you be to use a weapon (for example, a baseball bat, knife, or gun) on a guy who has sex with your girlfriend/wife or boyfriend/husband?
16	If you were in this situation how likely would you be to use a weapon (for example, a baseball bat, knife, or gun) on a guy who wrecks your stuff on purpose?
17	If you were in this situation how likely would you be to use a weapon (for example, a baseball bat, knife, or gun) on a guy when you're scared?

Appendix AE

Consent Form for Males Convicted of Violent Offences (Study 2)

A consent form tells you what we want you to do as a participant and allows you to make a decision about whether you want to be involved in the study or not. Consent forms also list any potential bad outcomes and they tell you who to contact in case you have any questions or concerns after the research is finished or in case you have any questions or concerns that cannot be answered by the researcher.

Present study: Is Violent Thinking Related to Violent Behaviour?

Eligibility: Heterosexual, male offenders, age 18 years or older, who understand written English, and who have been charged/convicted of violent (but not sexually violent) offense(s), or non-violent offense(s).

Funding: The current project is funded by a University Medical Research Fund (UMRF), through the Royal Ottawa's Institute of Mental Health Research.

Research personnel. This study is being done by Sacha Maimone (PhD student, Department of Psychology, Carleton University, 613-520-2600, ext 2649; sachamaimone@cmail.carleton.ca) along with Dr. Kevin Nunes (Associate Professor, Department of Psychology, Carleton University, 613-520-2600, ext 1545; kevin.nunes@carleton.ca), Dr. Michael Seto (Michael.Seto@theroyal.ca; co-investigator and responsible site investigator; director of forensic research unit/forensic rehabilitation research at the Royal), and Dr. AG Ahmed (AG.ahmed@theroyal.ca; co-investigator; psychiatrist/associate chief of the Integrated Forensic Program at the Royal Ottawa Health Care Group and the Brockville Mental Health Center).

Concerns. If you have any questions or concerns about this study, please contact Kevin Nunes. If you have any concerns about the ethics of the study, please contact the Royal Ottawa Health Care Group's Research Ethics Board (by phone at [613-722-6521](tel:613-722-6521) ext. 6214 or via email at research.ethics@theroyal.ca) and/or Dr. Natasha Artemeva, Chair, Carleton University Research Ethics Board-B (by phone at [613-520-2600](tel:613-520-2600) ext. 4085 or via email at ethics@carleton.ca).

Purpose. The categorization tasks included in the survey, as well as some of the questionnaires you will complete, were designed to measure how positively or negatively participants view violence. We are trying to determine whether men who have been violent view violence more positively than men who have not engaged in violence.

Task requirements. You will complete a 45-minute session in a private room at your institution. You will be asked to complete some word matching tasks and surveys, some of which will ask about prior violence and future propensity for violence. The word matching tasks are designed to measure how people think about violence. In addition, your official institutional files will be accessed following completion of the survey in

order to obtain an index for prior violence from official records (e.g., number of prior violent convictions; number of prior misconducts in the institution).

Potential risk/discomfort. Because some of the questions ask about violence, some people may find them embarrassing or disturbing. For instance, some questions ask if you have ever assaulted someone. In addition, you will be presented with several provocative scenarios and asked to choose how you would respond in these scenarios. Some of the scenarios contain vulgar language that may be perceived as offensive; however, you are free to stop the survey at any time, not complete it, or refuse to answer any of the questions.

Anonymity/confidentiality. Data will be kept confidential. An assigned participant number will be used to link participants to their data. Only the participant number, rather than names, will be indicated on the data to protect confidentiality. Identifying information will be stored separately from the data. All identifying information will be destroyed after data collection is complete. A copy of the dataset will be kept indefinitely in the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University, stored on password protected computers and back-up hard drives. Whether you choose to take part in the current study or not **will not** affect your treatment in any way.

Members of the ACBR lab may analyze these data for future research projects to be presented at conferences and published in journals. Presentations involving these data may also be done at the Royal Ottawa by a member of the research team (i.e., Sacha Maimone) to provide updates and further inform other researchers and treatment staff at the Royal Ottawa. As stated above, the data will be confidential and thus, no identifying information will be included in future research (i.e., publications and presentations) involving these data.

Right to withdraw. Whether you decide to do this study or not is your choice. At any point during the study, you have the right to not complete certain questions, or to withdraw. If you wish to withdraw at any point, please inform the member of the research team responsible for administering the study and we will not use your data. Please note that it is not possible to withdraw your data after you have finished the survey because we will not be able to find which responses were yours.

This study has received clearance by the Royal Ottawa Health Care Group (REB#2018006), the Ministry of Community Safety and Correctional Services Research Ethics Board, and the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640).

I understand that the information I provide is confidential, and will never be revealed to anyone except under the following circumstances: If I disclose information about plans which may result in actual or potential harm to myself or others and/or information concerning any unknown emotional, physical or sexual abuse of children, the researcher is required to report this information to the appropriate authorities.

Circle "I Agree" to show that you understand the information above and would like to participate in this study or "I Disagree" if you do not want to do the survey.

I Agree

I disagree

Researcher's name _____

Date _____

Appendix AF

Debriefing Form for Males Convicted of Violent Offences (Study 2)

Debriefing Form: Is Violent Thinking Related to Violent Behaviour?

Thank you very much for participating in this study. We hope the information below addresses any questions you may have.

Anonymity/confidentiality:

Data will be kept confidential. An assigned participant number will be used to link participants to their data. Only the participant number, rather than names, will be indicated on the data to protect confidentiality. Identifying information will be stored separately from the data. All identifying information will be destroyed after all participants have been compensated. A copy of the dataset will be kept indefinitely in the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University, stored on password protected computers and back-up hard drives.

Members of the ACBR lab may analyze these data for future research projects to be presented at conferences and published in journals. Presentations involving these data may also be given at the Royal Ottawa by a member of the research team (i.e., Sacha Maimone) to provide updates and further inform other researchers and treatment staff at the Royal Ottawa. As stated above, the data will be confidential and thus, no identifying information will be included in future research (i.e., publications and presentations) involving these data.

Importance of This Research to the Academic Community:

The categorization tasks (i.e., the Implicit Association Tests [IATs] and an Evaluative Priming Task), as well as some of the measures you answered, were designed to measure how positively or negatively you view violence. We are trying to see whether men who have been violent view violence more positively than men who have not engaged in violence. We are also interested in seeing whether the categorization tasks you answered are able to detect these differences and whether there is a relationship between the tasks and measures that were answered.

Importance of This Research to the General Public:

Violence has many negative outcomes for victims and the public in general. It is believed that violent cognitions play a central, and perhaps causal, role in violence. Therefore, finding more out about how people think about violence and establishing better ways of assessing this may help us to better understand why men behave violently.

Additional Resources if You Want to Learn More:

To learn more about the IAT, visit Anthony Greenwald's (the creator of the procedure)

website at <http://faculty.washington.edu/agg/> or read:

- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, 74, 1464-1480.

Also, visit the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University at <https://carleton.ca/acbrlab/> and

Relevant conference/poster presentations from the ACBR lab:

- [Maimone, S., Nunes, K. L., Balemba, S., Pettersen, C., Clermont, M., Staddon, M., & Frank, C. \(2015, June\). Exploring the relationship and direction of influence between attitudes, outcome expectancies, and violent behaviour. In K. L. Nunes \(Chair\), Violent cognitions. Symposium conducted at the 3rd North American Correctional and Criminal Justice Psychology Conference, Ottawa, Ontario, Canada.](#)
- [Hermann, C. A., Nunes, K. L., Ennis, L., Maimone, S., & Choy, A. \(2014, July\). Four approaches to measuring attitudes towards violence: Beliefs, explicit evaluation, outcome expectancies, and implicit evaluation. Poster presented at the 21st World Meeting of the International Society for Research on Aggression, Atlanta, Georgia.](#)
- [Nunes, K. L., & Hermann, C. A. \(2013, January\). Thinking clearly about violent cognitions: Exploratory factor analysis of scales designed to measure attitudes towards violence. Poster presented at the 14th Annual Meeting of the Society for Personality and Social Psychology, New Orleans, Louisiana.](#)

Who to Contact if You Have Questions:

Please direct any questions about this research to Sacha Maimone (PhD student, Department of Psychology, Carleton University, 613-520-2600, ext. 2649; sachamaimone@cmail.carleton.ca) or Dr. Kevin Nunes (Associate Professor, Department

of Psychology, Carleton University, 613-520-2600, ext 1545; kevin.nunes@carleton.ca). Also, if you have any questions or concerns about this study, please contact Sacha Maimone or Dr. Kevin Nunes. If you have any ethical concerns with the study, please contact the Royal Ottawa Health Care Group's Research Ethics Board (by phone at [613-722-6521](tel:613-722-6521) ext. 6214 or via email at research.ethics@theroyal.ca) and/or Dr. Natasha Artemeva, Chair, Carleton University Research Ethics Board-B (by phone at [613-520-2600](tel:613-520-2600) ext. 4085 or via email at ethics@carleton.ca).

Mental Health Resources if You Found this Study Emotionally Draining:

If you feel any distress (e.g., feel sad or mad) as a result of this study, please visit the links below for a list of crisis hotlines and other resources:

Mental Health Today: +44(0)1273-434-943; E-mail: info@mentalhealthtoday.co.uk

<https://www.mentalhealthtoday.co.uk/about-mental-health-today>

Suicide prevention lifeline: 1-800-273-8255 (TALK) www.suicidepreventionlifeline.org/

Some resources in Canada: <http://www1.carleton.ca/health/emergencies-and-crisis/emergency-numbers/>

- Mental Health Crisis Services **(613)722-6914**
1-866-996-0991
- Good2Talk **1-866-925-5454**
- Distress Center of Ottawa and Region **(613)741-6433**
- Men & Healing **(613)482-9363**
- Aboriginal Suicide Prevention Lifeline **1-800-273-8255**
1-800-799-4889
TTY

List of resources by country: <https://www.suicideforum.com/crisis-lines-sites/>

This study has received clearance by the Royal Ottawa Health Care Group (REB#2018006), the Ministry of Community Safety and Correctional Services Research Ethics Board, and the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640).

Thank you very much for making this research possible.

Appendix AG**Quality Control Questions for Study 3A**

QC1.Demographics (Please select ‘No’. This is just to check if people are paying attention.)

Response options: *1 = No, 2 = Yes*

QC2.EVQ (Please select ‘Very good’. This is just to check if people are paying attention.)

Response options: *1 = Very bad, 2 = A bit bad, 3 = A bit good, 4 = Very good*

QC3.VESD (Please select “Right”. This is just to check if people are paying attention.)

Response options:

1 = Very wrong

2 = Wrong

3 = Somewhat wrong

4 = Neutral

5 = Somewhat right

6 = Right

7 = Very right

QC4.VBS (Please select ‘Three times’. This is just to check if people are paying attention.)

Response options:

0 = Never

1 = Once

2 = Twice

3 = Three times

4 = Four times

5 = Five times

6 = Six times

7 = Seven times

8 = Eight times

9 = Nine times or more

QC5.EVQLikelihood (Please select ‘Very Likely’. This is just to check if people are paying attention.)

Response options: *1 = Very unlikely, 2 = A bit unlikely, 3 = A bit likely, 4 = Very likely*

Appendix AH

Criminal Attitudes to Violence Scale (CAVS)

Instructions: Please indicate how much you disagree or agree with the following statements.

RESPONSE SCALES: *Strongly disagree, Disagree, Neutral, Agree, Strongly agree*

#	Item
1	If somebody insults me or my family I feel better if I beat them up.
2	Lots of people are out to get you so you have to be violent.
3	When I get violent, what I want most is to teach the other person a lesson.
4	Men should be allowed to sort their differences out by fighting.
5	If somebody puts me down, I feel like I have to fight them to get back my pride.
6	The best thing about being violent is that it gets my anger out of my system.
7	Fighting between men is normal.
8	After a fight I feel happy if I won and depressed if I lost.
9	Some people have to be treated roughly because they lack feelings that can be hurt.
10	My loyalty to my friends or gang is more important than avoiding violence.
11	I am more likely to be violent when another person shows me up in public.
12	The best lesson a man can teach his son is how to fight.
13	It is important to fight when your gang's honour is threatened.
14	I believe that you have to use violence to get through to some people.
15	The best thing about being violent is that it makes the other person get into line.
16	When your main business is crime, being violent is just part of the job.
17	It's necessary to carry a gun or a knife if you live in a rough neighbourhood.
18	If a person hits you, you have to hit them back.
19	If I assault or rob someone, chances are I'll get away with it.
20	Violence is an important part of my culture, even if it is against the law.

Appendix AI

Aggression Questionnaire – Physical Aggression (AQ-PA) Subscale

Instructions: Please indicate how unlike you or like you each of the following statements are.

RESPONSE SCALES:

Extremely not like me, Not like me, Neither not like me nor like me, Like me, Extremely like me

#	Item
1	If I have to resort to violence to protect my right, I will.
2	I have become so mad that I have broken things.
3	Once in a while, I can't control the urge to strike another person.
4	I have threatened people I know.
5	Given enough provocation, I may hit another person.
6	I can think of no good reason for ever hitting a person. *
7	If somebody hits me, I hit back.
8	There are people who pushed me so far that we came to blows.
9	I get into fights a little more than the average person.

*Reverse scored item.

Appendix AJ

Consent Form for Community Qualtrics Panel (Studies 3A and 3B)

A consent form tells you what we want you to do as a participant and allows you to make a decision about whether you want to be involved in the study or not. Consent forms also list any potential bad outcomes and they tell you who to contact in case you have any questions or concerns after the research is finished or in case you have any questions or concerns that cannot be answered by the researcher.

Present study: Is Violent Thinking Related to Violent Behaviour?

Eligibility: Heterosexual males, 18 years of age or older, who understand written English

Funding: The current project is funded by a University Medical Research Fund (UMRF), through the Royal Ottawa's Institute of Mental Health Research.

Research personnel. This study is being done by Sacha Maimone (PhD student, Department of Psychology, Carleton University, 613-520-2600, ext 2649; sachamaimone@cmail.carleton.ca) along with Dr. Kevin Nunes (Associate Professor, Department of Psychology, Carleton University, 613-520-2600, ext 1545; kevin.nunes@carleton.ca), Dr. Michael Seto (Michael.Seto@theroyal.ca; co-investigator and responsible site investigator; director of forensic research unit/forensic rehabilitation research at the Royal), and Dr. AG Ahmed (AG.ahmed@theroyal.ca; co-investigator; psychiatrist/associate chief of the Integrated Forensic Program at the Royal Ottawa Health Care Group and the Brockville Mental Health Center).

Concerns. If you have any questions or concerns about this study, please contact Kevin Nunes. If you have any concerns about ethics of the study, please contact Dr. Natasha Artemeva, Chair, Carleton University Research Ethics Board-B (by phone at [613-520-2600](tel:613-520-2600) ext. 4085 or via email at ethics@carleton.ca).

Purpose. We want to test if men who have been violent view violence more positively than men who have not been violent.

Task requirements. You will be asked to complete a survey online. It will take around 45-minutes. The survey includes some word matching tasks and questionnaires, some of which measure how people think about violence and others ask if you have behaved violently or would behave violently.

Benefits/compensation. You will be compensated for your time, except if you answered without paying attention (for example, giving the wrong answer for the attention-check questions, clicking the same button for every question, or finishing the survey much faster than most other participants), if you withdrew from the survey before the end of it, or if you are not an adult male living in North America. The amount and conditions of compensation are specified in your agreement with the company managing this survey panel.

Potential risk/discomfort. Because some of the questions ask about violence, some people may find them embarrassing or disturbing. For instance, some questions ask if you have ever assaulted someone. In addition, you will be presented with several provocative scenarios and asked to choose how you would respond in these scenarios. Some of the scenarios contain vulgar language that may be perceived as offensive; however, you are free to stop the survey at any time, not complete it, or refuse to answer any of the questions. At the end of the survey you will be given contact information for local support services that you may contact if you need or want help.

Anonymity/confidentiality. Participants are known to Qualtrics for the purposes of compensation, but their identifiers will not be linked to the survey data that the research team has access to. Therefore, we will not record any personal information in the survey and no other information that could be used to identify you can be matched with your survey answers. In other words, we will not be able to link your answers to your identity and we will not know who said what. IP addresses or any other information that could identify you will **NOT** be collected. The information you provide will be used only for research and teaching purposes.

Your data will be stored and protected by Qualtrics servers located in Toronto, but may be disclosed via a court order or data breach. The data for this study will be removed from the Qualtrics server after six months and will be stored on password protected computers and data keys in the Aggressive Cognitions and Behaviour Research (ACBR) Lab at Carleton University and will be accessible only to those working on this project and related future research. These data will be confidential and thus, no identifying information will be included in future research (i.e., publications and presentations) involving these data.

Right to withdraw. Whether you decide to do this study or not is your choice. At any point during the study, you have the right to not complete certain questions, or to withdraw. However, as mentioned above, you would not receive payment if you choose to withdraw from the survey or if your responses are deemed inadequate (i.e., if you answered without paying attention, complete the survey too quickly, answer all items with the same response, or skip the majority of questions). An option to withdraw from the survey will be given at the bottom of each page of the survey. If you wish to withdraw at any point, select the withdraw option and we will not use your data; but note that you cannot withdraw your data after you have finished the survey because we will not be able to find which answers were yours. Responses from participants who choose to withdraw will not be included in the final downloaded dataset or examined/analyzed in any way.

This study has received clearance by the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640).

Circle "I Agree" to show that you understand the information above and would like to participate in this study or "I Disagree" if you do not want to do the survey.

I Agree

I disagree

Appendix AK

Debriefing Form for Community Qualtrics Panel (Studies 3A and 3B)

Debriefing Form: Is Violent Thinking Related to Violent Behaviour?

Thank you very much for participating in this study. We hope the information below addresses any questions you may have.

Anonymity/confidentiality:

Data will be kept confidential. An assigned participant number will be used to link participants to their data. Only the participant number, rather than names, will be indicated on the data to protect confidentiality. Identifying information will be stored separately from the data. All identifying information will be destroyed after all participants have been compensated. A copy of the dataset will be kept indefinitely in the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University, stored on password protected computers and back-up hard drives.

Members of the ACBR lab may analyze these data for future research projects to be presented at conferences and published in journals. Presentations involving these data may also be given at the Royal Ottawa by a member of the research team (i.e., Sacha Maimone) to provide updates and further inform other researchers and treatment staff at the Royal Ottawa. As stated above, the data will be confidential and thus, no identifying information will be included in future research (i.e., publications and presentations) involving these data.

Importance of This Research to the Academic Community:

The categorization tasks (i.e., the Implicit Association Tests [IATs] and an Evaluative Priming Task), as well as some of the measures you answered, were designed to measure how positively or negatively you view violence. We are trying to see whether men who have been violent view violence more positively than men who have not engaged in violence. We are also interested in seeing whether the categorization tasks you answered are able to detect these differences and whether there is a relationship between the tasks and measures that were answered.

Importance of This Research to the General Public:

Violence has many negative outcomes for victims and the public in general. It is believed that violent cognitions play a central, and perhaps causal, role in violence. Therefore, finding more out about how people think about violence and establishing better ways of assessing this may help us to better understand why men behave violently.

Additional Resources if You Want to Learn More:

Please follow the link below for more information about violence from the American Psychological Association:

<http://www.apa.org/topics/violence/>

For information about attitudes towards violence, click on the link below to a relevant conference presentation:

<https://carleton.ca/acbrlab/wp-content/uploads/Nunes-2018-April-Violent-attitude-R-and-R-conference-keynote-handout-2018-04-11.pdf>

To learn more about the IAT, visit Anthony Greenwald's (the creator of the procedure) website at <http://faculty.washington.edu/agg/> or read:

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Also, visit the Aggressive Cognitions and Behaviour Research (ACBR) lab at Carleton University at <https://carleton.ca/acbrlab/> and

Relevant conference/poster presentations from the ACBR lab:

- [Maimone, S., Nunes, K. L., Balemba, S., Pettersen, C., Clermont, M., Staddon, M., & Frank, C. \(2015, June\). Exploring the relationship and direction of influence between attitudes, outcome expectancies, and violent behaviour. In K. L. Nunes \(Chair\), Violent cognitions. Symposium conducted at the 3rd North American Correctional and Criminal Justice Psychology Conference, Ottawa, Ontario, Canada.](#)
- [Hermann, C. A., Nunes, K. L., Ennis, L., Maimone, S., & Choy, A. \(2014, July\). Four approaches to measuring attitudes towards violence: Beliefs, explicit evaluation, outcome expectancies, and implicit evaluation. Poster presented at the 21st World Meeting of the International Society for Research on Aggression, Atlanta, Georgia.](#)
- [Nunes, K. L., & Hermann, C. A. \(2013, January\). Thinking clearly about violent cognitions: Exploratory factor analysis of scales designed to measure attitudes towards violence. Poster presented at the 14th Annual Meeting of the Society for Personality and Social Psychology, New Orleans, Louisiana.](#)

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If you feel any distress (e.g., feel sad or mad) as a result of this study, please visit the links below for a list of crisis hotlines and other resources:

Mental Health Today: +44(0)1273-434-943; E-mail: info@mentalhealthtoday.co.uk

<http://www.mental-health-today.com/resources/toll.htm>

Suicide prevention lifeline: 1-800-273-8255 (TALK) www.suicidepreventionlifeline.org/

Some resources in Canada: <http://www1.carleton.ca/health/emergencies-and-crisis/emergency-numbers/>

- Mental Health Crisis Services **(613)722-6914**
1-866-996-0991
- Good2Talk **1-866-925-5454**
- Distress Center of Ottawa and Region **(613)741-6433**
- Men & Healing **(613)482-9363**
- Aboriginal Suicide Prevention Lifeline **1-800-273-8255**
1-800-799-4889
TTY

List of resources by country: <https://www.suicideforum.com/crisis-lines-sites/>

This study has received clearance by the Carleton University Research Ethics Board - B (CUREB-B Clearance #108640), the Royal Ottawa Research Ethics Board (REB #2018006), and the Ministry of Community Safety and Correctional Services Research Ethics Board.

Thank you very much for making this research possible.

Appendix AL

Quality Control Questions for Study 3B

QC1.Demographics (Please select ‘No’. This is just to check if people are paying attention.)

Response options: *1 = No, 2 = Yes*

QC2.VESD (Please select ‘Right’. This is just to check if people are paying attention.)

Response options:

1 = Very wrong

2 = Wrong

3 = Somewhat wrong,

4 = Neutral

5 = Somewhat right,

6 = Right

7 = Very right

QC3.EVQ (Please select ‘Very good’. This is just to check if people are paying attention.)

Response options: *1 = Very bad, 2 = A bit bad, 3 = A bit good, 4 = Very good*

QC4.AQ-PA (Please select ‘Like me’. This is just to check if people are paying attention.)

Response options:

1 = Extremely not like me

2 = Not like me

3 = Neither not like me nor like me

4 = Like me

5 = Extremely like me

QC5.EVQLikelihood (Please select ‘Very likely’. This is just to check if people are paying attention.)

Response options: *1 = Very unlikely, 2 = A bit unlikely, 3 = A bit likely, 4 = Very likely*

Appendix AM

Table A1

Bivariate Correlations for Factors Found to be Significantly and Incrementally Related to Physical Aggression in Study 3C

Variable/Factor	AQ-PA	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
AQ-PA	-	.33***	.63***	.74***	.71***	.53***
Factor 1	.33***	-	.16***	.28***	.24***	.30***
Factor 2	.62***	.14***	-	.77***	.72***	.41***
Factor 3	.74***	.25***	.74***	-	.81***	.55***
Factor 4	.71***	.23***	.70***	.79***	-	.54***
Factor 5	.54***	.31***	.40***	.56***	.55***	-

Note. $N = 1,129$. Pearson's r correlations are reported above the diagonal and Spearman's rho correlations are reported below the diagonal. AQ-PA = Aggression Questionnaire–Physical Aggression subscale that was entered as the outcome to assess physical aggression in the regression analysis. Factor 1 = mostly cross-loading items and MCAA-R-V item 3. Factor 2 = remaining MCAA-R-V items, excluding MCAA-R-V items 3, 5, and 7. Factor 3 = all CAVS items. Factor 4 = all EVQ items. Factor 5 = VESD items, excluding VESD item 4 (because of issues with multicollinearity).

*** $p < .001$.

Appendix AN

Table A2

Bivariate Correlations for Factors Found to be Significantly and Incrementally Related to Likelihood of Violence in Study 3C

Variable/Factor	EVQ-Like	Factor 1	Factor 2	Factor 3	Factor 4	Factor 6
EVQ-Like	-	.29***	.71***	.76***	.80***	.18***
Factor 1	.33***	-	.16***	.28***	.24***	-.03
Factor 2	.69***	.14***	-	.77***	.72***	.15***
Factor 3	.76***	.25***	.74***	-	.81***	.17***
Factor 4	.81***	.22***	.70***	.79***	-	.14***
Factor 6	.16***	-.01	.15***	.17***	.14***	-

Note. $N = 1,130$. Pearson's r correlations are reported above the diagonal and Spearman's rho correlations are reported below the diagonal. EVQ-Like = EVQ-Likelihood version that was entered as the outcome to assess likelihood of violence in the regression analysis. Factor 1 = mostly cross-loading items and MCAA-R-V item 3. Factor 2 = remaining MCAA-R-V items, excluding MCAA-R-V items 3, 5, and 7. Factor 3 = all CAVS items. Factor 4 = all EVQ items. Factor 6 = four VE-IAT parcels.

*** $p < .001$.