

**Heterogeneity of Violent Offenders and the Implications for Correctional
Treatment: A Descriptive Profile and Examination of Treatment-Related Outcomes
and Executive Cognitive Functioning in Reactive and Instrumental Violent
Offenders**

by

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Abstract

Purpose: By merging neuropsychological theory and practice with forensic correctional tenets, the goal of the current thesis was to explore the profile of treatment-related outcomes and executive cognitive functioning (ECF) among reactive violent offenders and instrumental violent offenders. **Method:** Three studies were conducted to examine the following key areas: 1) the prevalence and profile of reactive and instrumental violent offenders in terms of demographic characteristics, offence types, static risk, criminogenic needs, and psychometric measures assessing constructs related to aggression ($n = 395$); 2) an examination of treatment-related variables, such as readiness to change, program completion rates, and release outcomes across violent offender subtypes; and 3) an examination of ECF in reactive and instrumental violent and nonviolent offenders ($n = 171$). **Results:** In terms of profile results, violent offender subtypes were differentiated regarding the severity of violence, degree of provocation, familiarity with victim, type of substance used, and emotional state during the incident. With respect to treatment outcomes, reactive violent offenders were more likely to drop out of correctional treatment; however, they had lower rates of return to custody relative to instrumental violent offenders. ECF was differentially related to offender subtypes; specifically, reactive violent offenders were more deficient relative to nonviolent offenders. **Conclusion:** Many of the findings are preliminary, and as such, further replication is required. Given the differential results related to substance abuse, assessment of risk, program outcomes, and ECF, differential treatment programs for violent offenders are an important direction to consider in future program development.

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Introduction

Violent crime is associated with substantial economic and human costs to society. An examination of the costs associated with violent crime in Canada reported that assaults, homicide, robbery, criminal harassment, and sexual assault had an economic impact of nearly 13 billion Canadian dollars (CAD) in 2009 (Easton, Furness, & Brantingham, 2014). Further, the economic cost of crime increased by 15% from 2006–2012 despite a consistently declining rate of crime (Story & Yalkin, 2013).

The overall police-reported crime rate in Canada has steadily decreased over the last decade, with a 3% decline in 2012 (Perreault, 2013). The rates of the most violent crimes in Canada have also decreased, albeit it with some exceptions. Specifically, rates of sexual assault, homicide, assaulting a peace officer, and robbery-related offences decreased, whereas violent firearm offences, other non-homicide offences causing death (e.g., criminal negligence causing death), extortion, and sexual offences against children increased. Although assault-related changes and kidnapping-related offences decreased from 2011–2012, the rates remained 6–16% higher than in 2002 (Perreault, 2013).

Nearly 70% of incarcerated offenders in Canada's correctional system are serving a federal sentence for a violent offence (Public Safety, 2013). Consequently, effective correctional treatment programs addressing violent behaviour are essential to eradicating institutional violence and to decreasing future violent reoffending. Given the exorbitant human and economic cost of crime, the objective of this study is to contribute to the understanding of violent behaviour by examining theoretically defined subtypes of violent offenders and their underlying cognitions and motivations. Conceivably, a better understanding of the cognitions of violent offenders and their motivation for violence will

inform treatment options for violent offender subgroups, thereby improving the efficacy of correctional violence prevention programs.

The following literature review begins with the challenges in defining violence and aggression in general and their subtypes specifically. This will outline the primary efforts to classify subtypes based upon motivation, affect, and provocation. Then, the core tenets of selected theories of aggression will be discussed in an effort to understand reactive and instrumental aggressive behaviour. Subsequently, factors known to be associated with violent offending and its subtypes will be reviewed, with a focus on social problem solving, substance abuse, and executive cognitive function (ECF). Finally, treatment outcomes and treatment readiness in relation to violent offenders are discussed.

Defining Violence and Aggression

Despite the frequency with which aggression and violence are a focus of academic investigation, consistent definitions of these terms remain elusive. Interpersonal aggression and violence have been studied from various theoretical perspectives (Bandura, 1973; Berkowitz, 1989, 1993; Lorenz, 1966; Hollin & Bloxson, 2007) and are understood to be influenced by numerous environmental, social, neurobiological, and cultural features (Anderson & Bushman, 2002; Eron, 1987). Both theoretical and practical in approach, these varying perspectives have unintentionally obscured the development of overarching, inclusive, and precise definitions of aggression and violence. That is, despite a plethora of research and knowledge focusing on aggression and violence, there is little consensus regarding the various elements defining aggression and/or violence, such as intent, motivation, and severity (Stanford et al., 2003).

Aggression is defined as “any behaviour directed toward another individual that is carried out with the proximate (immediate) intent to cause harm. In addition, the perpetrator must believe that the behaviour will harm the target and that the target is motivated to avoid the behaviour” (Anderson & Bushman, 2002, p. 28). Harm in this definition can encapsulate various types of harm, including emotional, psychological, or physical harm (Hollin & Bloxson, 2007). This definition is sufficiently broad in scope as to include indirect aggressive behaviour, such as relational and verbal aggression, as well as more physically aggressive acts, such as violent threats or assault. Also, imbedded in the definition is the requirement that the behaviour be carried out with the intent to cause harm regardless of the actual outcome. Given this requirement, behaviours that are deemed accidental (e.g., impaired driving causing bodily harm) are generally not considered to be aggressive or violent acts, given the lack of intent to harm.

Violence is considered to be a more severe form of aggression in which harm is intentionally inflicted (Anderson & Bushman, 2002; Reiss & Roth, 1993). Absent from the literature is a description of the point at which an aggressive act is considered a violent act. There are behaviours that are clearly violent (e.g., murder, physical assault); however, there are other cases (e.g., uttering threats to cause harm, attempted robbery) whereby the distinction is less clear and classification is more challenging. Reiss and Ross (1993) described violence as “behavior by individuals that intentionally threaten, attempt or inflict personal harm on others” (p. 2). Again, this definition includes the intent to harm but also broadens the type of behaviour to include threats of harm, where intent to harm may not be assumed. Evident from these definitions is that all violent

behaviour can be categorized as aggressive; however, not all aggressive behaviour is violent (Anderson & Bushman, 2002).

Furthermore, in the extant forensic psychology literature, behaviour liable to be punished by the courts (e.g., assault, kidnapping, robbery) is typically classified as violent behaviour. Conversely, other harmful behaviour that is primarily psychological or emotionally damaging in nature (e.g., name calling, spreading rumours) is not typically punished by the courts and is more commonly deemed to be aggressive behaviour (Megargee, 1982; Patrick & Zempolich, 1998). The focus of this dissertation is on violent behaviour within an offender sample; therefore, the definition of violence based upon the punitive aspects of the behaviour was utilized. Further, this operationalization of violence is congruent with Reiss and Ross' (1993) definition of violence, which includes the intent to harm and threats of violence.¹

Heterogeneity of Violence

There have been numerous attempts to distinguish subtypes of violent behaviour in offender and non-offender samples; however, the basis of differentiating subtypes has varied considerably amongst studies, with the most common distinctions based on differences in the form or function of the aggression (e.g., Cornell et al., 1996; Dodge, 1991; Moyer, 1976).

In terms of the form of aggression, classifying aggressive subtypes has been based upon whether the behaviour was physical versus non-physical (Tremblay, 2002), active (hitting another person) versus passive, direct versus indirect (Buss, 1961), overt versus

¹ Although *violence* is the focus of this study, when reporting results from studies described in the literature, the original terminology utilized by the author will be maintained (i.e., aggressors) despite its application to violent offenders in the current study.

covert (Buss, 1995), and relational versus social (see Parrot & Giancola, 2007; Ramirez, 2009; see Ramirez & Andreu, 2003 for an overview of classifications of aggressive behaviour based on form).

Subtypes based upon the function of aggression examine the reasons for the violent act or the motivation underlying the behaviour. For example, violent behaviour is defined differently in a situation whereby an individual is defending him or herself from a perceived attack versus using violence to obtain money or enact revenge. Although varied in nomenclature, two overarching and multifaceted typologies emerge in terms of classifying aggression based on function: 1) affective-impulsive-hostile-reactive violence is an emotionally driven, impulsive form of aggression in response to perceived provocation, and 2) premeditated-instrumental-predatory-proactive violence is an unprovoked aggressive act to meet a predefined goal or objective (i.e., the goal is unrelated to the violent action, for example, finances, power, drugs, sex).

Ramirez (2009, 2011) provided an overview of varying dichotomous conceptualizations for aggression subgroups based on function as reported in the literature. Comparisons were made between the following subtypes: instrumental and hostile aggression, proactive and reactive aggression, and impulsive and premeditated aggression. Although differences emerged with respect to the components examined in each model (i.e., inclusion of additional factors such as cognitive aspects and physiological and biological elements, which varied by sample), Ramirez concluded that the various conceptualizations are congruent in terms of how they differentiate subtypes (e.g., motive, planning) (Ramirez, 2009, 2011).

A two-factor model of aggression is the most common classification utilized in distinguishing violent offender subtypes (Barratt, 1991; Barratt, Stanford, Dowdy, Liebman, & Kent, 1999; Barratt, Stanford, Kent, & Felthous, 1997; Dodge & Coie, 1987; Feshbach, 1964; Kingsbury, Lambert, & Hendrickse, 1997; Ramirez, 2009; Stanford et al., 2003; Vitiello et al., 1990; Weinshenker & Siegel, 2002), albeit a handful of researchers have proposed more than two subgroups (Barratt et al., 1999; Stanford et al., 2003; Woodworth & Porter, 2002). Given its frequency in the literature on violent criminal behaviour, the reactive–instrumental distinction will be utilized in the current study (Murrie, Cornell, Kaplan, McConvill, & Levy-Elkon, 2004; Woodworth & Porter, 2002).

Importantly, there are a number of key elements that differentiate subtypes of aggressive behaviour, and these elements will be reviewed in an attempt to aid in conceptualizing violent offender subtypes. This is followed by a brief discussion of areas of divergence within the classification of violent behaviour.

Premeditation or planning. A key differentiating factor between subtypes is the degree of planning/premeditation of the aggressive act. Instrumental aggression typically involves some degree of planning or premeditation related to the incident (e.g., purchasing a weapon and clothing for a robbery). This is in contrast to a reactive aggressive incident, which typically occurs impulsively with little to no degree of planning or forethought (Cornell et al., 1996).

Perceived provocation. Another distinguishing factor is the presence or absence of a perceived provocation and the presence or absence of negative affect (e.g., hostility, anger). Specifically, for reactive aggressors, the perception of a threat (physical or

verbal) to the offender is the precipitating factor for aggression. This is in contrast to instrumental aggressors, whereby the primary objective is goal-driven and is not based on perception of provocation (Cornell, 1996).

Goal directedness. The presence or absence of a goal external to the aggressive act is another key element. Bushman and Anderson (2001) describe the difference in terms of the primary versus secondary goal of the incident. In a hostile aggressive incident, whereby someone is provoked (e.g., bumping into someone in a crowded bar), the primary goal is to defend him or herself against the antagonist. Conversely, in an instrumentally aggressive incident, the primary goal is not to defend but rather to meet an objective (e.g., obtain money or desired objects), and aggression or violence is the “means to obtain this objective” (e.g., violent robbery) (Bushman & Anderson, 2001).

Anger or arousal level. Finally, an individual’s level of emotional arousal is another cardinal characteristic or common distinction in violent subtypes. The presence of anger or hostility, often as a result of interpersonal conflict, is a differentiating characteristic of reactive versus instrumental aggression. Reactive aggression is also referred to as “hot-blooded” aggression (Ramirez, 2009). This is in contrast to instrumental aggression, which is “motivated by goals, not emotions” and is consequently referred to as “cold-blooded” aggression (Cornell et al., 1996; Ramirez, 2009).

Evidence Refuting the Two-Factor Model of Aggression

Bushman and Anderson (2001) argued against this classification within the framework of the model—that is, they contended that a bimodal approach is an unrealistic depiction of violence, as real-world events are seldom purely instrumental or purely reactive (Bushman & Anderson, 2001). There are numerous contributing factors

to each incident, and given the multitude of events, factors, and characteristics that influence the outcomes of an incident, a bimodal classification system is unreliable because the boundaries for each subtype are not distinct. For example, when considering the characteristic of information processing as a distinguishing factor, one would classify the process in reactive aggression as impulsive, uncontrollable, and automatic, whereas instrumental aggression would be classified as premeditated and calculated. Further, instrumental aggressors have acquired scripts supporting the use of violence for achieving goals, but the scripts may include elements of anger and hostility, which are generally associated with reactive aggression. However, their inclusion within “instrumental” falls under the notion that scripts are often automatized. Therefore, classifying offenders based upon the characteristics of information processing confounds the subtypes, as reactive aggression is not always automatic, nor is instrumental aggression always controlled (Bushman & Anderson, 2001).

Further, it has been asserted that classifying violent incidents as either subtype is not generally problematic; however, if one was to consider an individual’s entire history of violence, the classification becomes more difficult, as classifying multiple offences increases the variability across multiple events. Additionally, the varying levels of violent history add another layer of complexity to classifying behaviour. In some cases, categorizing an individual within a mixed-history category is a viable option (Cornell et al., 1996; Vitiello, 1990).

Along similar lines, Woodworth and Porter (2002) purported that violent behaviour is not purely bimodal and conceptualized that it falls on a continuum ranging from purely

reactive to purely instrumental. A mixed-motive dimension also falls in the middle of the continuum, and as such, the authors proposed a four-factor model of aggression.

To recap, based on these differentiating criteria, reactive aggression is characterized as an impulsive, emotionally charged response to a perceived threat type, whereas instrumental violence is depicted as a controlled, unemotional, goal-oriented, and often planned act of physical violence (Stanford et al., 2003). Despite the similarities, discrepancies exist in the classification of violent subtypes in terms of classifying specific behaviour (e.g., revenge) and whether subtypes should be placed into precise dichotomous categories or fall on a continuum.

Theoretical Support for Violent Offender Subtypes

Numerous theoretical models provide a framework for understanding violent and aggressive behaviour in general terms. Such models include cognitive neoassociation, excitation transfer, the frustration–aggression hypothesis, and social learning, all of which have proposed adequate explanations for aggressive behaviour and factors under which aggression or violence is expressed (Bandura, 1973, 1977, 2001; Berkowitz, 1989, 1990, 1993; Dollard, Doob, Miller, Mowrer, & Sears, 1939; Mischel, 1973; Mischel & Shoda, 1995; Zillmann, 1983). Among these theories, many central tenets provide support and further explanation for differentiating violent offender subtypes. Two key theories are discussed in the context of subtypes of violence: the frustration–aggression hypothesis and social learning theory.

The frustration–aggression hypothesis infers that the propensity for aggressive or violent behaviour increases when an individual experiences negative affect in response to an external frustration or social stress (e.g., threats, humiliation) as a result of another

individual's actions (Dollard et al., 1939; Berkowitz, 1989, 1990, 1993). Not all scenarios involving external stress result in an aggressive response, as individual differences and contextual factors such as threat of punishment and prior learning influence the outcome. For example, aggression may occur if an individual has limited self-control and perceives the antagonist's behaviour to be provocative or aggressive. Conversely, aggression may be inhibited in a situation of provocation if an individual has a low self-efficacy for aggression, high self-control, or a perception that the likelihood of punishment is high. This theory supports the conceptualization of reactive aggression and speaks to the individual factor, which may inhibit or increase the likelihood of an aggressive response.

Bandura's (1973, 1977, 2001) theory of social learning proposed that much of human behaviour, including violence, is acquired through socialization and is driven by expected outcomes. Developmentally, behaviours are learned through observing the positive (reinforced) and negative (punished) consequences of behaviours. Bandura asserted that an individual's violent behaviour is developed from previous observational and experiential learning that aggression is rewarding. As such, the positive expectancies associated with aggression increase the likelihood of engaging in such behaviour. Another factor augmenting the likelihood of aggression may include high self-efficacy for aggression. Conversely, an individual may also associate aggression with punishment and therefore be inhibited from future aggressive acts. This framework implies that violence is primarily instrumental in nature, as it is regulated by positive expectancies for aggression and provides distinct support for the conceptualization of instrumental aggression.

Many of the models of violence and/or aggression, however, are domain-specific and are limited in their explanation of violence and its genesis, as in the case of social learning theory and the frustration–aggression hypothesis. That is to say, although social learning theory lends support for instrumental aggression, it fails to provide support for reactive aggression. Similarly, while the frustration–aggression hypothesis provides support for the underlying factors related to reactive aggression, it offers limited explanation for instrumental or proactive aggression.

Social Information Processing within Reactive and Instrumental Violence

Crick and Dodge (1994, 1996) conducted pioneer research related to social cognitive processing in reactive and proactive aggression in children. Although initially developed and subsequently validated in the developmental literature relating to aggression, the conceptual framework informs patterns of ineffective social information processing in adults as well (Gannon, Ward, Beech, & Fisher, 2007). The model describes a series of sequential stages through which individuals progress when encountering a social situation: 1) encoding of cues involves the perceptions and encoding of the situation and social cues in the environment, 2) interpretation of cues involves the evaluation and development of attributions or interpretation of the cues, 3) clarification of the goals of the social situation that impacts arousal levels (e.g., obtaining a desired object, getting revenge), 4) response access or construction involves either the retrieval of potential response options from previous knowledge or experience (social schemas, knowledge, experiences, acquired rules) or the construction of a newly formulated response for the given situation, 5) response decision involves the evaluation

(perceived outcomes, self-efficacy) and selection of a response, and 6) behavioural enactment involves the initiation of the selected response (Crick & Dodge, 1994).

Decades of research and meta-analytical reviews have consistently demonstrated that aggressive children have greater social cognitive deficits and distortions (Dodge, 1986; Yoon, Hughes, Gaur, & Thompson, 1999). For example, aggressive children remember, focus on, and perceive more aggression-relevant stimuli than nonaggressive children (encoding stage) (e.g., Dodge & Frame, 1982; Lochman & Dodge; Losel & Beelmann, 2005); aggressive children are more likely to attribute hostile intentions to others than nonaggressive children (interpretation of cues) (e.g., Coie, Dodge, Terry, & Wright, 1991; Slaby & Guerra, 1988), and aggressive children have more self-efficacy and more positive outcome expectancies for aggression (e.g., getting revenge, money) (e.g., Coie, Dodge, Terry, & Wright, 1991; Slaby & Guerra, 1988). Further, aggressive children generate more hostile and aggressive response options than nonaggressive children (Beelmann & Losel, 2004; Losel & Beelmann, 2005).

Despite that the vast majority of the theoretical groundwork within this domain is being conducted within the developmental literature, there is sufficient evidence to support the information-processing model within adults—more specifically, adult offenders. For instance, Bettman (1998) assessed the social information-processing model in 208 male offenders with extensive criminal histories. Offenders were asked to describe how they would respond to a series of hypothetical situations. The results indicated numerous types of deficits amongst the offenders. Within offenders who indicated that they would respond violently in the hypothetical scenario, two key encoding deficits emerged: 1) an indication of an intention to react immediately to the

incident (i.e., impulsively), and 2) an indication of anger in response to the situation. Further, offenders demonstrated interpretative deficits, difficulties in goal clarification, and generation of alternative solutions. Specifically, offenders indicating that they would resort to violence attributed more hostile intentions to the antagonist, selecting hostile goals and offering fewer effective solutions to resolve the situation. Overall, deficits in information processing accounted for a considerable amount of variance in predicting violent responses, predicting fights, and violent convictions (Bettman, 1998; Serin & Brown, 2005).

Research has indicated that the attributions of violent offenders are different from nonviolent offenders in that they tend to be more violent in their underlying attitudes (Serin, 1991). Further, Serin and Kuriychuk (1994) proposed a framework whereby the combination of impulsivity or disinhibition and a hostile self-schema increases the propensity for violence. Therefore, deficits in the processing of information, be it social problem solving or social information processing, influence the likelihood of violence, especially in combination with negative attributions.

Within the same vein, Seager (2005) examined the relationship between impulsivity and a self-schema for a hostile world in persistently violent men. Significant positive correlations emerged, indicating that high levels of impulsivity were related to high self-schema for a hostile world. Additionally, impulsivity was positively correlated with all measures of violent behaviour. Regression analyses indicated that the combination of a hostile schema and impulsivity significantly increased the likelihood of violent behaviour, thereby supporting the impact of hostile attributions to violence.

Polaschek, Collie, and Walkey (2004) devised a 20-item scale assessing attitudes toward violence. The Criminal Attitudes to Violence Scale (CAVS) successfully distinguished between offenders with a history of violence (past or present) and those with no violent histories, indicating the significant presence of violent-supportive attitudes in the former group. Moreover, the CAVS moderately predicted risk of reconviction and re-incarceration (Polaschek et al., 2004).

Polaschek, Calvert, and Gannon (2009) extended their work by conducting a series of qualitative studies examining schemas in violent offenders. The results indicated violent offenders report a number of specific schemas relating to violent behaviour—specifically, the acceptance and normalization of using violence to maintain or achieve status (beat or be beaten), the belief of an entitlement to harm others (I am the law), and the schema related to poor self control. These findings support previous attempts to isolate specific schemas or attitudes toward violence (e.g., Nisbett, 1993; Toch, 1992). The authors used the findings of their qualitative study to develop a behavioural rating form intended to assess implicit theories of individuals from their narratives and discussions (Polaschek et al., 2009).

A negative schema or script is the key to deficits in social information processing (Collie, Vess, & Murdoch, 2007; Guerra & Slaby, 1990; Serin & Brown, 2005). Specifically, schemas are “clusters of beliefs, attitudes, and other major forms of cognition associated closely together in enduring networks as a result of experience and learning” (Collie, Vess, & Murdoch, 2007, p. 180; Huesmann, 1998). Scripts contain information about how people typically respond to or behave during certain events and the common outcomes that result (Huesmann, 1998). Furthermore, scripts and schemas

are influential in processing social information. In line with the current discussion, violent thoughts, attitudes, or scripts therefore influence the processing of information, potentially contributing to violent behavioural outcomes (Collie, Vess, & Murdoch, 2007).

It is apparent from the aforementioned literature that deficits in social information processing are key elements that are associated with aggressive and/or violent behaviour in general. It is evident that aggression can occur as the result of deficits at any level throughout the information-processing stages; however, aggression subtypes in children have been distinguished by deficits at different stages in the social information-processing model.

A review conducted by Hubbard, McAuliffe, Morrow, and Romano (2010) provided an overview of specific stages in social cognitive processing that differ by subtype. With respect to reactive aggressors, the most prominent social cognitive error is a hostile attribution bias—that is, reactive aggressors, relative to proactive or instrumental aggressors, are more likely to infer a hostile intent to another individual in an “ambiguously provocative situation” (e.g., Crick & Dodge, 1994; 1996; Nas, Orbio de Casatro, & Koops, 2005). Further, reactive aggressors are less able to recall and describe social cues in a situation, thereby inhibiting their capacity to process all of the necessary social information in their formulation of their behaviour (e.g., Dodge, Lochman, Harnish, Bates, & Pettit, 1997). In addition, reactive aggressors have demonstrated greater difficulty generating nonaggressive solutions to social problems, as aggressive responses for reactive aggressors are more common than proactive aggressors (e.g., Dodge & Coie, 1987; Dodge et al., 1997).

Essentially, reactive aggressors have difficulty with the early stages of social information processing, in particular, processing at the encoding and interpretation stage. This is especially the case in ambiguous provocation situations whereby hostile attributions and missing key social cues contribute to aggressive outcomes (Fontaine, 2008).

Conversely, proactive aggressors demonstrate deficits in the later stages of social information processing, primarily in terms of goal clarification and perceived outcomes. For instance, proactive or instrumental youth are less likely to attribute negative consequences to aggression but are more likely to attribute positive outcomes to their violent behaviour relative to nonviolent youth (Crick & Dodge, 1996; Dodge & Coie, 1987; Dodge et al., 1997; Fontaine, 2008; Hancock, 2014). That is, proactive aggressors are more likely to endorse the belief that using aggression will assist with achieving personal goals (material, territorial, social) (Hubbard et al., 2010). Further, proactive aggressors are more likely to report higher levels of self-efficacy in carrying out an aggressive act relative to reactive aggressors. Elevated levels of self-efficacy further influence the likelihood of an aggressive act, given that it is perceived as an effective means for meeting one's goals (Crick & Dodge, 1996; Dodge et al., 1997; Hubbard et al., 2010).

Additionally, in line with positive expectancies of using aggression as a means to an end, there is evidence to suggest that, in youth, instrumental aggressors are more likely to "choose" meeting their own needs (e.g., material, territorial, social) over maintaining positive social interactions by not engaging in an aggressive action. That is, for proactive aggressors only, instrumental goals are prominent in determining a response option, and

social goals or maintaining social relations are secondary (Crick & Dodge, 1996; Dodge et al., 1997; Hubbard et al., 2010).

Overlapping with the concept of social information processing is social problem solving. A subcategory of social cognition, social problem solving has a reported influence on violent behaviour. When we encounter difficult social situations, we mainly utilize one or more of the following processes: 1) discuss the problem and its constraints and generate a collection of possible plans of action (“alternative thinking”), 2) consider the possible consequences that result from each plan of action (“consequential thinking”), 3) plan a method to achieve the favoured outcome (“means–end thinking”), and 4) decide whether we have the resources to act accordingly to achieve the favoured outcome (Howells, 1986).

When examining research within offender populations, it is noted that problem-solving deficits are present among various types of offenders. Examples include offenders with mental disorders (McMurrin, Egan, Richardson, & Ahmadi, 1999), sex offenders (Grier, 1988), and violent offenders (Crick & Dodge 1994, 1996; Serin & Brown, 2005). In the current study, the author is interested in social problem solving as it relates to offending, in particular, subtypes of violent offending. Research on aggressive adolescents suggests that these youth produce fewer solutions to problems and that the solutions they do produce are poor, ineffective, and more aggressive than the solutions of their nonaggressive counterparts (Evans & Short, 1991). Among adult violent offenders, research suggests that aggressive offenders utilize a smaller range of “alternative thinking” to solve problems, consider less the consequences of their actions, and rely more on physical and verbal aggression than on nonaggressive controls (Hains & Ryan,

1983; Slaby & Guerra, 1988; Guerra & Slaby, 1990). Further, Howells (1986) provided evidence to suggest that violent offenders may have difficulty with social skills; in particular, it is thought that when an individual encounters a social problem, it is a combination of frustration and a lack of “alternative thinking” that causes the individual to resort to violence.

Since social problem-solving deficits may be implicated in the maintenance and use of aggression and violence, examining interventions addressing this issue is important. Kazdin, Esveldt-Dawson, French, and Unis (1987) examined the efficacy of a social problem-solving skills program on conduct/antisocial-disordered children (7 to 13-year-olds). Notable results included reductions in aggression and overall problem behaviour at school and at home. The results were maintained at a one-year follow-up (Kazdin et al., 1987). Evaluations of social problem-solving programs for aggressive adolescents have generated similar findings. Guerra and Slaby (1990) assessed the ability of a cognitive mediation intervention program for aggressive offenders to alter social problem-solving skills and subsequent aggressive institutional behaviour. The results supported an increase in social problem-solving skills, a decrease in the endorsement of aggressive and hostile beliefs, and a reduction in aggressive and impulsive behaviour, as rated by staff. With respect to adults, the Correctional Service of Canada’s (CSC) Violence Prevention Program (VPP) integrates theories of social information processing and social learning theory. Correctional treatment programs such as reasoning and rehabilitation (R&R) and enhanced thinking skills (ETS) (Robinson, 1991; Robinson, 1995; Ross, Fabiano, & Ross, 1986; McGuire, 2000) provide training on social problem-solving skills as part of a general cognitive skills treatment program. Evaluations of such programs demonstrate

success in improving offenders' problem-solving abilities and subsequent recidivism. More specifically, for the treated group, pre- and post-intervention difference scores on an impulsivity measure were greater than the difference scores of the control group. With respect to recidivism, treatment resulted in a reduction in reconviction of 20% and a reduction in recidivism of 35% when examining high-risk violent offenders on their own (Robinson, 1991; Robinson, 1995). Since deficiencies in social problem solving may lead to violent and aggressive criminal behaviours, treatment programs teaching social problem-solving skills show promise in decreasing aggression, both in youth and in incarcerated adult offenders (Guerra & Slaby, 1990; Robinson, 1991; Robinson, 1995).

The aforecited summary on problem solving, attitudes, scripts, and schemas is not a complete and comprehensive description of the available literature regarding these constructs and their contribution to violent behaviour; however, it is intended to illustrate the increased inclination of violent offenders to interpret their world more negatively by way of their schemas and beliefs and how this in turn influences outcomes and subsequent types of violent behaviour.

Attempting to unify many of the domain-specific models of aggression into a comprehensive framework, Anderson and Bushman (2002) proposed the General Aggression Model (GAM). This model acknowledges biological, environmental, social, and psychological factors that influence aggression, and it aids in distinguishing between aggression subtypes.

The GAM suggests that affect, arousal, and cognition mediate the situational and personological variables in aggression. *Personological variables* include such things as personality traits, gender, beliefs, attitudes, values, and scripts. *Situational variables*

include aggressive cues, incentives, pain and discomfort, provocation, frustration, and drugs or alcohol use. The routes by which situational and personal variables influence behaviour are described as *present internal states* that capture cognition, affect, and arousal related to aggression. For example, trait hostility (cognition) and alcohol consumption (situational) interact to influence the accessibility of aggressive thoughts and/or behaviour (Anderson & Bushman, 2002).

In terms of accounting for aggressive subtypes, based on previous existing models of aggression, there are key situational and personal factors that influence each type of aggressive act. For example, in terms of situational cues, provocation, frustration, and aggressive cues increase the likelihood of reactive aggression; conversely, incentives (e.g., money, power) facilitate instrumental aggression. Personal factors related to reactive aggression include negative affect, elevated arousal, trait anger, and hostile attribution, whereas personal beliefs related to self-efficacy may increase the likelihood of instrumental aggression (Anderson & Bushman, 2002). Personal and situational factors affect “cognition” by way of influencing the accessibility of hostile thoughts and scripts. Both “affect” (moods and emotions) and “arousal” are influenced by inputs in a similar fashion—all three are interconnected. For example, cognition and arousal influence affect, and affect influences cognition and arousal (Anderson & Bushman, 2002).

Outcome is the final stage of the model and involves information processes, both automatic and controlled, that determine the final action of the encounter. The exact response would differ for each person based upon his or her personality and his or her state of mind. An appraisal can result in a “thoughtful action” if the person has sufficient

resources (time, cognitive capacity), or it can result in an impulsive action if the resources are insufficient: the former, if goal-oriented, may inform instrumental violence, whereas the latter is reactive by nature.

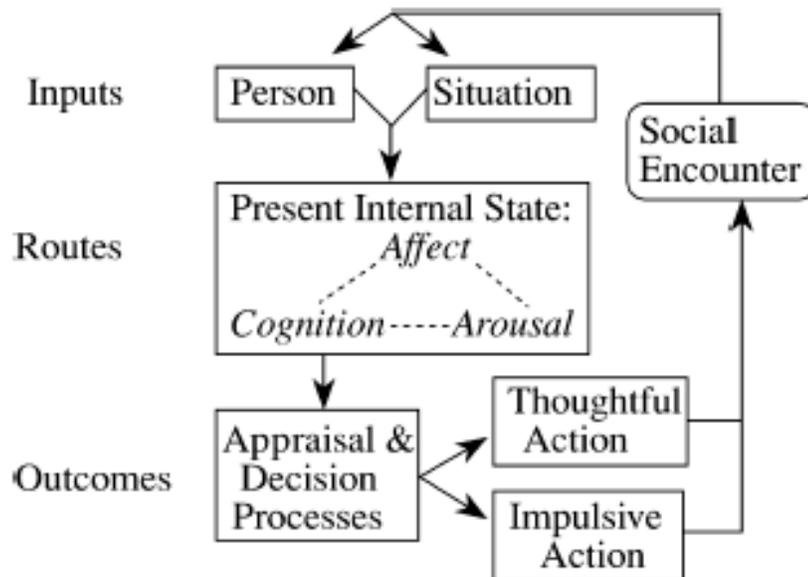


Figure 1. The GAM.

The GAM focuses on the “person in the situation” and consists of one cycle of an ongoing social interaction. There are three main areas of discussion in any given social interaction: 1) personal and situational inputs; 2) the cognitive, affective, and arousal routes through which these input variables have their input; and 3) outcomes of the underlying appraisal and decision processes (adapted from Anderson & Bushman, 2002).

Anderson and Bushman’s (2002) model serves as a general framework to integrate many of the specific aggression theories into the literature.

Violent Subtypes and their Correlates

Despite the contentions in the aforementioned literature, there is an abundant body of literature in support of a classification of violence, be it on a continuum or bimodal. The subsequent review examines various correlates of factors that are related to the dimension of each subtype of violent behaviour.

Psychiatric Disorders and Reactive and Instrumental Violence

Psychiatric disorders in relation to violent behaviour are not the primary area of focus in the current study; however, there are a number of areas that are relevant to the current discussion. Subtypes or specific patterns of violent behaviour are clinically relevant to a number of psychiatric disorders (Stanford et al., 2003). For example, aggressive behaviour is a required element for Intermittent Explosive Disorder (IED) (American Psychiatric Association, 2000). However, the criteria include “several discrete episodes of failure to resist aggressive impulses that result in serious assaultive acts or destruction of property”; further, “the degree of aggressiveness expressed during the episodes is grossly out of proportion to any precipitating psychosocial stressors” (American Psychiatric Association, 2000, p. 612). These criteria imply a very reactive behavioural response that is unpredictable and typical of individuals classified within the subtype of reactive aggression. Monroe (1978) describes “episodic dyscontrol,” the earlier terminology for IED, as an outcome of a self-regulation or “urge control” mechanism whereby an individual is overwhelmed by stimuli in the environment and acts impulsively in response to a perceived threat. Broadly speaking, research regarding impulsive aggressors has been associated with elevated levels of anger, hostility, guilt, and personality disorders (Chase, O’Leary, & Heyman, 2001; Miller & Lynam, 2006; Shoham, Askenasy, Rahav, & Chard, 1989; Tweed & Dutton, 1998).

With respect to specific psychiatric correlates of aggression, empirical support indicates that impulsive violent behaviour (from forensic and non-forensic samples) is more related to psychological distress and disorders. For example, within domestic abusers, the proportion of personality-disordered offenders was greatest amongst impulsive aggressors (Tweed & Dutton, 1998). Similarly, in domestic abusers classified by the degree and type of violence (impulsive or premeditated), greater levels of psychopathology were present in impulsive domestic abusers relative to instrumental domestic abusers (Stanford, Houston, & Balbridge, 2008). Moreover, other associations with high levels of anger, neuroticism, and hostility have been reported to be present amongst impulsive aggressors (Chase, O'Leary, & Hayman, 2001; Galvoski & Blanchard, 2002; Gauthier, Furr, Mathias, Marsh-Richard, & Dougherty, 2009; Miller & Lynam, 2006; Shoham, Askenasy, Rahav, Chard, & Addi, 1989; Swogger, Walsh, Houston, Cashman-Brown, & Conner, 2010).

Premeditated aggressors report fewer mental health issues with respect to psychopathology; however, extensive empirical research supports higher levels of psychopathy in premeditated aggressors in adults and youth (Cornell, Warren, Hawk, Stafford, Oram, & Pine, 1996; Flight & Forth, 2007; Murrie, Cornell, Kaplan, McConville, & Levy Elkon, 2004; Vitacco et al., 2006). Offenders classified as premeditated aggressors based on offence history exhibited higher psychopathy scores than individuals classified as impulsive aggressors (Cornell et al., 1996).

Recognizing potential correlates of psychiatric disorders and violent offender subtypes, Swogger, Walsh, Houston, Cashman-Brown, and Conner (2010) sought to explore this area further by examining psychopathy and Axis I disorders in impulsive and

proactive aggressors. Utilizing the Impulsive, Premeditated Aggression Scale (IPAS) to assess aggression subtypes, 95 individuals (71 males, 24 females) were assessed via the Psychopathy Checklist–Revised (PCL-R) (Hare, 2003) and the Psychiatric Diagnostic Screening Questionnaire (PDSW) (Zimmerman & Mattia, 2001). The IPAS assesses both impulsive and premeditated aggression on a continuum for each individual. This is in contrast to other attempts at classification whereby individuals are dichotomized into one group based on offence history. Correlations were conducted to assess the magnitude and direction of the relationships between psychopathy, psychiatric diagnoses, and each subtype of aggression. Supporting previous research, premeditated aggression scores correlated with the overall psychopathy score. Results for impulsive aggressors indicate significant positive relationships with alcohol use, post-traumatic stress disorder (PTSD), generalized anxiety disorder (GAD), and psychopathy. Interestingly, in further examining the subscales of psychopathy, although both subtypes of aggression were related to the overall PCL-R scores, impulsive aggression only related to Factor 2 (F2), and premeditated aggression solely related to Factor 1 (F1). As previously stated, F1 of the PCL-R represented the callous, manipulative, and unemotional interpersonal style stereotypic of a psychopathic personality type. Logically, then, F1 is most related to a premeditated aggression and is in line with previous literature with a general offender sample (Walsh, Swoogger, & Kosson, 2009) and a sample of offenders who have committed homicide (Woodworth & Porter, 2002). In the same way, F2 represents the antisocial components of psychopathy, examining such factors as impulsivity, disinhibition, and general deviance.

Therefore, as maintained in the extant literature, F2 is most related to impulsive or reactive aggression, as affect, especially negative affect, contributes greatly within this subtype. The inability to inhibit negative affect in impulsive aggressors is central to patterns of offending. Significant clinical issues support the positive relationship between PA and psychopathy.

Substance Use and Violent Behaviour

Substance use, in particular the consumption of alcohol prior to the perpetration of a violent crime, has been reported in a multitude of epidemiological and experimental studies examining violent behaviour (Bushman & Cooper, 1990; Murdoch, Pihl, & Ross, 1990; Pihl, Lau, & Assaad, 1997). Alcohol use has been implicated in 42% of violent crimes, including homicides, assaults, domestic violence, and sexual assaults (Pernanen, 1991). A review of research from 11 countries by Murdoch, Pihl, and Ross (1990) identified alcohol as a factor in 63% of violent crimes. That is, the majority of offenders convicted of violent offences had been drinking prior to committing their offence. A more recent study with a Canadian sample indicated that the majority (80%) of incarcerated offenders have issues with substance use (Grant & Gileno, 2008). Despite alcohol use being implicated in violent behaviour, the majority of individuals who use alcohol are not violent (Boles & Miotto, 2003; Fagan, 1990; Ito, Miller, & Pollack, 1996).

It is purported that acute alcohol consumption, rather than chronic alcohol abuse, is more strongly associated with individuals incarcerated for a violent offence. Moreover, there are a number of additional factors that have been reported to influence the relationship between alcohol and aggression. Numerous individual, environmental,

cultural, and situational factors such as dispositional aggression (Giancola, 2003), previous drinking experience (Laplace, Chermack, & Taylor, 1994), personality disorders (Moeller & Dougherty, 2001), problem-solving ability (Chermack & Giancola, 1997), and ECF (Chermack & Giancola, 1997; Graham, Wells, & West, 1997; Lau, Pihl, & Peterson, 1995) have been reported.

Bushman and Cooper (1990) reviewed 30 studies that used laboratory-based aggression measures such as the Point Subtraction Aggression Paradigm (PSAP)² and the Taylor Aggression Paradigm (TAP)³ (Taylor & Chermack, 1993) to assess the effects of alcohol use on aggression. Across the majority of the studies, the consumption of alcohol increased the likelihood of reacting aggressively when faced with provocation (Chermack & Giancola, 1997; Fishbein, 2003). A key component that has been demonstrated to interact with aggressive response and alcohol consumption is dispositional aggression. Giancola (2003) examined alcohol-related aggression in a sample of males and females using the TAP. Individuals with higher trait aggression, as assessed by the Buss–Perry Aggression Questionnaire (BPAQ) (Buss & Perry, 1992), exhibited more behavioural aggression on the TAP than those with lower dispositional aggression. Moreover, alcohol increased aggressive responses within individuals with a high disposition for

² In this task, participants sit in front of a computer and a mechanical box with two buttons. They are asked to press one of the buttons on the box as fast as possible in order to earn the amount of money displayed on the computer screen. The participants are told that they have been paired up with an opponent, albeit a fictitious opponent, whom they can ostensibly take money away from; they can do this by pressing the second button. The participants are provoked by having money taken away from them, ostensibly by the “opponent.” The number of times the participants press the second button to take money from the “opponent” serves as the participants’ measure of aggression.

³ Within this paradigm, participants are asked to compete on a reaction time task with a fictitious opponent in another room. Participants are asked to select the intensity, on a scale of 1–10, of shock that they wish to administer to the opponent if he or she loses. The reaction time task occurs and the loser receives the shock. The participants are unaware that the rate of wins and losses are predetermined and distributed evenly. The measure of aggression in this paradigm is the intensity of the shocks selected by the participants (Chermack & Giancola, 1997).

aggression; however, alcohol did not have the same influence on those with low trait aggression. Additional studies utilizing similar methodologies have also reported less aggression in individuals with low trait aggression when provoked and intoxicated (Pihl, Lau, & Assaad, 1997).

With respect to information-processing deficits in relation to alcohol and aggression, alcohol has been reported to disrupt ECF and capacity for problem solving and abstract reasoning. It is therefore purported that alcohol consumption by an individual with information-processing deficits may consequently increase the risk for impulsive aggression (Chermack & Giancola, 1997).

Giancola (2000, 2004) proposed a model describing the mediating and moderating role by which ECF deficits interact with alcohol consumption to increase the likelihood of aggression. There are two mechanisms by which the pharmacological factors in alcohol increase aggression: 1) Within individuals with deficits in ECF, the consumption of alcohol increases the likelihood of aggressive response relative to individuals without deficits in ECF; and 2) acute alcohol consumption reduces an individual's ECF, which is proposed to increase his or her likelihood of reacting to perceived provocation with aggression. The role of ECF appears complex; however, it has been demonstrated that those who are at greatest risk are those individuals who when sober demonstrate low ECF and when intoxicated demonstrate a further increase in ECF dysfunction (Hoaken, Giancola, & Pihl, 1998; Pihl, Assaad, & Hoaken, 2003). It is proposed that deficits or disruptions in ECF related to alcohol intoxication result in consequences to one's actions not being considered and the generation of alternative solutions to a given incident not being accessible, resulting in an impulsive response to the provocation. Further, the

saliency of the provocation increases, and individuals may experience a type of “tunnel vision” in relation to the perceived provocation (McMurran & Cusens, 2003).

The relationship between alcohol and aggression is complex, and researchers have been limited in their capacity to demonstrate a causal relationship between these factors. However, consistent evidence has illustrated an association, with the recognition that the role of indirect causes such as individuals’ differences and situational factors are important (Bushman, 1997; Lipsey, Wilson, Cohen, & Derzon, 1997). Much of the research conducted on this subject matter examines violent behaviour in general and fails to consider subtypes of violence.

Turning the discussion to the use of illicit drugs in relation to violence, although less research has examined the relationship between the use of drugs and violence, generally, the results suggest that the correlation between drug use and violence is similar to that of alcohol and violence (Reiss & Roth, 1993); however, the aetiology is different in terms of motivation. Brochu et al. (2001) demonstrated that drug use is more commonly associated with crimes of acquisition relative to crime under the influence of alcohol, aptly named the economic–compulsive model, which suggests that offenders who are addicted to illicit drugs engage in acquisitive crime in order to support their addiction. Offences such as robberies are commonly reported when offenders are engaged in periods of heavy drug use. Further, drug cravings or withdrawal symptoms may increase the likelihood of using violence due to the immediate need to decrease the withdrawal symptoms.

More recently, McMurran, Jinks, Howells, and Howard (2010) examined the prevalence of *types* of violence in young offenders who had consumed alcohol at the time

of the offence. They determined three categories a priori based on interviews: 1) “violence in pursuit of non-social profile based goals” (i.e., the action of taking or wanting to take something, for example, money), 2) “violence in pursuit of social dominance goals” (i.e., perceived insult or injury), and 3) “violence in defence in response to threat” (i.e., perceived threat). Although further validation of these types of alcohol-related violence are required, this research is one of few studies that examined underlying motivations for violent and substance type.

Ternes and Johnson (2011) re-examined this notion and extended their research to include the type of substance use and the type of crime in a sample of 10,845 male offenders. Although not examining violent offenders specifically, they found that offenders who reported having used drugs were more likely to be convicted of acquisitive crimes (robbery, theft, fraud, drug offences); conversely, offenders who reported using alcohol were more likely to have committed expressive violent crimes (e.g., murder, assault, sexual assault, arson). In the same vein, offenders under the influence of drugs were more likely to be committing an offence in order to support their drug addiction (34%), which was only the case in 6% of offenders who had used alcohol.

Further, specific drugs are reported to be more associated with violence than others. For example, based on the pharmacological effects of the specific drug, use of cocaine or chronic use of amphetamines have been linked to violent behaviour, whereas substances such as opioids and marijuana are associated with decreases in violence (Boles & Miotto, 2003).

Goldstein (1985) is one of few researchers that has directly linked the use of substances to the type of violence. Although the research is dated, the categories and

structures of the ways in which substance use is linked with violence are relevant to the current research. The first type of violence Goldstein described occurs when the substance distorts an individual's cognitive capacity or emotional state from immediate use of the drug. The use of drugs or alcohol can increase paranoia and irritability, which may increase perceptions of provocation and result in violence. A second type of violence is economic compulsive violence, whereby the motivation for the violence is the acquisition of drugs or to obtain money for the purchase of drugs. Violent behaviour within this category is characterized as an intentional means to an end to acquire more drugs. The final type of violence is systematic violence, which is characterized by the use of violence in the course of a drug deal. Examples include violence associated with territorial or drug turf disputes or the enforcement of rules within organized crime (Boles & Miotto, 2003; Goldstein, 1985).

In sum, there is preliminary evidence to indicate the complex role of substance use in violent behaviour. Specifically, different substances seem to influence the type of violence (i.e., drugs are associated with acquisitive crime) (Goldstein, 1985).

Additionally, associations have been demonstrated amongst high trait aggression, perceived provocation, and intoxication (Giancola, 2000, 2003). Finally, another perspective examines the influence of alcohol on ECF and the complex interaction between ECF deficits, intoxication, and violent behaviour (Giancola, 2000, 2003).

ECF and Reactive and Instrumental Violence

Research examining the cognitions or neuropsychological functions underlying criminal behaviour has become increasingly common in the last decade as technological advances have enhanced capabilities to examine neurological processes associated with

behaviours (Sestir & Bartholow, 2007). ECF is an umbrella term to describe “higher-order” cognitive capabilities (Giancola, Martin, Tarter, Pelham, & Moss, 1996); it encapsulates elements of planning, attention, mental flexibility, self-monitoring, disinhibition, and working memory (Milner, Petrides, & Smith, 1985; Stuss & Benson, 1984). Effective ECF allows individuals to “reason and generate goals and plans, maintain focus and motivation to follow through with goals and plans, and flexibly alter goals and plan in response to changing contingencies” (Suchy, 2009, p. 106).

It has been argued that neuropsychological deficits from an early age are related to the development of persistent anti-social behaviour (Moffitt, 1993). Several empirical investigations have examined the relationship between ECF deficits and antisocial behaviour. For example, Morgan and Lilienfeld (2000) conducted a meta-analytic review of 39 studies that utilized at least one of six common ECF measures. After controlling for age, sex, intelligence, and ethnicity, the antisocial behaviour group was .62 standard deviations more deficient on ECF measures than the comparison group. The magnitude of the relationship varied by the operational definition of the sample (delinquency, $d = .86$; criminality, $d = 1.09$; conduct disorder, $d = .40$; psychopathic, $d = .29$).

Ogilvie, Stewart, Chan, and Shun (2011) updated Moran and Lilienfeld’s (2000) original study. They included a total of 126 studies across six antisocial categories. The results yielded a respectable overall effect of .44, with some variation between groups. Significant effect sizes ranged from $d = .19$ –.61, with antisocial personality disorder demonstrating the smallest effect and criminality the largest. Additionally, studies assessing incarcerated offenders and those with co-morbid attention deficit and hyperactivity problems demonstrated larger effects. With a few caveats related to

methodological issues (variation across studies in terms of measures and samples), the authors postulated that neuropsychological impairments may play a mediating role in the effects of psychosocial and genetic factors on criminal behaviour (Ogilvie et al., 2011). There is consistent evidence to support a relationship between antisocial behaviour and ECF deficits; however, less is understood about the potential role of ECF in developing risk pathways and about the profile of ECF deficits in various subgroups (e.g., sexual offenders, violent offenders, female offenders).

Considering violent behaviour in general across a variety of experimental contexts, samples, and disciplines, ECF deficits may mediate violent behaviour as well as general criminality (Baker & Ireland, 2007; Bufkin & Luttrell, 2005; Giancola, 1995, 2000; Hawkins & Trobst, 2000; Hoaken et al., 1998, 2003; Moffitt, 1993). Executive dysfunction has been significantly related to the frequency and severity of violent offending but not total offending (Hancock et al., 2010) and repeat offenders versus first-time offenders (Ross & Hoaken, 2011).

Further, aggression has been associated with low frontal lobe activity (Barratt et al., 1997; Surguy & Bond, 2006), self-monitoring (Hancock, Tapscott, & Hoaken, 2010), verbal ability (Fabian, 2010), attention (Hanlon, Brook, Stratton, Jenson, & Rubin, 2013), cognitive flexibility (Hancock et al., 2010), and disinhibition or impulsivity (e.g., Hoaken, Shaughnessy, & Pihl, 2003; Lau, Pihl, & Peterson, 1995). For example, a putative relationship exists between violence and ECF, with impulsivity being the primary influencing factor. That is, it has been postulated that individuals with deficient ECF are more impulsive, consequentially resulting in aggressive behaviour. However, Hoaken et al. (2003) reported that within individuals with low ECF, their response time

to provocation was slower than individuals with high ECF, contrary to the conceptualization of an “impulsive response.” Consequently, they proposed that individuals with deficits in ECF may also have difficulties with social information processing (i.e., encoding social cues, hostile attribution, and generation of alternative solutions), and as a result, respond aggressively by default (Hoaken, Shaughnessy, & Pihl, 2003; Lau, Pihl, & Peterson, 1995). Evidently, the interplay between ECF and violent behaviour is multifaceted, and it has been proposed that the heterogeneous nature of violent behaviour may be obscuring the results (Giancola, 2000).

Recognizing potential heterogeneity among violent offenders, a growing body of literature is devoted to examining ECF definitions in relation to the type of violence. Relative to instrumental aggressors, reactive aggressors are reported to have more deficits with respect to intelligence and verbal ability (Barratt, Stanford, & Kent et al., 1997; Stanford et al., 2003; Vitiello et al., 1990); self-regulation (White, Jarrett, & Ollendick, 2012); memory, attention, and intelligence (Hanlon, Brook, Stratton, Jensoen, & Rubin, 2010); and diminished frontal lobe functioning (Raine, Meloy, Bihrl, Sotddard, Lacasse & Buchsaur, 1998).

In terms of characterizing instrumental aggressors, a lack of affective response during a violent act is typically reported. More explicitly, instrumental aggressors typically respond with limited physiological arousal while committing a violent act, unlike their counterparts, reactive aggressors (Stanford et al., 2003). With respect to applying neurocognitive models of violent subtypes, Blair (2001) proposed a framework explaining the emergence of subtypes, specifically, that reactive aggression is the result of deficits in the executive emotional system. In terms of presentation, this is reflected

by difficulty processing angry facial expressions, and in social situations, by judging the appropriateness of behaviour (Blair, 2000; Blair & Cipolotti, 2000).

Essentially, this is a disruption of control over the system's response to threat. Conversely, instrumental aggression is associated with developmental psychopathy and supported by the violence inhibition mechanism model. In terms of its manifestation, "the signal to the learning system concerning emotionally aversive stimuli is muted – that is, the unconditional stimulus is diminished, thus impairing the formation of unconditioned stimulus–conditioned stimulus associations" (Blair, 2001, p. 730). Evidence of this is present in psychopathy in individuals with muted emotional responses to sad and fearful facial expressions. Although this model is different from the social psychological theories in terms of its lens or perspective, conceptually, it is congruent with models in social information-processing literature and with neuropsychology literature on group differences.

A recent study by Levi, Nussbaum, and Rich (2010) involved administering a battery of measures to 89 male offenders to examine personality and neuropsychological factors amongst three subtypes of offenders. Based upon their offence histories, offenders were categorized into predominately predatory/instrumental, predominately irritable/reactive, or nonaggressive groups. The classification system was an adaptation and combination of the Cornell et al. (1996) and Cormier-Lang protocols (Quinsey, Harris, Rice, & Cormier, 1998). The neuropsychological measures included two tests for disinhibition or impulsivity, the Integrated Visual and Auditory Continuous Performance

Task (IVA) (Stanford & Turner, 2000), and the Iowa Gambling Task (IGT)⁴ (Bechara, Damasio, Damasio, & Anderson, 1994). The results of the neuropsychological measures indicate that the reactive group performed the poorest. On the impulsivity component of the IVA, the reactive subgroup was significantly more impulsive and less able to inhibit their responses relative to the nonviolent group, whereas the instrumental aggressors were more similar to the nonviolent group on an impulsivity task. On the gambling task, however, where financial profit is an incentive, the reactive offenders were the most deficient, but the instrumental group also performed statistically more poorly than the nonviolent group, which is more comparable to the reactive group in terms of the degree of deficiency. Accordingly, Levi et al. (2010) purported that violent offender subgroups exhibit different “motivation and cognitive control systems.” That is, on the cognitive impulsivity task (the IVA), instrumental aggressors were able to inhibit their responses and performed within a normal range, yet when a potential reward was introduced, the instrumental group was less able to inhibit their responses, thereby exhibiting a deficit in response modulation. In sum, the reactive offenders appeared to exhibit the greatest deficits on inhibition tasks with regard to executive functioning, whereas the instrumental group only exhibited deficits when motivation influenced the inhibition task (Levi et al., 2010).

⁴ The gambling task was utilized as a measure of disinhibition, as participants were to choose a card from a deck in order to capitalize on profit; but, what was unknown to the participants was that each deck of cards had a prescribed outcome: some were high-paying with high losses and others were low-paying with low losses but were also less risky. Choosing the advantageous deck most often would maximize profit. The most successful outcome occurred when participants benefitted from feedback during the task and shifted to responding to the safer low-paying decks. This was deemed to be a test of motivational inhibitor control (Levi et al., 2010).

Boomhall (2005) examined performance on the Delis Kaplan Executive Functioning System (Delis, Kaplan, & Kramer, 2001) in reactive ($n = 12$) and instrumental ($n = 13$) violent offenders. Despite the small sample size, significant differences emerged, with reactive offenders significantly more deficient on all of the ECF tests, specifically, verbal inhibition maintenance of set, initiation, and cognitive flexibility relative to instrumental violent offenders. Instrumental aggressors, however, were more limited in terms of disinhibition—that is, they were only deficient when there was perceived value associated with the task (i.e., contingency such as a financial reward), and in those instances, instrumental aggressors' performance was more comparable to reactive aggressors.

Turning briefly to neuroimaging, Raine et al. (1998) reported that reactive aggressors had reduced frontal activity relative to their subcortical activity, whereas there was no difference in this ratio for instrumental aggressors, as they were most similar to the controls. Further, in a review of 17 neuroimaging studies, Bufkin and Lattrell (2005) suggested that given the consistent findings of aggressors' subtypes, these should be examined in further studies, as they may add to understanding the neuroanatomy of violent behaviour. These structural (neuroimaging) and functional (neuropsychological) distinctions provide further support for structural differences between violent offence subtypes.

The accumulated evidence suggests that distinct neuropsychological differences exist amongst subtypes; however, much of this work is based on small sample sizes, and few of the studies have been replicated. Despite evidence demonstrating a relationship between ECF and aggression in addition to evidence demonstrating reactive aggressors

exhibiting greater ECF deficits relative to instrumental aggressors, there has been little progress in terms of translating this knowledge to assessment of risk and/or treatment of violent offenders (Broomhall, 2005; Hancock et al., 2010). Accordingly, the aim of the current study is to examine ECF within violent offender subtypes in an effort to better understand the needs of the subtypes and to inform subsequent treatment efforts.

Treatment of Violent Offenders

One of the challenges in treating individuals with violent histories is addressing the varied pathways leading to aggressive and violent behaviour. Well documented are the apparent typologies of offending violently (i.e., instrumental, reactive), yet a gap remains in the extant literature regarding the underlying influences that differentiate violent typologies. Research specifically on violent offender typologies has been conducted only intermittently through the years. While the matter of the typologies of violent offenders has been examined periodically, progress has been suspended, and there has been little recent advancement in their understanding.

At present, a consensus exists that correctional treatment programs are successful in reducing recidivism relative to a comparison group (Andrews & Bonta, 2006). Gleaned from previous meta-analyses are the principles of effective correctional treatment, namely, the principles of risk, need, and responsivity (RNR) (Andrews, Bonta, & Hoge, 1990; Andrews & Bonta, 2006; Dowden & Andrews, 2000). These principles, when applied to correctional treatment programs, result in significantly better outcomes and treatment effects than programs that do not apply these principles (Andrews & Bonta, 2006; Gendreau, Goggin, French, & Smith, 2006; Smith, Gendreau, & Swartz, 2009). Adherence to the RNR principles is demonstrated by the following: 1) providing

intensive services to offenders who have the highest risk of reoffending (risk principle), 2) targeting treatment needs (criminogenic needs) that have been empirically related to criminal behaviour (e.g., pro-criminal attitudes or substance use) (need principle), and 3) utilizing a cognitive behaviour-based program that can be adapted to the individual characteristics of offenders' learning styles (responsivity principle) (Andrews et al., 1990; Andrews & Bonta, 2006). Moreover, in addition to providing positive treatment outcomes, programs adhering to these principles result in positive cost-benefit outcomes on the whole (Aos, Miller, & Drake, 2006).

Meta-analytic reviews examining the outcomes for particular offender subtypes or programs are common throughout the existing body of literature, addressing, for example, domestic violence treatment programs (Babcock, Green, & Robie, 2004), female offenders (Dowden & Andrews, 1999), Aboriginal offenders (Gutierrez, Wilson, Rugge, & Bonta, 2013), youth offenders (Matjasko, Vivolo-Kanto, Massetti, Holland, Holt, & Dela Cruz, 2012), sexual offenders (Hanson, Broom, & Stephenson, 2004; Hanson, Bourgon, Helmus, & Hodgson, 2009; Hanson & Morton-Bourgon, 2005), cognitive behaviour treatment (Lipsey, Landenberger, & Wilson, 2007; Wilson, Bouffard, & Mackenzie, 2005), and educational programming (Wilson, Gallagher, & MacKenzie, 2000). Most recently, there have been considerable efforts to assess the elements of correctional programs that enhance or impede the outcomes of correctional programming beyond the core principles of RNR, such as attrition (Jewell & Wormith, 2010; Olver, Stockdale, & Wormith, 2011) and offender motivation interviewing (McMurrin, 2009), all of which have contributed greatly to our increased capacity for understanding offender treatment and the improved reintegration potential of an

offender.⁵ Despite the advances in correctional research outcomes and programming as a whole, there have been only modest gains within the domain of violent offenders. This is especially the case relative to other subgroups, such as sexual offenders, offenders with mental disorders, and female offenders.

Approaches to Violence Prevention Programs

There is a sizeable body of theoretical and applied research examining the underlying causes of aggression and/or violence in an attempt to better understand and prevent further aggressive behaviour. Such research has been instrumental in helping develop violence prevention programs. The following section contains a summary of the literature available on the treatment needs of violent offenders and what is known to date about the efficacy of treatment programs for violent offenders.

With respect to treatment needs, decades of research have identified key risk factors for violent offenders (youth and adults), which include elements such as impulsivity (Henry & Moffitt, 1997), hostility (Megaree, 1976), substance abuse (Pihl & Peterson, 1993), social information problem-solving deficits (Dodge & Swartz, 1997), and anger control (Howells, 2000; Novaco, 1997; Serin & Preston, 2001).

Traditionally, violent offender treatment programs have focused on anger management or anger control based on the belief that violent offenders are violent due to excessive levels of anger and/or an inability to manage such emotions (Serin, 1994; Serin & Preston, 2001). The results of anger management treatment have been mixed, and this

⁵ The reintegration potential of an offender is another factor commonly assessed in relation to treatment. This term describes the likelihood of an offender successfully reintegrating back into the community (CSC, 2003, 2012), and with the CSC, it is a composite measure based on the offender's scores on a series of static and dynamic risk factors from the Revised Statistical Information on Recidivism (SIR-R1), Static Factor Rating (SFA), and Custody Rating Scale.

treatment model as the gold-standard approach for violent offenders has since been challenged, with the acknowledgement that although anger is a common precursor to violence, it is not necessarily a prerequisite—it is often difficult to determine the extent to which anger is the underlying cause of violence (McGuire, 2008; Polaschek & Reynolds, 2004). The literature varies regarding the outcomes and rationales for offering anger management programming to all violent offenders, as violent offenders tend to be heterogeneous in their treatment needs (Howells & Day, 2002; Howells, 2003; Novaco & Welsh, 1989; Serin & Preston, 2001).

Currently, the most common theoretical models for violent offender treatment programs are cognitive skills-based and behaviour-based. As a general approach to offender treatment, cognitive behaviour-based programs result in the largest reduction in criminal risk (McGuire, 2006); however, few studies have examined the outcomes for cognitive behaviour-based programs for violent behaviour.

Dowden and Andrews (2000) conducted a meta-analysis of 35 diverse programs that included violent reoffending as an outcome measure. Included in the analysis were family-based violence (i.e., domestic abuse), sexual offending, and youth violence programs. The largest treatment effects were reported with respect to the presence of general responsiveness (i.e., a cognitive behaviour treatment approach) and greater numbers of criminogenic needs (specifically, targeting anger and relapse prevention).

Reviews of Violent Offender Interventions

Polaschek and Collie (2004) conducted a narrative review of programs for violent offenders involving nine evaluations of cognitive behaviour interventions. Three of the programs were anger management-based, two were primary cognitive-based, and three

were classified as multi-modal programs. The results varied considerably from small (a 10–15% reduction in recidivism) to large (a 15% or more reduction in recidivism) effects for nonviolent and violent recidivism. Given the limited information provided relating to program descriptions or general information, few conclusions could be drawn from this review relating to effective and theoretical frameworks for interventions addressing violent offending. This study, conducted nearly a decade ago, made a strong claim for more evaluative research studies and for future studies to describe details relating to the program in question.

Jolliffe and Farrington (2007, 2009) have provided the most comprehensive review of violent offender interventions to date. Overall, the results indicate that for offenders who complete violent offender intervention, general recidivism was reduced by approximately 8-11% relative to a comparison group. Eight studies examined violent recidivism outcomes, with only two demonstrating statistically significant reductions in violent offending. The results for violent offender program completers indicated a 7-8% reduction in reoffending relative to comparison groups. Although the percentage of reduction was not substantial, it is considerable enough to suggest that violent offender program completion, even with limitations in program quality, can reduce violent behaviour (Jolliffe & Farrington, 2007, 2009). Further, the authors explored a number of program characteristics and their relationships to outcomes. For example, programs with a longer duration overall as well as a longer duration per session were associated with a greater reduction in recidivism in general and for violent recidivism in particular. In addition, interventions that targeted cognitive skills, anger management, or relapse prevention utilizing role-playing or requiring the completion of homework were also

more effective. Programs that included basic education, empathy training, and moral training were less effective overall than other areas of focus.

Derkzen and Serin (n.d., in preparation) conducted a meta-analytic study examining the outcomes of 16 violent offender treatment programs to test the effect of primarily cognitive behaviour-based treatment on general and violent recidivism. Risk ratios of .69 for general recidivism and .52 for violent recidivism indicated that participating in violent offender treatment programs was associated with a decreased risk of reoffending, thereby supporting the supposition that well-designed cognitive behaviour-based programs for violent offender adhering to the principles of effective correctional programming are related reductions in recidivism of 14-15% (Dowden & Andrews, 2000; Losel, 2001; Polaschek & Collie, 2004).

Numerous shortcomings exist within the literature: an over-reliance on self-report measures, few studies with outcomes, and/or the lack of a control group. When considering treatment programs for violent offenders, jurisdictions offering intensive treatment programs specifically targeting violent behaviour for offenders deemed to be high risk and who have a history of violent behaviour are less common than one might expect. Evaluations of such programs are even less common; however, there has been an increase in the amount of literature in this area in the last few years. In general, the available literature supports the belief that completion of violent offender treatment may be somewhat related to reductions in recidivism relative to comparison groups (Berry, 1999; 2003; Cortoni, Nunes, & Latendresse, 2006; Di Placido, Simon, Witte, Gu, & Wong, 2006; McGuire, 2008; Polaschek et al., 2005; Polaschek & Dixon, 2001; Wong, Gordon, & Gu, 2007).

As suspected, given the sparse literature on the classification of violent subtypes, research on outcomes or conclusive propositions on successful treatment approaches with violent offender subtypes is underdeveloped. In terms of outcomes, Heilburn (1978) reported that offenders convicted of proactive or premeditated violent offences were more likely to successfully complete their parole than impulsive offenders. More recently, Swogger, Walsh, Christie, Priddy, and Conner (2014) supported Heilburn's earlier work, demonstrating that a history of premeditated aggression predicted recidivism, whereas impulsive aggression did not predict recidivism.

Crick and Dodge (1996) proposed that subtypes of violent offenders might respond differently to psychologically based interventions. To date, no known studies have examined this theoretically driven hypothesis, and the question remains untested. It is notable that much of the literature discusses children with violent behaviour, not adults; however, no research testing this theory with either children or adults has been conducted. Given that reactive aggressors tend to have greater deficits with respect to problem solving, impulsivity, hostility, and anger relative to instrumental aggressors, it has been posited that reactive aggressors may benefit from anger management-type treatment, whereas instrumental aggressors may benefit from "contingency management" (Crick & Dodge, 1996; Day, Bream, & Pal, 1992; Dodge, Lochman, Harnish, Bates, & Pettit, 1997).

Further, it has been postulated that pharmacological treatment options (e.g., lithium) are more effective for reactive aggressors than for instrumental aggressors. Studies involving pharmacological treatment provide firmer support for biological and social distinction amongst violent offender subtypes. For example, Barratt, Stanford,

Felthous, and Kent (1997) treated impulsive and premeditated aggressors with an anticonvulsant, phenytoin (Dilantin), and established that impulsive offenders responded favourably to the pharmacological treatment relative to a control group. Specific gains were present with respect to an improved mood state and normalization of event-related potentials.⁶ More significantly, the impulsive offenders who were treated exhibited a reduction in the intensity and frequency of their aggressive behaviour. Premeditated violent offenders given the same treatment exhibited no improvements in any of the measureable domains (Barratt, Stanford, Felthous, & Kent, 1997; Stanford et al., 2003). In sum, the abovementioned literature illustrates relatively moderate levels of success for treatment outcomes of violence prevention programs. Although to some degree, this indicates that treatment programs are targeting the proper behaviour and effectively ameliorating aggressive tendencies, there is considerable opportunity for advancement. It has been postulated that the moderate levels of success may be attributed to the heterogeneous nature of the population (Kudryavtsev & Ratinova, 1999) and that increased levels of success may result from assessing and considering subtypes of violent behaviour within a treatment framework.

Similarly, differentiating between violent subtypes may inform the assessment of risk in offenders. By disaggregating subtypes, trends may become evident, indicating differential rates of reoffending between groups. For example, offenders on the impulsive end of the continuum may have higher rates of reoffending relative to instrumental offenders (Kudryavtsev & Ratinova, 1999).

⁶ Event-related potentials (ERPs) are small voltages which that are generated in the brain in response to a specific stimuli or event (sensory, motor, or cognitive events) (Barratt et al., 1997). ERPs of different waveforms and patterns are used to examine the brain response in a non-invasive manner in normal and psychiatric patients.

Moreover, it may be informative to differentiate between an individual who has committed a violent offence with no history of violent behaviour versus an individual who has committed a violent offence and has a significant history. That is, there may be a distinction in terms of the aetiology of violent offending and a violent offender, as defined by predisposition (Polaschek, 2006).

Evidence for consistent, valid, and reliable underlying typologies of violent offenders could be of significant practical and theoretical significance. Typologies could inform more effective correctional treatment by attending to the responsivity principle and matching treatment to the offender subtypes.

Treatment Readiness and Engagement in Violent Offender Subgroups

Within correctional institutions, treatment non-completion is an interminable concern. Not only do high rates of treatment dropout compromise the cost-effectiveness of correctional programming, but they negatively impact treatment outcomes by decreasing the effectiveness of the program (McMurrin & Ward, 2010); overall, they impact the agency's ability to adhere to the risk principle (Wormith & Olver, 2002). Rates of dropout and non-completion vary by program location (institution, 15%; community, 46%; McMurrin & Theorosi, 2007), offence type (sex offenders, 8%; non-sex offenders, 12%; Nunes & Cortoni, 2006), and ethnicity (non-Aboriginal males, 11–12%; Aboriginal males, 20–22%) (Nunes & Cortoni, 2006). Additionally, rates of dropout have been reported to be related to lower motivation (Nunes & Cortoni, 2006; Nunes et al., 2010). These findings underscore the need to better understand treatment engagement and readiness on the part of offenders. As such, it is imperative to apply

such research findings to program development in order to eradicate treatment attrition and maximize treatment outcomes.

The term treatment readiness has existed within psychotherapy literature for decades; however, only recently has the term begun its conceptual expansion as it applies to offender treatment. Treatment readiness is defined as “the presence of characteristics (states or dispositions) within either the client or their therapeutic situation, which are likely to facilitate engagement in therapy, and which, as a consequence of this investment, are likely to augment the process of therapeutic change” (McMurran & Ward, 2010, p. 78; Howells & Day, 2003; Serin, Mailloux, & Kennedy, 2007; Serin, Kennedy, Mailloux, & Hanby, 2010, see Mossière & Serin, 2014). Essentially, treatment readiness is a broad term that includes factors such as responsivity, motivation, and engagement (McMurran & Ward, 2010). Further, treatment readiness and engagement are individual factors hypothesized to contribute to positive outcomes; that is, the greater levels of treatment readiness and engagement enhance treatment outcomes.

Endeavours to operationally define the constructs of motivation, responsivity, treatment engagement, and treatment readiness and to further link such concepts to conceptual models have increased in the academic literature in the last 15 years (e.g., Drieschner, Lammers, & vander Staak, 2004; Serin & Kennedy, 1997; McMurran, 2009; Ward et al., 2004). Despite the increased attention and attempts to better understand these constructs, there remains a lack of consistency and clarity in terms of their application and definition, as these terms have often been used synonymously (Mossière & Serin, 2014). There are a number of models of motivation and treatment readiness that are commonly referred to in the offender treatment literature; however, given the

inclusion of the University of Rhode Island's Change Assessment Scale (URICA) in the current study (McConaughy, Prochaska, & Velicer, 2003), the transtheoretical treatment model of behaviour change is discussed in depth in the current context. The key tenets of two additional models, the model of treatment responsiveness (Serin & Kennedy, 1997) and the multifactor offender readiness model (Ward et al., 2004), are briefly reviewed.

Although a full review of the construct of motivation is beyond the scope of this paper, it is essential to contextualize the importance that assessing motivation has in the evolution of treatment readiness. Historically, motivation has been the primary concept considered when examining treatability or motivation to engage in treatment. The concept itself has evolved considerably from a static personality trait deemed to be immutable to a dynamic construct an individual possesses that progresses throughout treatment (Prochaska & Diclemente, 1986; Serin & Kennedy, 1997). Developed and adapted from addictions literature, Prochaska and Diclemente (1983) proposed a transtheoretical treatment model of behaviour change, which posits that individuals progress through five stages of change (SoC) or motivation when they are addressing their problematic behaviour (Prochaska, DiClemente, & Norcross, 1992). Each stage provides a description of one's readiness to change: 1) pre-contemplation: not even considering change; 2) contemplation: ambivalence to or rejection of change; 3) preparation: considering change; 4) action: commitment to change and attempting to make change; and 5) maintenance: sustaining the change. In an attempt to capture an individual's state, the authors developed a self-report measure: URICA (McConaughy, Prochaska, & Velicer, 2003). Similar measures have been developed, as this model has been applied to various problematic behaviours, including substance abuse, eating

disorders, and smoking (e.g., the Readiness to Change Questionnaire by Rollnick, Heather, Gold, & Hall, 1992; the Personal Drinking Questionnaire [SOCRATES] by Miller & Tonigan, 1996). Since its inception, the concept of motivation has demonstrated considerable success in assessing and capturing motivation for change and linking this change to program engagement and outcomes (Littell & Girvin, 2002; Prochaska, DiClements, & Norcross, 1992).

The application of the concept of treatment responsivity or readiness to an offender population was first initiated by Serin and colleagues (Serin & Kennedy, 1997; Serin, 1998; McMurrin & Ward, 2010). Serin and Kennedy (1997) developed their conceptual model of treatment responsivity in order to better understand the process of offender change. Within this framework, a number of factors are conceptualized to influence treatment engagement and performance. Specifically, treatment readiness is rated by examining the following items: motivation, problem recognition, expectation, goal setting, behavioural consistency, self-appraisal, views about treatment, and self-efficacy (Mossière & Serin, 2014; Serin, Kennedy, Mailloux, & Hanby, 2010).

An additional framework of offender readiness that considers individual-, program- and context-related barriers to treatment is the Multifactor Offender Readiness Model (MORM). From this perspective, readiness is influenced by cognitive factors (beliefs, cognitive strategies), affective factors (emotions), volitional factors (goals or desires), and behavioural factors (competencies and skills). Also considered are context-related factors such as circumstance (offender type, degree of coercion for treatment participation), treatment location (community or institution), the opportunity or availability of programming, levels of interpersonal support, and resource factors

(adequate staff, the quality of programming) (Ward et al., 2004; Day, Casey, Ward, Howells, & Vess, 2010). It is proposed that contextual factors in combination with personal factors interact to influence the likelihood of an individual benefiting from a treatment program. From this perspective, treatment readiness is conceptualized as follows: To be ready for treatment means that the person is motivated (i.e., wants to, has the will to), is able to respond appropriately (i.e., perceives that he or she can), finds it relevant and meaningful (i.e., can engage), and has the capacities (i.e., is able) to successfully enter the treatment program (Ward et al., 2004, p. 647). Provided that the programs address criminogenic needs and abide by the principles of risk and need, individuals who are ready for treatment will likely have higher rates of participation, attendance, and more engagement with the program material and therefore have decreased levels of risk and criminogenic needs (Ward et al., 2004; Day, Casey, Ward, Howells, & Vess, 2010).

Unsurprisingly, treatment resistance, hostility, and non-compliance are prominent concerns within the management and treatment of high-risk violent offenders. Based on the Trans-Theoretical Model of change, violent offenders are commonly assessed as being in the early stages of change at the beginning of the correctional program—that is, they are in the pre-contemplation or contemplation stage (Casey, Day, Howells, 2005; Day, Howells, Casey, Ward, Chambers, & Birgden, 2009). Low levels of treatment readiness are associated with an increased risk of treatment dropout (Day et al., 2010).

McMurran and Theodosi (2007) conducted a review of literature on cognitive behaviour-based treatment for offenders and reported a mean non-completion rate of 15% for institutional programs. Further, when considering outcomes, treatment non-

completers were more likely to reoffend upon release, even when deemed to be of a similar risk level to treatment completers. Presumably, this would be even higher in a population of violent, high-risk, and psychopathic offenders, as this subsample is notoriously difficult to engage in treatment (Wong & Hare, 2006). Moreover, rates of attrition for anger-based programs are high relative to other treatment options (Dalton, Major, & Sharkey, 1998; Hird, William, & Markham, 1997).

Considering the heterogeneity of violent offenders, reactive aggressors are characterized by having difficulty in affective regulation and by showing elevated levels of hostility. Often, these behaviours transfer to the treatment context and may ultimately impact an offender's readiness for treatment (Day, Casey, Ward, Howells, & Vess, 2010). Further, offenders with psychopathy or antisocial personality disorder are reported to demonstrate lower levels of treatment compliance. Prevalence rates of personality disorder are reported to be greater in instrumental violent offenders, which may contribute to varied rates of dropout within violent offenders and should be an area of further investigation (Day, Casey, Ward, Howells, & Vess, 2010).

In terms of predictors related to treatment dropout, factors such as age, motivation, risk level, education, and employment history are known to be significantly associated with non-completion (Browne, Foreman, & Middleton, 2000; Nunes & Cortoni, 2006; Nunes, Cortoni, & Serin, 2010; Wormith & Olver, 2002). Attention to responsivity issues has been proposed as a potential solution to decrease treatment dropout. Of the multitude of potential responsivity issues, cognitive abilities are one viable area of consideration (Wormith & Olver, 2002). Presumably, given that education and employment history were significant differentiating factors in Wormith and Olver's

study, the influence of ECF on treatment outcomes is worthy of investigation. Matching the need of the offender to the treatment type is likely to be an important factor in offender treatment and may decrease expulsion rates or treatment dropout.

These findings underscore the need to better understand treatment engagement with offenders generally and violent offender subtypes specifically. Further, given the temperament of the population to which the CSC is responsible for providing effective correctional programming, and the necessity to provide cost-effective programming, it is vital to utilize and apply research regarding treatment readiness in program offerings.

Impetus for the Study

Although considerable research has been conducted on nonsexual violent behaviour, and its putative relationships with psychological factors have been empirically supported, there is still a considerable gap in our understanding of violent behaviour with respect to subtypes of violent offenders.

The literature on nonsexual violent offenders spans over two decades; despite an increase in research concerning offenders and treatment in general, there have been few theoretical advances in the literature with respect to nonsexual violence. Compared to research in other areas of forensic psychology (i.e., sexual offenders, risk assessment, and psychopathy), the research available on nonsexual violent offenders is diminutive. Because scholars have only a partial understanding of the predictors of distinctive subgroups of violent behaviour, theoretical research on violence has been limited in its progress. Further, previous studies have focused primarily on understanding and treating violent offenders as a homogenous group.

Given the evidence supporting the existence of subtypes of violent offenders as well as the limited research examining the differential impact of treatment on subgroups, current research efforts need to examine violent offenders as a heterogeneous group in order to advance our knowledge and understanding of violent offenders as a class. Theoretical value as well as practical significance can be gained from the advancement of our understanding of violent offender subtypes and their treatment. The present study aims to inform and refine the knowledge related to situational variables (aggressive cues, provocation, drugs or alcohol) and how they differentially influence the outcomes of violent offender subtypes. This study also aims to provide further support for the tenets of

social learning theory, particularly for the expectation that violent behaviour is regulated by contingencies in a specific subset of offenders (i.e., instrumental violent offenders).

In practical terms, attending to the heterogeneity of violent offenders could play an important role in the development of successful correctional interventions and the management of violent offenders. The identification of patterns of aggressive subtypes could guide the development of specific treatment programs. As research has indicated, a key principle of effective correctional treatment is that responsiveness to the needs of offenders increases the likelihood of rehabilitation (Andrews & Bonta, 2010; Kudryavtsev & Ratinova, 1999). Further, distinguishing subtypes and associated factors related to self-control and cognition has potential implications for release and risk assessment (Kudryavtsev & Ratinova, 1999).

The present study's aim was threefold: 1) to examine the profiles and prevalence of reactive and instrumental violent offenders in a Canadian federal offender sample; 2) to examine treatment-related variables, such as treatment readiness, institutional adjustment, program completion rates, and release outcomes, amongst reactive and instrumental violent offenders; and 3) to clarify the role of ECF amongst reactive and instrumental violent offenders and a nonviolent comparison group. Together with a multimethod design, establishing multiple research goals allows for the exploration of the profiles of violent offender subtypes with respect to program-related variables and ECF. The following paragraphs delineate the research questions and corresponding hypotheses of the present study.

Research Question 1: What are the prevalence and profiles of reactive and instrumental violent offender subtypes?

The prevalence rates of violent offender subtypes are examined in Study 1 based on the results of the coding of offence histories of an archival sample of violent offenders enrolled in a correctional program while incarcerated in CSC. The characteristics and profiles of reactive and instrumental violent offenders will be explored by comparing subgroups with respect to characteristics of offences (e.g., substance use, severity of violence), sentence length, static risk, and criminogenic needs. Further, self-report measures completed pre- and post-program assessing constructs such as impulsivity and aggression were also explored amongst violent offender subtypes. It is hypothesized that reactive violent offenders will be serving longer sentences than instrumental violent offenders and will have more extensive violent offence histories, greater levels of risk, more needs, lower motivation, and lower reintegration potential.

Research Question 2: How do reactive and instrumental violent offenders differ in terms of program-related variables, such as readiness to change, institutional adjustment, rates of program completion, and release outcomes? Is there a relationship between readiness to change and outcomes?

Study 2 assesses treatment-related variables within violent offender subtypes. It is hypothesized that reactive violent offenders will show a higher readiness to change compared with instrumental violent offenders because reactive violent offenders are generally more emotionally labile, consequently have more accessible emotional states, and are therefore more likely to accept responsibility for their offence (Douglas, 2010;

Howells & Day, 2006; Sheldon, Howells, & Patel, 2010). It is also hypothesized that instrumental violent offenders and reactive violent offenders will have similar rates of program completion, but that reactive violent offenders will have higher rates of institutional charges. Further, it is proposed that readiness to change will accurately predict pre-program treatment outcomes for all offender groups.

Research Question 3: To what extent and in what way do underlying cognitive impulsivity and ECF contribute to the heterogeneity of violent offenders?

Study 3 will examine elements of social problem solving, impulsivity, aggression, and ECF in violent and nonviolent offenders. It is hypothesized that as a group, violent offenders will have greater deficits in ECF related to constructs such as planning, cognitive flexibility, and impulsivity than will nonviolent offenders. Moreover, reactive violent offenders will exhibit greater deficits in ECF compared to instrumental violent offenders and the nonviolent comparison group. Finally, for tasks involving a motivational inhibition element (e.g., the IGT), instrumental violent offenders will exhibit deficits more similar to those of reactive violent offenders than their nonviolent counterparts. Finally, under the assumption that violent offenders are truly heterogeneous in their expression of underlying ECF and treatment outcomes, an overall discussion will review the implications for correctional programming and treatment.

Data Sources

Data collection for the present study involved the following methods: 1) access to archival treatment program databases (Studies 1–2), 2) administration of self-report measures and a neuropsychological battery of tests (Study 3), 3) administration of

computerized cognitive tasks (Study 3), and 4) data retrieval from a computerized database (Studies 1–3). Table 1 presents a summary of the research questions and data sources associated with each study.

Table 1

Integration of Studies, Research Questions, and Data Sources

Study	Research Questions	Data Sources		
		Offender Management System	Pre- and Post-Program Assessment Battery	Field Data
Study 1: Violent Offender Subtypes: An Exploratory Profile of Distinctiveness in Federal Violent Offenders	RQ 1	<ul style="list-style-type: none"> ▪ Criminal Profile Report (CPR) ▪ Intake assessment (e.g., risk, need, offence history) 	<ul style="list-style-type: none"> ▪ Buss–Perry Aggression Questionnaire (BPAQ) ▪ Eysenck’s I₇ ▪ Novaco Anger Scales (NAS-PI) ▪ Reasons for Aggression (RFA) ▪ Aggression Efficacy Scale (AES) ▪ Balanced Inventory of Desirable Responding (BIDR) 	--
Study 2: Readiness for Treatment, Institutional Misconducts, and Returns to Custody in Reactive and Instrumental Violent Offenders	RQ 2	<ul style="list-style-type: none"> ▪ Institutional charges ▪ Release type ▪ Release outcomes 	<ul style="list-style-type: none"> ▪ University Rhode Island Change Assessment (URICA) ▪ Violence Risk Scale (VRS) ▪ Psychopathy Checklist–Revised (PCL-R) 	--
Study 3: Examination of Executive Cognitive Functioning (ECF) and its contribution to the Heterogeneity of Violent Offenders.	RQ 3	<ul style="list-style-type: none"> ▪ Criminal Profile Report (CPR) ▪ Intake assessment (e.g., risk, need, offence history) ▪ Program participation ▪ Institutional charges 	--	<ul style="list-style-type: none"> ▪ Delis Kaplan Executive Function Scale (5 tests) ▪ Iowa Gambling Task (IGT) ▪ GoStop ▪ Buss–Perry Aggression Questionnaire–Short Form (BPAQ-SF) ▪ Social Problem Solving Inventory (SPSI:R:L)

Study 1: Violent Offender Subtypes: An Exploratory Profile of Distinctiveness in Federal Violent Offenders

As established in the literature review, theoretical and operational distinctions amongst violent offender subtypes have been demonstrated in numerous studies. Nearly 70% of male offenders serving a federal sentence committed a violent offence; however, the number of offenders convicted of reactive violence versus instrumental violence is unknown (Public Safety Canada, 2013).⁷ There are key differences between violent offender subgroups with respect to the degree of planning, perceived provocation, victim injury, and motivation for violence; nevertheless, little is known regarding the prevalence of each subtype amongst male federal offenders with violent criminal histories. Even less is known regarding the differences and similarities in demographic and sentence characteristics amongst violent offender subgroups. Consequently, the objective of this study was to examine the profiles of violent offender subgroups by examining their demographic and sentence characteristics, such as age, marital status, ethnicity, sentence length, risk of reoffending, criminogenic need, offence history, and severity of violence. The following research questions and related hypotheses are addressed in the present study:

⁷ Schedule I offences encompass a category of serious offences detailed in the Corrections and Conditional Release Act (1992). Schedule I offences are commonly used to determine and categorize violent offences in reporting rates of violent crime (Statistics Canada, 2012). In addition, Public Safety Canada classifies violent offences as Murder I, Murder II, and Schedule I offences. This definition includes sexual offences; however, in the present study, sexual offences or sexually motivated offences, arson, and impaired driving offences are excluded from this definition. The specific offences are described in the methodology section and Appendix A.

Research Question 1: What are the prevalence and profiles of violent offender subtypes, particularly, of reactive violent offenders (RVOs) and instrumental violent offenders (IVOs)?

Based on the coding of descriptions of violent offences, violent offenders were classified as either predominantly reactive violent offenders or predominantly instrumental violent offenders. For each offender subtype, a profile accounting for demographic information, risk, criminogenic need, motivation, reintegration potential, sentence length, offence history, victim selection, and severity of violent offences was devised.⁸

Hypothesis 1. Compared to instrumental violent offenders, reactive violent offenders will serve longer sentences and have more extensive offence histories, be assessed at higher static risk to reoffend, a higher criminogenic need rating, lower motivation, and lower reintegration potential.

Methodology

Participants

In total, 395 offenders from 15 federal penitentiaries were selected for this study. The archival sample was comprised of violent offenders enrolled in the CSC's VPP between November 1999 and October 2004. All participants were male offenders from 17 to 54 years of age, with a mean age of 29.8 ($SD = 7.7$) at admission.

⁸ The data source for this study was different from what had been proposed originally. In the original proposal for this study, it was hypothesized that compared to nonviolent offenders, violent offenders as a group would be serving longer sentences and have more extensive offence history, greater levels of risk, higher criminogenic needs ratings, lower motivation, and lower reintegration potential. As a result, this hypothesis was not tested in the present study, as only violent offenders were included in the new data source, which precludes direct comparisons with nonviolent offenders.

VPP. The VPP is a correctional program for male offenders with a history of violent behaviour.⁹ The program consists of 94 group sessions lasting 2.5 hours with a maximum of 12 participants per group. On average, the program is delivered over 16–20 weeks depending on the number of sessions offered per week. The program is delivered by a psychologist and a trained program facilitator (CSC, 1999; Cortoni et al., 2006).

The VPP is designed to decrease the likelihood of violent recidivism by targeting problem solving, conflict resolution, anger management, impulse control, and interpersonal skills. Associations between substance abuse and interpersonal relationships are also examined in the context of violent behaviour (CSC, 1999; Cortoni et al., 2006).

A portion of the data used in the present study was collected as part of an evaluation of the VPP conducted in the mid-2000s (Cortoni et al., 2006). Unlike this evaluation, however, the present study does not aim to assess outcomes related to program participation in order to draw conclusions regarding the efficacy of the VPP. Rather, the dataset was accessed to identify an existing sample of violent offenders in order to determine whether differential characteristics in risk, need, and program outcomes exist amongst violent offender subtypes. The data were used to categorize violent offenders into violent offence subtypes based on their index offence (at the time of program participation) and any previous violent convictions.

In order to be referred to participate in the VPP, an offender must meet the following inclusion criteria: 1) have two or more separate convictions of a violent offence

⁹ The VPP is currently being phased out as the primary correctional program for violent offenders in federal prisons in Canada. In 2010, the CSC adapted a new correctional program approach with the implementation of the Integrated Correctional Program Model (ICPM).

(i.e., Schedule I or murder) in either a community or institutional setting (youth violent convictions are included), and 2) meet the criteria for being at high risk of reoffence on the SIR-R1 (i.e., category: poor [-8 to -5] or very poor [-9 to -30]) or, for offenders without SIR-R1 scores, be classified as high for static risk at intake (CSC, 2000).

With respect to timeframes, the sample consisted of male offenders enrolled in the VPP between November 1999 and October 2004.¹⁰ Prior to coding offence files, the initial sample was comprised of 500 VPP enrollees; however, offenders were excluded from the present study for the following reasons: 1) the Criminal Profile Report (CPR) describing the offender's index offence in detail as well as any previous violent convictions was not available in English (i.e., only files written in French were available [$n = 97$]); 2) insufficient CPR information regarding details of violent index offence or violent history in order to determine group membership ($n = 6$); and 3) limited and incomplete data related to an offender's sentencing and risk (e.g., assessment of risk and criminogenic need) ($n = 2$). Given these data restrictions, the results describing the profile of violent offender subtypes were based on a sample of 395 male violent offenders.

In terms of the sample's representativeness, data from each institution was not available; however, each region was included, with limited representation from the Quebec region due to the limited availability of files written in English (i.e., CPRs). More specifically, relative to the in-custody proportions across regions, the study sample had a larger representation from the Pacific region and lower representation from the Ontario and Quebec regions. See Table 2 for a breakdown of the proportion of the sample of participants by region.

¹⁰ Participants and their data from the initial 120-session version of the VPP ($n = 55$) and participant data from individuals who took part in the program in the Special Handling Unit were also excluded.

Table 2

Regional Distribution of VPP Participants Relative to a Snapshot of the Overall Sample of Incarcerated Male Offenders

Region ^a	VPP participants % (<i>n</i>) <i>N</i> = 395	In Custody Within a Federal Institution ^b % (<i>n</i>) <i>N</i> = 12,790
Pacific	44.3 (175)	14.9 (1,894)
Prairies	21.3 (84)	23.1 (2,940)
Ontario	20.5 (81)	27.0 (3,441)
Quebec	2.3 (9)	25.6 (3,279)
Atlantic	11.6 (46)	9.34 (1,236)

Note.^a Pacific includes British Columbia and Yukon Territory. Prairies include Alberta, Saskatchewan, Manitoba, and Ontario, west of Thunder Bay, and the Northwest Territories. Ontario includes Ontario as far west as Thunder Bay and Nunavut. Quebec includes the province of Quebec. Atlantic includes New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland, and Labrador.
^b Snapshot of in-custody offenders on March 31, 2004 within a federal institution by region.

Data Sources

The study utilized data from two main sources: 1) an archival dataset of VPP enrollees, and 2) data extracted from the offenders' computerized files in the CSC's Offender Management System (OMS).¹¹

Consent

VPP data. Consent for VPP data collection was taken as part of standard program procedures because consent is required from each participant prior to program commencement. Providing consent indicates permission for the CSC to obtain program-related information (see Appendix B for the CSC program participation consent form).

All participants included in the study reviewed and signed an informed consent form and agreed to participate in an assessment of the program. Consent for this study indicated permission for two phases of data collection: 1) agreement to participate in

¹¹ The OMS is an automated database the CSC uses to manage information on federal offenders.

completing self-report questionnaires for research purposes both pre- and post-treatment, and 2) permission to access further data from the OMS files.

OMS data. Data within the OMS are administrative and compiled by the CSC to manage offenders while they are under supervision within federal institutions and the community. The use of OMS data in the present study is considered a secondary use of data, because this data had been collected for administrative purposes and was not compiled within the OMS for the purpose of research. As such, as per the Tri-Council Policy Statement, informed consent was not required.

Within both data sources, given the nature of the study, it was not possible for the data to be anonymous because it was necessary for each offender to be identified (by a unique identifier) in order to ensure that the correct offender files were coded for each program participant and that the corresponding OMS data were extracted; however, once extracted and compiled, the data were anonymized, and each offender was assigned a participant number. The master list of participants with corresponding participant numbers and unique offender identification numbers is securely stored at the CSC's national headquarters.

Finally, ethical approval from the Carleton University Research Ethics Board was obtained. Research approval was also granted from the CSC's Research Review Committee (see Appendix C and Appendix D).

Measures

OMS. Demographic characteristics and sentence-related variables, specifically, ethnicity, age, marital status, most serious offence, security level, sentence type, aggregate sentence length, and security level, were extracted by the researcher from the

OMS. These variables were aggregated and examined for group comparison (i.e., reactive violent offenders versus instrumental violent offenders).

Additional OMS variables included substance use, institutional charges, institutional program participation, and variables from the Offender Intake Assessment (OIA). The OIA database contains static (i.e., criminal history, offence severity, and risk of reoffence) and dynamic risk information on each offender when he or she is collected at intake into custody for his or her federal sentence. Dynamic risk information within the OIA includes indicators such as employment and educational history, substance abuse, family and marital information, attitudes, personal and emotional orientation, community functioning, and associates (CSC, 2012).

Ethnicity. An offender's ethnicity was categorized as follows: 1) Caucasian; 2) Aboriginal (Inuit, Métis, and First Nations); 3) Black; and 4) other visible minorities (Asiatic, Chinese, Filipino, East Indian, Hispanic, Korean, Latin American, Southeast Asian, and South Asian).

Age at admission. This variable indicated the age of the offender at the time of admission to a federal institution at the commencement of his current sentence.

Age at program commencement. This variable indicated the age of the offender at the time he was enrolled in the VPP.

Marital status. An offender's relationship status at intake was classified as follows: 1) married or common law, 2) divorced or separated, and 3) single, which included being widowed.

Most serious offence. This variable is adapted from a classification system originally developed by the Canadian Centre for Justice Statistics and is a component of

the reporting of Canada's crime rate, specifically determining the Crime Severity Index¹² (Statistics Canada, 2009).

The categories have been adapted and used to determine the most serious offence for each offender for the sentence he was serving at the time of program participation. In the present study, a participant's most serious offence for his current sentence was classified according to the following categories: homicide/manslaughter, attempted murder, sexual offences (e.g., sexual assault, sexual abuse), major assault, common assault, robbery, kidnapping, extortion, drug-related offences (e.g., possessing drugs or trafficking/importing drugs), arson (e.g., arson—setting fire by negligence, arson of one's own property), weapons or explosives (e.g., possession of weapon), fraud, breaking and entering, and theft. For example, if an offender was convicted for both a major assault offence and a breaking-and-entering offence, he would be classified as having a major assault offence as his most serious offence. Only the most serious offence for each offence was used to classify the individual. Although these categories were used to classify each offender, because the sample consisted primarily of violent offenders, statistics examining group differences were conducted only across violent offences and excluded nonviolent offences.

Sentence type.¹³ An offender's sentence type was included as a descriptive variable in the present study. Two types of sentences were examined: determinate and

¹² The Crime Severity Index is a type of "crime rate" reported by Statistics Canada that considers the severity, or the relative seriousness, of police-reported crime (Statistics Canada, 2009). The severity of offence categories is classified based on court and sentencing data, specifically, the average sentence length and incarceration rate for a given offence. The violent offence categories from most to least serious are as follows: murder, attempted murder, sexual assault, aggravated assault, common assault, robbery, kidnapping, and extortion.

indeterminate. The former occurs when a judge sets a maximum length or specific timeframe for an offender's sentence (e.g., three years), whereas an indeterminate sentence does not have a specific timeframe or maximum length and is often set for offences that are more severe in nature, such as murder, or for cases in which offenders are deemed dangerous.

Aggregate sentence length. An offender's aggregate sentence length indicates the current sentence length in years for each offender. Aggregate sentence length was only reported for offenders serving a determinate sentence. Offenders serving an indeterminate sentence (e.g., lifers) were excluded from analyses including aggregate sentence length.

OIA. The OIA, which is completed by an institutional parole officer at intake, is a comprehensive assessment of an offender's risk and needs upon admission (Motiuk, 1997; CSC, 2003, 2012). More specifically, an offender's level of static (i.e., criminal history) and dynamic risk (i.e., criminogenic need) as well as his or her reintegration potential and motivation to participate in the correctional plan are assessed. The assessment of risk at intake within CSC involves an integration of an actuarial assessment (SIR-R1 and SFA) with an assessment of dynamic factors that encompasses elements such as criminogenic needs and motivation.

Dynamic Factor Intake Assessment (DFIA). The DFIA provides an examination of the specific criminogenic needs of each offender. Criminogenic needs are domains that have been empirically related to correctional outcomes and may be used to

¹³ In Canada, most individuals sentenced to a term of two years or more serve their sentence in a federal prison or under federal supervision. Most individuals sentenced to fewer than two years serve their sentence in a provincially or territorially managed prison.

inform the type of intervention an offender requires (CSC, 2012). Each of the seven domains is assessed for an offender to determine his or her specific criminogenic need areas. The seven criminogenic need domains are employment, marital/family relationships, associates/social interaction, substance abuse, community functioning, personal/emotional orientation, and attitude. An offender is assigned one of the following ratings for each of the domains: 1) factors seen as an asset,¹⁴ 2) no need for improvement, 3) some need for improvement, and 4) considerable need for improvement.

Also, based on structured professional judgement, an offender's overall dynamic factor rating is low, moderate, or high according to an assessment of the degree and severity of his or her assessed criminogenic needs. That is, the number of domains identified and the severity of ratings across the seven domains determine the overall dynamic risk rating for each offender (CSC, 2012).

With some exceptions, the DFIA has demonstrated acceptable levels of predictive accuracy and reliability (Brown & Motiuk, 2005). In the present study, both the overall dynamic factor ratings and the rating for each of the seven domains for violent offender subgroups were considered. For many of the analyses, the four levels were collapsed into three, because the level *factor an asset* was not commonly endorsed in the sample. Therefore, chi-square analyses examined each domain with factor an asset and no immediate need for improvement combined.

SIR-R1 (CSC, 2012).¹⁵ The SIR-R1 is a static risk scale that assesses an offender's risk of general recidivism within three years of his release. The measure is

¹⁴ An offender cannot receive a rating of "factor seen as an asset" for both the substance abuse and personal/emotional domains.

¹⁵ Formerly known as the General Statistical Information on Recidivism (Nuffield, 1982).

typically computed within 90 days of admission to a federal institution and is completed only for non-Aboriginal men. The SIR-R1 is comprised of 15 actuarial items measuring an offender's criminal history. Scores for each item are totalled and differentially weighted according to the strength of its relationship with reoffending (CSC, 2012). Items include the following: age at first adult conviction, previous convictions for assault, employment status at arrest, previous revocation or forfeiture, previous incarceration, interval at risk since last offence, and current total aggregate sentence (CSC, 2012). The SIR-R1 is not used as an assessment of risk for women or for Aboriginal men.

Summation of the subscores yields scores ranging from -30 (poor risk) to +27 (very good risk), with lower scores reflecting greater risk of reoffending (poor risk) (Nafekh & Motiuk, 2002). Further, based on the overall score, offenders are classified into one of five risk categories based on risk of not reoffending: poor risk (-30 to -9; one out of three offenders are predicted to succeed); fair/poor risk (-8 to -5; two out of five offenders are predicted to succeed); fair risk (-4 to 0; one out of two offenders are predicted to succeed); good risk (+1 to +5; two out of three offenders are predicted to succeed); and very good risk (+6 to +27; four out of five offenders are predicted to succeed).

The SIR-R1 has demonstrated predictive validity for both general and violent recidivism (Bonta, Harman, Hann, & Cormier, 1996; Hoffman, 1994; Mills, Kroner, & Hemmati, 2004). In line with its intended purpose, the SIR-R1 has demonstrated more consistent associations with general recidivism than with violent recidivism (Kroner & Loza, 2001; Mills & Kroner, 2006; Mills, Loza, & Kroner, 2003). A recent study provided further evidence: the SIR-R1 predicted general (Area Under the Curve (AUC) =

.71) and violent reoffending (AUC = .68) in a sample of 12,845 male offenders (Barnum & Gobeil, 2012).

Reintegration potential. For each offender, this variable is described as low, moderate, or high, and it assesses the likelihood of an offender successfully reintegrating into the community (CSC, 2003, 2012). For non-Aboriginal male offenders, reintegration potential is a composite measure based on the offender's scores from the SIR-R1, the SFA, and the Custody Rating Scale¹⁶ (CSC, 2012). For Aboriginal offenders, reintegration potential comprises the offender's Custody Rating Scale, the SFA, and the Dynamic Factor Analysis Rating (CSC, 2012). In the present study, this variable was used for descriptive purposes only.

Motivation level. An offender's motivation level is assessed at intake as low, moderate, or high, based on the offender's drive and willingness to complete the requirements of his correctional plan (CSC, 2012). Factors that influence this rating include the following: recognition that a problem exists, willingness to change, feelings of responsibility, and levels of external support from family and friends (CSC, 2012).

Classification of participants as either reactive violent offenders or instrumental violent offenders. As part of the data collection, the CPR of consenting participants was accessed in order to categorize each individual into one of two groups: primarily reactive violent offender or primarily instrumental violent offender. The CPR provides an overview of the current index offences, an analysis of previous criminal

¹⁶ In conjunction with professional judgment, the Custody Rating Scale is an empirically derived tool that is used to determine the security designation of an offender at intake (minimum, medium, maximum). There are 12 items grouped into two subscales: the institutional adjustment subscale (five items) and the security risk subscale (seven items). The overall total score results in determining an offender's security level, with higher levels resulting in higher security recommendations (CSC, 2012).

behaviour, and an analysis of the offence cycle for each offender (see Appendix E for an overview of the CPR).

Nonsexual violent offences. As noted in the literature review, a violent offence or action is defined by Meloy (2006) as behaviour involving “an intentional act of physical aggression against another individual that is likely to cause physical injury” (p. 539; Anderson & Bushman, 2002; Reiss & Roth, 1993).

Specific offences defined as violent offences for the purposes of coding are listed in Appendix A. Schedule I offences of the Corrections and Conditional Release Act (CCRA) were classified as violent offences, including Murder I and Murder II convictions. There were additional offences classified as violent according to the CCRA but classified as nonviolent in the present study. These offences consisted of the following: 1) impaired driving-related offences (e.g., impaired driving causing bodily harm or impaired driving causing death); 2) criminal negligence that causes death or bodily harm; 3) arson-related offences (e.g., arson—disregard for human life); and 4) sexual offences, including sexually motivated violent offences (e.g., aggravated sexual assault, sexual assault). The first three of these offence types were excluded, given that the incident often occurs with no intent to harm an individual and on the basis of unique circumstances (e.g., impaired driving causing death). In view of the definition of violent acts as those that involve intentional acts of aggression meant to harm another individual (Anderson & Bushman, 2002; Meloy, 2006; Reiss & Roth, 1993), these offences were classified as nonviolent in the present study.

Moreover, sexual violence was excluded from the present study because the motivations underlying sexually based offences are believed to differ from those related

to nonsexual violence. That is, although offences such as sexual assault are often violent in nature and may result in a considerable injury to the victim, they were excluded because the motivations underlying sexually based offences have been demonstrated to be different from those underlying nonsexual violence (Declercq, Willemsen, Audenaert, & Verhaeghe, 2012; Serin & Kuriychuk, 1994). The differential cognitions and beliefs related to sexually motivated violence have been substantiated in numerous studies examining sex offenders (Declercq et al., 2012; Fisher & Beech, 2007; Eccleston & Owen, 2007).

Further, the framework and treatment approaches for sexual and non-sexual violent offenders are based on different programming models. Given these distinct and specialized program models for sexual and non-sexual violent and because the intent of this study is to inform correctional treatment specifically for non-sexual violence, the more narrow definition of violence that excludes sexual violence represents the area of interest.

The following coding guidelines were used to facilitate the categorization of each offender into an offender subgroup. There are two separate coding forms for classifying offenders as either reactive violent offenders or instrumental violent offenders.

Aggression Rating Form (ARF) (Vitacco et al., 2006). Originally developed to code files for juvenile offenders, and based on the Cornell et al.'s (1996) scheme, the ARF coding process assesses an individual on a continuum between reactive and instrumental aggression. There are five main areas that were coded: planning, goals, provocation, affective response, and victims of an offender's violent offences (Vitacco et al., 2006). Each behavioural domain is classified in order to place an individual along the

continuum. A test of the ARF's construct validity indicates that items assessing "goal directed aggression, unprovoked aggression, and lack of anger during aggression" best represent instrumental aggression in a youth sample (Vitacco et al., 2006, pp. 81). See Appendix F.

In the present study, this measure was used to classify each individual as either a predominantly instrumental aggressor or a predominantly reactive aggressor based on his index offence and violent offence history. The ARF represents an offender's pattern of violent offending as either predominantly instrumental or predominantly reactive and was used as the primary method of classifying offenders in the present study.

The ARF classifies each individual on a continuum between reactive and instrumental aggression with scores ranging from 5 to 25—higher scores represent offences that are more instrumental in nature. The construct validity of the coding results has demonstrated a good fit for the factor model in assessing aggression subtypes (Vitacco et al., 2006), with three items exhibiting the largest association with classifications: 1) the presence or absence of a goal, 2) the amount of provocation during the incident, and 3) the presence or absence of an affective response.

In order to assess differences amongst groups, the sample was split between ARF scores above and below 15 to classify participants as either predominantly reactive aggressors (< 15) or predominantly instrumental aggressors (> 15). There were 10 individuals with an ARF score of 15 who demonstrated characteristics of a mixed violent offender subtype. Given the limited subsample ($n = 10$) and because the initial intent of the study was to differentiate between reactive and instrumental violent offenders, the offence histories of these offenders were reassessed. The index and offence histories of

these individuals were re-evaluated based on the frequency of each subtype and were further categorized into either predominantly instrumental or predominantly reactive. The re-evaluation of the criminal history resulted in the classification of seven offenders as reactive violent offenders and the remaining as instrumental violent offenders.

Violent Incident Coding (VIC) (Cornell et al., 1996). In accordance with theoretically and empirically derived subtypes, Cornell et al. (1996) devised a coding guide to reliably distinguish between reactive and instrumental violent offenders. The VIC coding process involves identifying the amount of planning involved in the incident and other elements such as the perception of provocation; the former is associated with instrumental violence and the latter with reactive. Cornell et al.'s contribution has been significant in terms of providing a systemic approach to categorization.

Each offender's violent index offence was coded on a four-point scale as one of the following: 1) clearly reactive hostile aggression (e.g., interpersonal conflict); 2) primarily reactive hostile aggression, some instrumental qualities; 3) primarily instrumental aggression, some reactive qualities; and 4) clearly instrumental aggression (e.g., crime-related incident, drug deal). If multiple violent offences were present in the index offence, the most serious violent offence was coded. Very few index offences were coded as level 2 ($n = 11$) or 3 ($n = 21$), which limited our capacity to analyze these subgroups separately. Therefore, these items were recoded into either clearly reactive or clearly instrumental, and the VIC coding was dichotomized into either reactive or instrumental aggression groups.

This measure is different from the previous ARF coding system in that it categorizes only an offender's index offence and does not include his entire violent

offence history. The VIC form was used as a secondary measure of coding that only considered an offender's index offence.

For descriptive purposes, each index offence was also classified according to the following items: 1) planning: degree of premeditation or preparation for aggression; 2) goal directedness: degree to which aggression is motivated by some external gain or incentive, such as money; 3) provocation: degree of provocation, frustration, or threat from the victim; 4) arousal: degree of anger experienced by the aggressor; 5) severity of violence: degree of injury to the victim; 6) relationship to the victim: closeness of the relationship between the victim and the aggressor; 7) intoxication: intoxication with drugs or alcohol during the incident; and 8) psychosis: presence of psychotic symptoms during the incident. It should be noted that these eight characteristics were not used to determine group membership, but they were rather used for descriptive purposes for the index offence (see Appendix G for Cornell et al.'s (1996) VIC form).

Inter-Rater Reliability

A graduate-level researcher coded 10% of the cases to assess consistency across violent offender classifications. Inter-rater reliability assessments were conducted on individual items and the overall categorical rating of the ARF (Vitacco et al., 2006) and on the items of the VIC coding system (Cornell et al., 1996). Intra-class correlation coefficients (ICC) were calculated using two-way random effects and the consistency agreement definition. With respect to interpretation of the values of reliability, ICCs < .40 were classified as poor, .40–.59 as fair, .60–.74 as good, and .75–1.0 as excellent (Cicchetti & Sparrow, 1981).

Across the individual items for the ARF, ICCs ranged from .575 to .833. The lowest agreement was on the item related to the degree of planning involved with violent offences. Generally, this item was the most difficult to rate because the level of planning was not often described in the criminal profile, especially for non-index offences. The remaining items on the ARF demonstrated good or excellent agreement. The kappa related to agreement on the overall category of violent offence was considered excellent at .741.

The VIC coding system was consistent across the individual items, ranging from .552 to 1.0. Classification of the overall violent offence category was considered excellent at 1.0. The lowest rating for the VIC coding system was also related to the degree of planning involved in the index offence. The remaining items on the VIC demonstrated good or excellent agreement. See Appendix H for examples of violent offender subgroups.

Treatment Targets

In addition to the demographic and sentence-related data extracted from the OMS, self-report measures were also included in this study in order to assess group differences on treatment targets related to violent offending, such as impulsivity, attitudes toward violence, and reasons for aggression. These psychometric measures were originally collected as part of an evaluation of the VPP as one component of a pre- and post-program assessment battery to evaluate intra-individual treatment change. In total, nine measures were included as part of the program assessment: seven self-report measures and two risk assessment measures. Six of the seven self-report measures are described in

the present study, and the additional self-report measure and two risk assessment tools are detailed in Study 2.

Data were not available for all program participants. Approximately 60% of the sample had complete pre- and post-assessment data, with lower percentages for some measures (i.e., VRS, PCL-R). The program documentation does not elaborate on possible reasons for the large proportion of missing data. Completing the program assessment material was voluntary, and some offenders may not have been willing or interested in completing the measures. Analyses were conducted to compare the motivation level of participants who completed most of the measures within the assessment battery (3 or more) on a voluntary basis, relative to those who did not complete the assessment battery. Chi-square analysis indicated a significant difference in the level of motivation between offenders who completed most of the assessment battery ($\chi^2(2, 321) = 16.46, p < .001$). Results are in the opposite direction than expected, in that a greater proportion of offenders with high motivation (17.4%, $n = 8$) failed to complete the assessment battery. This analyses only included offenders who had participated in the psychometric assessment portion of the data collection ($n = 209$).

BPAQ (Buss & Perry, 1992). The BPAQ is a 29-item self-report questionnaire assessing aggression, anger, and hostility. Items are rated on a five-point Likert scale where 1 = extremely uncharacteristic of me, 2 = somewhat uncharacteristic, 3 = uncertain, 4 = somewhat characteristic, and 5 = extremely characteristic. There are four subscales: physical aggression (PA, 9 items), verbal aggression (VA, 5 items), anger (AG, 7 items), and hostility (HT, 8 items). The BPAQ resulted from modifications of the Buss–Durkee Hostility Inventory (BDHI) (Buss & Durkee, 1957) and was designed to

provide a more specific assessment of aggression than the BDHI (Ronan, Dreer, Maurelli, Wollerman-Ronan, & Gerhart, 2014). Revisions addressed the inconsistent findings and weak psychometric properties of the true–false format of the BDHI. Scores range from 29 to 145, with higher scores reflecting higher levels of aggression. The four subscales represent the motor and behavioural components of aggression (physical and verbal aggression), the affective or emotional component (anger), and the cognitive component (hostility) (Vigil-Colet, Lorenzo-Seva, Codorniu-Raga, & Morales, 2005).

Two more variations of the BPAQ have recently been developed and are cited in the literature: 1) the BPAQ–Short Form (BPAQ-SF) (12 items; Diamond & Magaletta, 2006) and 2) the Aggression Questionnaire (AQ) (34 items; Buss & Warren, 2000). These measures have a similar structure (four-point rating scales) but vary in terms of the number of questions. The AQ also includes an additional subscale assessing indirect aggression. This summary will provide an overview of key validity and reliability information of the 29 item measures included in the present study.

Validity. In the original BPAQ study, which utilized a sample of undergraduates, four subscales emerged as distinct factors, with Cronbach’s alphas ranging from .72 verbal aggression to .85 physical aggression, and with an overall alpha of .89 (Buss & Perry, 1992). Correlations between the BPAQ with peer-rated aggression measures further supported the construct validity, as the magnitude for the correlations ranged from .20 for verbal aggression to .45 for physical aggression (Buss & Perry, 1992). Williams, Boyd, Cascardi, and Poythress (1996) examined the validity of the BPAQ in an offender population. Their results supported concurrent validity, because positive correlations of .79 were reported between the NAS and the BPAQ. Subsequent confirmatory factor

analyses have established the presence of the four factors in offender samples: physical aggression, verbal aggression, anger, and hostility (Archer, Kilpatrick, & Bramwell, 1995; Berstin & Gesn, 1997).¹⁷

Smith and Waterman (2006) were able to differentiate amongst violent and nonviolent offenders and undergraduate students based on the results from the BPAQ. Specifically, violent offenders scored higher on all subscales as well as the total BPAQ score than did nonviolent offenders and undergraduate students. Nonviolent offenders demonstrated higher levels of physical aggression and hostility than undergraduate students.

Archer, Holloway, and McLoughlin (1995) examined the link between physical aggression and anger as measured by the BPAQ and the presence of an assault within the five years prior to the study. Their results demonstrated that individuals with an assault in their history scored higher on physical aggression and anger subscales compared to those who had no recent history of a physical assault. Broadly speaking, the BPAQ, in numerous samples, has demonstrated sufficient results to establish its validity (Ronan, Dreer, Maurelli, Wollerman-Rona, & Gerhart, 2014).

Reliability. Studies using the BPAQ within offender samples have reported acceptable to good levels of reliability, with alphas ranging from .77 to .84 (Ireland & Archer, 2004; O'Connor, Archer, & Wu, 2001).

¹⁷ Additionally, confirmatory factor analyses have demonstrated the four-factor structure in translated and adapted versions of the BPAQ, such as in Dutch (Meesters, Muris, Bosma, Schouten, & Beuving, 1996), Japanese (Nakano, 2001), Spanish (Ramierz, Andreu, Fujihara, 2001), and French (Pfister & Masse, 2001) versions.

In the present study, pre-program reliability values for the subscales of the BPAQ ranged from $\alpha = .73$ –.84 and post-program levels ranged from $\alpha = .71$ –.81 (see Appendix I for more results for specific subscales). The overall alpha for the BPAQ was $\alpha = .92$ pre- and post-program, indicating high internal consistency.

In terms of relationships with other key treatment targets, within the sample, $BPAQ_{TOT_PRE}$ and $BPAQ_{TOT_POST}$ were significantly correlated with I_{7PRE} , I_{7POST} , $NAS-PI_{PRE}$, and RFA_{PRE} (see Appendix J for correlation results with the BPAQ).

Impulsivity Test I₇ (Eysenck's I₇) (Eysenck, Easting, & Pearson, 1984).

Eysenck's I₇ is a 19-item self-report measure assessing Eysenck's conceptualization of impulsivity as behaving without thinking and consequently failing to realize the risks associated with a given behaviour (Luengo, Carrillo-de-la-Pena, & Otero, 1991). This measure is part of a larger scale that also assesses venturesomeness and empathy (Eysenck et al., 1985). Participants are asked to respond to each question by indicating whether the statement applies to or describes them. A point is allocated for each positive endorsement (e.g., Do you mostly speak without thinking things out? Do you usually work quickly, without bothering to check? Before making up your mind, do you consider all the advantages and disadvantages?). Higher scores are reflective of more impulsive behaviour. Normative data are available across eight categories from 16 to 89 years of age.

Validity. Previous factor analyses have demonstrated a consistent structure for the impulsivity component of this measure (Eysenck, Easting, & Pearson, 1984). In addition, numerous successful versions of the measure have appeared in other languages, including Spanish (Luengo, Carrillo-de-la-Pena, & Otero, 1991), German (Eysenck, Daum,

Schugens, & Diehl, 1990) and Dutch (Lijffijt, Caci, & Kenemans, 2005). Previous studies have confirmed that Eysenck's I_7 is a valid measure of impulsivity and consistently correlates with other measures of impulsivity, such as the Barratt Impulsiveness Scale (Luengo et al., 1991). Further, in a sample of 105 adult male offenders, Gordon and Egan (2011) examined the predictive validity of four self-report measures of impulsivity. Compared to the other measures, Eysenck's I_7 was the most reliable and predicted disciplinary breaches and violent convictions.

Reliability. Previous studies have demonstrated that the Eysenck's I_7 impulsivity subscales demonstrated good internal consistency, with $\alpha = .84$ for males and $\alpha = .83$ for females (Eysenck, Pearson, Easting, & Allsopp, 1985). In the present study, the overall alpha level was $\alpha = .83$, indicating good internal consistency pre- and post-program.

Novaco Anger Scale and Provocation Inventory (NAS-PI) (Novaco, 2003). The NAS and PI are the components of a larger self-report measure (the NAS-PI) that assesses an individual's cognitions, feelings, and actions related to anger and anger reactivity during provoking situations; essentially, this measure assesses the experience of anger (Ronan, Dreer, Maurelli, Wollerman-Rona, & Gerhart, 2014). The measure is comprised of 73 items across two sections. Part A: NAS (48 items) assesses the cognitive (justification, hostile attitude, suspicion), behavioural (physical confrontation, impulsive reaction, indirect expression), and physiological (irritability, anger intensity, duration) responses to anger. Items on the NAS assess characteristics associated with the experience of anger or characteristics of anger expression (i.e., trait anger) and are rated on a three-point Likert scale from 1 = never true to 3 = always true.

The cognitive subscale is comprised of 16 items assessing attention (e.g., I notice annoying things right away); rumination (e.g., I can't sleep when something wrong has been done to me); hostile attitude (e.g., If I don't like someone, it doesn't bother me to hurt their feelings); and suspiciousness (e.g., People act like they are being honest when they really have something to hide). These cognitive styles influence what an individual pays attention to in an interpersonal situation and consequently what is perceived as a provocation.

The arousal subscale is comprised of 16 items assessing the physiological experience of anger, including intensity (e.g., When I get angry, I feel like smashing things); duration (e.g., When I get angry, I stay angry for hours); somatic tension (e.g., I feel agitated and unable to relax); and irritability (e.g., I get annoyed when someone interrupts me).

The behaviour subscale is comprised of 16 items assessing the behaviour outcomes associated with anger, including impulsive reactions (e.g., If someone bothers me, I react first and think later); verbal aggression (e.g., Some people need to be told to get lost); physical confrontation (e.g., Some people need to get knocked around); and indirect expression (e.g., If someone makes me angry, I'll tell other people about them).

Part B: PI (25 items) assesses anger intensity in a number of provoking situations and includes the following subscales: frustration (e.g., Someone keeps making noise when you are trying to concentrate); annoying traits (e.g., People who act like they know it all); irritations (e.g., Being slowed down by another person's mistakes); disrespectful treatment (e.g., Someone looks through your things without your permission); and unfairness/injustice (e.g., Being accused of something you didn't do). Items are assessed

on a four-point Likert scale: 1 = not at all angry, 2 = a little angry, 3 = fairly angry, and 4 = very angry. Higher scores on both subscales reflect higher levels of anger, specifically capturing the element of anger reactivity to situations.

Validity. The NAS-PI has demonstrated good construct validity, and correlations with other self-report measures of anger (STAXI Trait Anger Scale) and aggression (e.g., BPAQ) (Buss & Warren, 2000) have been reported in offender and psychiatric samples (Novaco, 1994, 2003). In terms of subscales specifically with correctional samples, the subscales of the NAS-PI that correlate with the BPAQ include the arousal and behavioural subscales and the NAS total score.

In a Canadian sample of male violent offenders, Mills, Kroner, and Forth (1998) assessed the reliability and validity of the NAS and reported a significant relationship between the BPAQ total score and each of the subscales. Correlations ranged from $r = .65$ (cognitive subscale) to $r = .79$ (NAS total). Amongst subscales, the strongest relationship was between the behavioural subscale of the NAS and the physical aggression subscales of the BPAQ. Broadly speaking, the measure is related to other anger measures in the expected direction.

Further, in terms of predictive validity, the NAS-PI has been reported to be able to classify aggressive participants in a forensic sample with 90% accuracy and predict offenders' violent behaviour in the community upon release (Selby, 1984; Novaco, 1994).

Reliability. Data presented in the manual revealed excellent internal consistency for both the NAS subscale ($\alpha = .94$) and the PI subscale ($\alpha = .95$) (Novaco, 2003). Additional results demonstrated good intercorrelations with other anger measures (Jones,

Thomas-Peter, & Trout, 1999; Novaco, 1994). In the present study, reliability values for the subscales of the NAS pre-program were excellent, ranging from $\alpha = .82-.95$ pre-program and $\alpha = .82-.96$ post-program (see Appendix I for internal consistency levels for specific subscales).

Reasons for Aggression test (RFA) (Bettman & Serin, 1996). The RFA is a 55-item self-report measure that assesses the reasons an individual may be involved in physical assaults. Participants are asked to reflect on the occasions in which they have taken part in physical fights and subsequently to rate each item in terms of how often (four-point Likert scale from 1 = never to 4 = almost always) the reasons for aggression apply.

The scale is comprised of 11 subscales of reasons for aggression, each containing five items. Reasons for aggression include the following: 1) communication (e.g., When I couldn't tell someone how I really felt); 2) revenge (e.g., When I wanted to get even with someone); 3) control (e.g., When someone did something they know I wouldn't like); 4) intimacy (e.g., When my partner questioned my loyalty); 5) relationship (e.g., When others were pressuring me to change); 6) emotional liability (e.g., When I was on the edge and tried hard to control my anger); 7) impairment (e.g., When I had too much to drink or took too many drugs); 8) distress (e.g., When I had money problems); 9) social (e.g., When I wanted to prove I was part of the group); 10) ego (e.g., When someone criticized me in front of others); and 11) goal oriented (e.g., When I couldn't get something any other way). Higher scores signified higher endorsement of each reason for aggression. Scores for each subscale ranged from 0 to 20. Normative data is not available.

Validity. Given the limited use of this measure to date, validity has not been assessed.

Reliability. No previous documentation assessing the reliability of this measure has been reported. In the present study, reliability values for the subscales of the RFA ranged from $\alpha = .75-.97$ pre-program and $\alpha = .73-.98$ post-program (see Appendix I for internal consistency levels for specific subscales).

Aggression Efficacy Scale (AES) (Bettman & Serin, 1996). The AES is a 15-item self-report measure assessing a participant's beliefs about the use of aggression while in the community (street) and incarcerated (prison). Beliefs related to the efficacy of aggression in a given situation, the justification of using aggression, and perceived social support related to aggression are assessed on three subscales within each setting (prison scale, street scale).

Participants are asked to rate each statement on a four-point scale: 0 = not at all true, 1 = slightly true, 3 = fairly true, and 4 = very true. Examples of efficacy statements include the following: People say that I am a good fighter and I survive because I am strong. Examples of righteousness statements include the following: People who cross me deserve what they get and victims often exaggerate how bad it was to influence the courts. Examples of social support statements include the following: I can rely on my friends to back me in a fight, and my friends think more of me because I stand up for myself. Scores ranged from 0 to 15 within each subscale, with higher scores signifying attitudes in support of aggression as a "means to an end."

Validity. Given the limited use of this measure to date, validity has not been assessed.

Reliability. No previous documentation assessing the reliability of this measure has been reported. In the present study, reliability values for the subscales of the AES varied considerably from $\alpha = .42-.88$ pre-program and $\alpha = .53-.89$ post-program (see Appendix I for internal consistency levels for specific subscales). With the exception of the righteousness subscales, the internal consistency for the AES was good or excellent.

Balanced Inventory of Desirable Responding (BIDR) (Paulhus, 1998). The BIDR is a 40-item scale used to measure the potential response bias of self-report measures and is comprised of two subscales assessing a participant's self-deception enhancement (20 items; BIDR_SDE: e.g., I never regret my decisions; When my emotions are aroused, it biases my thinking) and impression management (20 items; BIDR_IM: e.g., I never cover up my mistakes; I sometimes tell lies if I have to). The self-deception (BIDR_SDE) subscale examines one's propensity to present an exaggerated claim of one's judgement and decision making, often described by the authors as an enhancement of the ego. The impression management (BIDR_IM) subscale analyzes the extent to which a respondent may be exaggerating or trying to impress the audience by underreporting undesirable behaviour (Paulhus, 1998).

Each subscale contains 20 items rated on a seven-point Likert scale from 1 = not true to 7 = very true. After reverse-scoring the negatively worded statements, responses are dichotomized, with responses indicating the two extreme scores (6 or 7) that represent "high impression management" or "high self-deception" recoded as "1" and all remaining scores recoded as "0." For the purposes of the present study, the BIDR was used to assess the impact of socially desirable responding on pre- and post-program scores. Pearson correlation coefficients were calculated between each BIDR scale and the self-

report measures. Correlation results with BIDR were reported within each section for a given measure. Further, the BIDR_TOT_POST was included as a covariate for the mixed between–within analyses of variance (ANOVAs) for each of the psychometric measures, including total and subscale scores. The BIDR_TOT_POST was chosen as the covariate, given that in the present study, it demonstrated the greater number and magnitude of significant correlations with the self-report measures.

Validity. The BIDR has been validated with an offender population (Kroner & Weekes, 1996) and has been used with offenders in a variety of research studies (e.g., Carney & Buttell, 2004; Irving, Taylor, & Blanchette, 2002; Richards & Pai, 2003; Mills & Kroner, 2005). Further, the BIDR represents the research version of the Paulhus Deception Scale (Paulhus, 1998), which has a similar structure and scoring procedure.

Reliability. Internal reliability has been more consistent for BIDR_IM subscales than for BIDR_SDE subscales, although both have been reported to be in the acceptable range (Paulhus, 1994), with alphas ranging from .65 to .75 for BIDR_SDE and .75 to .80 for BIDR_IM.

In the present study, reliability values for the subscales of the BIDR ranged from $\alpha = .54-.80$ pre-program and $\alpha = .55-.80$ post-program (see Appendix I for internal consistency levels for specific subscales).

Materials

Data analyses were performed using version 21.0 of the IBM Statistical Package for the Social Sciences (SPSS) (IBM, 2012) for Windows as well as version 9.2 of the Statistical Analysis Software (SAS) (2011). Data were extracted from the CSC's OMS database.

Procedure

Ethics approval from the Carleton University Research Ethics Board was obtained. Research approval was also secured from the CSC's Research Review Committee.

Analytic Strategy

In order to address the research questions and evaluate the corresponding hypotheses, the following statistical tests were used. First, for demographic and descriptive OMS data, Pearson chi-square tests were used to assess differences within categorical variables between reactive violent offenders and instrumental violent offenders. Adjusted standardized residuals were calculated for each significant chi-square analysis in order to determine which cells were significantly different between groups.¹⁸ Student's t-tests and ANOVAs were conducted to assess group differences with continuous variables. Where applicable, in order to reduce the chance of Type 1 error, significant levels were adjusted (Bonferroni corrections) to provide family-wise significance levels of .05 as needed. For psychometric measures, mixed between–within ANOVAs were conducted to examine the impact of treatment as a function of the violent offender treatment group. In order to control for socially desirable responding, an additional series of mixed between–within ANOVAs were conducted with BIDR as a covariate.

Data screening. In total, the original database was comprised of 500 male federal offenders who had been assigned to participate in CSC's VPP. Individuals were

¹⁸ Residuals help to identify the strength of the chi-square association between groups and are the difference between the expected and observed frequencies in a given cell. Residuals, when converted to Z-scores, become *adjusted standardized residuals* and follow a normal distribution, and as such, an absolute value $\geq +/-2$ indicates a significant deviation from the mean (Howell, 2002; Bewick, Cheek, & Ball, 2004).

excluded from analyses for the following reasons: 1) 97 participants were excluded for whom CSC documentation, specifically the CPR, was available only in French; and 2) eight individuals were excluded from various components of the OMS data analysis because only incomplete or inconsistent data were available. After excluding these participants, the remaining sample of 395 participants was included in the analyses.

Data entry. Data were inspected for data entry errors and corrected in advance of any further data screening. Means, standard deviations, and minimum and maximum values were examined to ensure variables were within an acceptable range.

Missing data. With respect to specific measures, mean substitution was conducted in order to address the missing response data according to published guidelines. Given the nature of the data and the relatively low amount of missing data within measures (less than 5% omission rate), mean substitution was an appropriate method to address the missing data (Tabachnick & Fidell, 2001).

For the PCL-R, missing scores were prorated when items were missing. The user manual recommended this method as a means to address missing data in the PCL-R, assuming that the proportion of missing data had not exceeded 6% (i.e., five items total, two items per factor, or one item per facet) (Hare, 2003).

Mean substitution was not conducted for the AES, Eysenck's I₇, RFA, NAS-PI, or BIDR. Consequently, pairwise deletion was adapted for all bivariate analyses. With respect to the proportion of participants with self-report data, 67% of the sample had been asked to complete the assessment battery as indicated by the presence of self-report data. Of this sample, only 18% ($n = 49$) had complete data across all eight measures, and the remaining participants were missing one (12.8%, $n = 34$), two (21.8%, $n = 58$), three

(24.4%, $n = 65$), or four or more measures (22.7%, $n = 60$) pre-program. Levels of missing data were greater post-program, partially resulting from program dropout ($n = 11$). Specifically, 15% ($n = 40$) had complete data across all eight measures, and the remaining participants were missing one measure (10.2%, $n = 27$), two measures (18.4%, $n = 49$), three measures (21.1%, $n = 56$), or four or more measures (35.3%, $n = 94$) post-program.

In terms of missing data by measures, the BPAQ, Eysenck's I_7 , NAS-PI, and BIDR had the lowest amounts of missing data, all approximating 20% pre-program. Conversely, missing data for the AEST, RFA, and RFC averaged in excess of 40%, and given that this represented all of the independent self-report measures, replacement of data was deemed inappropriate. A series of chi-square analyses was conducted to assess the differences in the proportion of missing data by group. All analyses were non-significant, indicating that reactive violent offenders and instrumental violent offenders did not differ in terms of the proportion of missing data by measures. The pattern of missing data was examined using Little's Missing Completely at Random (MCAR) test, with age, ethnicity, risk, violent offender subgroups, and scores on the primary subscales of measures included in the analysis. The MCAR results were non-significant for pre-program ($\chi^2(544, n = 266) = 241.68, p = 1.0$) and post-program ($\chi^2(475, n = 266) = 455.05, p = .737$) data. These results indicate that data were missing completely at random or missing at random (Allison, 2001), both of which suggest that missing data is not a concern.

Multiple imputation is an option for addressing missing data (Tabachnick & Fidell, 2007) in this scenario. However, given the complexity of the design (pre- and post-

psychometric measures and professional ratings) across various groups (reactive and instrumental violent offenders, treatment completers, dropouts, non-completers for administrative reasons), the voluntary nature of completing self-report measures, concerns with social desirability, and the varying degree of missing data by measure, multiple imputation was not considered to be a viable option for the present study.

Table 3

Proportion of Individuals with Missing Data Pre- and Post-Program, by Measure

Measure	Pre-Program % (n)	Post-Program % (n)
BPAQ	18.8 (50)	25.2 (67)
Eysenck's I ₇	19.5 (52)	25.2 (67)
NAS	20.7 (55)	26.3 (70)
PI	20.7 (55)	26.7 (71)
BIDR	21.4 (57)	25.9 (69)
AEST	51.1 (136)	56.8 (151)
RFA	43.2 (115)	50.8 (135)
URICA	50.0 (133)	55.3 (147)
VRS	41.0 (109)	44.7 (119)
PCL-R	67.3 (179)	--

Note. BPAQ = Buss–Perry Aggression Questionnaire, NAS = Novaco Anger Scale, PI = Provocation Inventory, BIDR = Balanced Inventory of Desirable Responding, AEST = Aggression Efficacy Scale, RFA = Reasons for Aggression, URICA = University of Rhode Island Change Assessment, VRS = Violence Risk Scale, PCL-R = Psychopathy Checklist–Revised.

Outliers and Normality

In terms of data screening, all continuous variables were assessed for non-normality (skewness and kurtosis) and the presence of univariate and multivariate outliers.

Specifically, histograms, normal probability plots, studentized residuals, and skewness and kurtosis statistics were conducted for each variable. Further, standardized scores and the Mahalanobis distance test were conducted to assess for univariate and multivariate outliers, respectively.

Univariate outliers. First, univariate outliers were identified and standardized. Z-scores were calculated for each variable and for each case. Z-scores of 3.3 or higher identified an outlier, and 15 cases were identified as univariate outliers across the 12 variables. Scores identified as outliers were recoded to be within three standard deviations of the overall group means for the subscale, as they represented extreme scores (Tabachnick & Fidell, 2001).

Multivariate outliers. Mahalanobis distance values for each case were calculated to screen for the presence of multivariate outliers. No multivariate outliers were detected; therefore, no additional outliers were recoded.

Skewness and kurtosis. Two key indicators of normality, skewness and kurtosis statistics, were converted to Z-scores. Skewness and kurtosis statistics were identified as an issue (i.e., z_s or z_k greater than or less than +3.3 or -3.3) in 25 of the 97 scales or subscales. Positively skewed variables were transformed using a square root, a logarithm, or an inverse transformation depending on the severity of the skewness. Negatively skewed variables were transformed using a reflection, a reflection and a square root, a reflection and a logarithm, or a reflection and an inverse transformation depending on the severity of the skewness (Tabachnick & Fidell, 2001).

For each variable that was transformed due to non-normality, t-tests and ANOVAs were conducted for comparison. Because these tests indicated statistically non-significant differences between transformed variables and original variables, the original variables were retained to facilitate interpretation.

Results

Research Question 1: What are the prevalence and profiles of violent offender subtypes, particularly, of reactive violent offenders (RVOs) and instrumental violent offenders (IVOs)?

Prevalence of Violent Offender Subtypes (Research Question 1)

In total, the CPRs of 395 male offenders were coded to classify each offender as either a predominantly IVO or a predominantly RVO based upon their index and violent offence history.¹⁹

ARF (Vitacco et al., 2006). Coding from each participant's CPR resulted in 61.6% ($n = 247$) of the sample being classified as predominantly IVOs and 36.9% being classified as predominantly RVOs. Approximately 1.5% ($n = 6$) had insufficient information to code the offence category (see Table 4).

Overall, the mean score on the ARF was 17.32 ($SD = 6.49$), demonstrating a sample with a high level of instrumental violence history. As described in the methods section, scores on the ARF measure were divided into two categories, with lower scores representing predominantly RVOs and higher scores representing predominantly IVOs.

¹⁹ In total, 401 offender files were accessed for coding; however, OMS-related violent offence history was not available for six participants. Additionally, psychometric measures were available only for approximately 50% of the sample, and sample sizes consequently vary by measure.

Table 4

Prevalence of Violent Offender Subtypes Based on the Aggression Rating Form (ARF)

Offence Category	% (n)
RVOs (history and index)	36.9 (148)
IVOs (history and index)	61.6 (247)
Unknown: insufficient offence information to classify	1.5 (6)

Note. RVOs = reactive violent offenders. IVOs = instrumental violent offenders.
n = 401.

A detailed examination of each ARF item and the corresponding ratings for each violent offender subgroup is shown in Table 5. Statistical analyses were not conducted because these items were used to determine group membership.

IVOs are characterized as committing violent offences that are goal directed ($M = 4.44$, $SD = .61$) with some degree of planning involved ($M = 4.26$, $SD = .84$) and no provocation ($M = 4.33$, $SD = .74$). Conversely, participants classified as RVOs demonstrated little to no planning or preparation prior to the violent incident ($M = 1.92$, $SD = 1.02$) and were more likely to have known their victim ($M = 2.62$, $SD = 1.14$), expressed anger²⁰ during the incident ($M = 1.69$, $SD = .72$), and perceived some degree of provocation from the victim ($M = 1.71$, $SD = .70$). RVOs also consistently demonstrated intense emotion during their violent offence. See Appendix H for examples of IVO and RVO offence histories.

²⁰ For the *planning*, *goal-directed*, and *no perceived provocation* items, the presence of each of these items in the majority of previous violent offences is demonstrated by a higher score (3–5). Conversely, for *anger* and *relationship* items, the presence of each of these items in the majority of previous violent offences is demonstrated by a lower score (1–3). Overall, for this measure, the higher the score, the higher the degree of instrumental violence.

Table 5

Means and Standard Deviations of Items on the Aggression Rating Form (ARF) for Violent Index Offence and History by Violent Offender Subtype

ARF Items	RVOs	IVOs	Overall
	<i>n</i> = 148	<i>n</i> = 247	<i>n</i> = 395
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Planning	1.92 (1.02)	4.26 (.84)	3.38 (1.45)
Goal directed	1.89 (.82)	4.44 (.61)	3.48 (1.42)
No perceived provocation	1.71 (.70)	4.33 (.74)	3.35 (1.46)
Anger	1.69 (.72)	4.38 (.69)	3.37 (1.48)
Relationship with the victim	2.62 (1.14)	4.34 (.87)	3.70 (1.29)
ARF total score (range: 5–25)	9.82 (3.05)	21.76 (2.86)	17.29 (6.49)

Note. RVOs = reactive violent offenders. IVOs = instrumental violent offenders. Statistical analyses were not conducted between groups, given that the groups were formed according to results on this measure.

VIC. In addition to coding each offender's index and criminal history using the ARF measure, each index offence was coded using the VIC form. This coding form was used to examine whether considering only an offender's index offence in determining violent offender subtypes resulted in different subgroup outcomes.

Overall, results were similar to the ARF coding in that the VIC coding resulted in the classification of a larger proportion of the sample as IVOs (67.8%, *n* = 268) than as RVOs (27.6%, *n* = 109); in fact, the proportion of IVOs is even greater based on coding only the index offence versus all documented violent offences (i.e., ARF IVOs = 61.6% vs. VIC IVOs = 67.8%). Consequently, the proportion of RVOs based on VIC coding was lower than that based on ARF coding (i.e., ARF RVOs = 36.9% vs. VIC RVOs = 27.6%). It is worth noting that 5.2% of the sample had not been convicted of a violent offence on their current sentence and were consequently excluded from the VIC coding; however, these participants had histories of violent convictions and were included in the ARF coding.

Offence characteristics of violent offender subtypes. Each item on the VIC (e.g., arousal, planning) was rated for its prevalence in each participant's violent index offence.

The following are the results for each of the VIC items by ARF violent offender subtype. Table 6 contains a detailed overview of the VIC coding results by violent offender subtype.

Planning. With respect to the degree of planning of a violent offence, some planning was significantly more likely in the index offences of IVOs than in those of RVOs. In 72.3% ($n = 175$) of the index offences of IVOs, there was some planning present in the index offence, whereas in the majority of RVOs (59.3%, $n = 80$), very little or no planning took place before the violent act.

Goal directedness. The majority of IVOs (93.4%, $n = 226$) demonstrated clear, unequivocal goal directedness during the commission of their violent offence, which is in contrast to the 75.6% ($n = 102$) of RVOs for whom there was no apparent goal directedness during the violent offence because the motive of the offence was to retaliate or defend themselves.

Provocation. During the index offence there was no apparent provocation for a greater proportion of IVOs (77%, $n = 186$) than RVOs (22.2%, $n = 30$). Conversely, a greater proportion of RVOs experienced either mild (35.6%, $n = 48$), moderate (33.3%, $n = 45$) or strong provocation (8.9%, $n = 12$) than IVOs during their violent index offence.

Arousal. The participants' mental state and level of emotional arousal was coded during the index offence. The majority of IVOs (87.3%, $n = 211$) were reported to be calm or tense at most during the index offence. RVOs were more varied in their display of emotion: 34.8% ($n = 47$) were coded as calm or tense, but 63% ($n = 85$) demonstrated a high degree of anger or fear.

Table 6

Index Offence Characteristics of Reactive and Instrumental Violent Offenders

Violent Incident Coding (VIC) Items	RVOs	IVOs	χ^2	<i>p</i>	Φ or V
	<i>n</i> = 135	<i>n</i> = 242			
	% (<i>n</i>)	% (<i>n</i>)			
Planning					
None	59.3 (80)	11.1 (27)	99.94***	.000	.515
Some	36.3 (49)	72.3 (175)			
Moderate/extensive	4.4 (6)	16.5 (40)			
Goal directedness					
No apparent or secondary	75.6 (102)	6.6 (16)	191.56***	.000	.713
Clear or primary with other motives	24.4 (33)	93.4 (226)			
Provocation					
No apparent	22.2 (30)	77.0 (186)	114.65***	.000	.551
Mild	35.6 (48)	15.6 (38)			
Moderate	33.3 (45)	7.0 (17)			
Strong, very, or exceptionally strong	8.9 (12)	0.4 (1)			
Arousal					
Calm	34.8 (47)	87.3 (211)	126.48***	.000	.579
Excited	2.2 (3)	4.1 (10)			
Angry or enraged	63.0 (85)	8.6 (21)			

Note. RVOs = reactive violent offenders, IVOs = instrumental violent offenders, Φ or V = Phi or Cramer's V effect size.

****p* < .001.

Severity of violence. The severity of violence varied considerably between violent offender subtypes. Although there was more variability within RVOs in terms of the degree of injury, overall, the severity of violence was greater for RVOs than IVOs. For example, IVOs were more likely (34.7%, $n = 84$) to have threatened a victim with a weapon (i.e., the variation in sample size was due to the variation in the number of participants who had complete information) or to have caused only a minor injury (20.1%, $n = 49$). Conversely, RVOs were more likely to have committed a homicide (30.4%, $n = 41$) or to have caused serious (16.3%, $n = 22$) or severe injury (17.8%, $n = 24$) or minor injury (23.7%, $n = 32$).

Relationship with the victim. IVOs were significantly more likely than RVOs to have committed their violent index offence against a stranger (77.3%, $n = 187$ vs. 34.8%, $n = 47$). RVOs were more likely to have some form of relationship with their victim, whether it was an acquaintance (25.2%, $n = 34$), a specific relationship (22.2%, $n = 30$), or a very close relationship (i.e., a romantic partner or an immediate family member; 10.4%, $n = 14$).

Intoxication. The degree of intoxication did not significantly differ between violent offender subgroups. Approximately three-quarters of both RVOs (74.0%, $n = 91$) and IVOs (75.8%, $n = 150$) were intoxicated at the time of their index offence. Type of substance used during offence was not specified, as this item only coded for level of intoxication.

Psychosis. With the exception of one individual, who was described as being in a depersonalized state, most offenders were not classified as being psychotic during their index offence.

Table 6

Index Offence Characteristics of Reactive and Instrumental Violent Offenders (Continued)

Violent Incident Coding (VIC) Items	RVOs	IVOs	χ^2	<i>p</i>	Φ or <i>V</i>
	<i>n</i> = 135	<i>n</i> = 242			
	% (<i>n</i>)	% (<i>n</i>)			
Severity of violence					
No assault	8.1 (11)	34.7 (84)	59.77***	.000	.398
Assault without injury	3.7 (5)	14.5 (35)			
Minor injury	23.7 (32)	20.2 (49)			
Serious injury	16.3 (22)	10.3 (25)			
Severe injury	17.8 (24)	9.1 (22)			
Homicide or extreme homicide	30.3 (41)	11.2 (27)			
Relationship with victim					
Stranger	34.8 (47)	77.3 (187)	78.04***	.000	.455
Acquaintance	25.2 (34)	11.6 (28)			
Specific relationship	22.2 (30)	9.9 (24)			
Close relationship	7.4 (10)	0 (0)			
Very close relationship	10.4 (14)	1.2 (3)			
Intoxication					
Not intoxicated	22.0 (27)	23.2 (46)	3.33	.189	.102
Mildly intoxicated (1–2 drinks)	4.1 (5)	1.0 (2)			
Intoxicated or severe intoxication	74.0 (91)	75.8 (150)			

Note. RVOs = reactive violent offenders, IVOs = instrumental violent offenders, Φ or *V* = Phi or Cramer's *V* effect size.

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

Current and Previous Violent Offence History as a Function of Subtype

Ninety-six percent ($n = 377$) of the sample was convicted of a violent index offence at the time of their enrolment in the VPP. In terms of violent offence history, 80% ($n = 300$) of those offenders had documented prior violent adult convictions and 37.6% ($n = 132$) had documented prior violent youth convictions.²¹ Although 4.5% of the sample had not been convicted of a violent index offence, they were included as program participants, given their extensive violent history (see Table 7).

With respect to domestic violence, 7.3% ($n = 29$) of the sample was convicted of a violent domestic offence as part of their index offence. Additionally, 21.1% ($n = 74$) had at least one previous domestic violence conviction in their violent offence history (see Table 7 for further details).

In terms of group differences, generally speaking, the proportion of offenders with previous adult and youth violent histories was comparable across groups. Domestic violence represented the most notable difference between groups: a greater proportion of RVOs were currently serving a sentence for a domestic violence conviction (RVOs: 12.2%, $n = 18$; IVOs: 4.5%, $n = 11$) or had a previous history of domestic violence (RVOs: 32.1%, $n = 44$; IVOs: 14.1%, $n = 30$).

²¹ As noted in the methods section, these values are likely an underestimation, given that they are based on internal CSC administrative documentation and not on formal RCMP CPIC files. In addition, due to the archival nature of the study, there was variability in terms of the level of detail and consistency of reporting within the CPR.

Table 7

Presence of Current Violent Index and Previous Violent History within Reactive and Instrumental Violent Offenders

	RVOs <i>n</i> = 148	IVOs <i>n</i> = 247	Overall <i>n</i> = 395			
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)	χ^2	<i>p</i>	Φ or <i>V</i>
Violent index	91.2 (135)	98.0 (244)	95.9 (377)	9.72*	.002	.157
Domestic violence index	12.2 (18)	4.5 (11)	7.3 (29)	8.08*	.004	.143
Previous violent offence history						
Adult history ^a	80.8 (118)	79.8 (182)	80.2 (300)	0.06	.813	.012
Youth history ^b	41.0 (57)	35.4 (75)	37.6 (132)	1.13	.287	.057
Domestic history ^c	32.1 (44)	14.1 (30)	21.1 (74)	16.26***	.000	.216

Note. Φ or *V* = Phi or Cramer's *V* effect size.

^a *n* = 374 (RVOs *n* = 146; IVOs *n* = 228).

^b *n* = 351 (RVOs *n* = 139; IVOs *n* = 212).

^c *n* = 350 (RVOs *n* = 137; IVOs *n* = 213).

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

Substance Use During the Violent Index Offence

Given that substance use is a common factor or correlate in violent behaviour (Lipsey, Wilson, Cohen, & Dezon, 1997; Murdoch, Pihl & Ross, 1990), each index offence was coded for whether the offender used substances before or during the violent incident and whether the violent incident was perpetrated in order to obtain drugs (e.g., robbery for drug money). Further, the type of substance, if provided, was also coded and then categorized as follows: 1) alcohol only, 2) drugs only, or 3) alcohol and drugs combined.

Of the $n = 395$ coded CPRs, 78.2% ($n = 309$) of the files provided some information describing whether or not a substance (i.e., drugs or alcohol) was used during the commission of index offences (see Table 8). Of the CPRs that provided information on substance use, 83.2% ($n = 257$) indicated that a substance was used before or during the incident. Overall, the use of any substance did not significantly differ by group. In both groups, approximately 83% had consumed a substance prior to the violent index offence; however, when the substance type was classified as alcohol, drugs, or both, group differences emerged. Specifically, a greater proportion of RVOs had consumed alcohol only prior to the index offence (57%, $n = 53$) compared to IVOs (24.2%, $n = 36$); conversely, a significantly greater proportion of IVOs had used drugs only (i.e., the most common being heroin or cocaine) prior to the index offence ($\chi^2(2, 240) = 38.71$, $p < .001$). No significant difference was present with respect to the proportion of each group that used a combination of alcohol and drugs.

The proportion of participants who committed their violent index offence as a means to obtain a substance (i.e., assault or robbery for drug money or drugs) was also

examined. The overall results indicated that violent incidents occurred in order to obtain drugs or alcohol in 44.5% ($n = 131$) of the sample. With respect to group differences, a significantly greater proportion of IVOs (62.9%, $n = 112$) committed a violent crime (i.e., robbery) in order to obtain drugs or alcohol compared to RVOs (16%, $n = 19$; $\chi^2 (1, 297) = 63.78, p < .001$). See Table 8 for a summary of these results.

Table 8

Substance Use During the Commission of Violent Index Offence

	RVOs $n = 119$	IVOs $n = 190$	$n = 309$		
	% (n)	% (n)	% (n)	χ^2	Φ or V
Substance use during violent index offence? ^a					
Yes	83.2 (99)	83.2 (158)	83.2 (257)	.000	.000
Substance type used during violent index offence ^b					
Alcohol only	57.0 (53)	24.5 (36)	36.8 (89)	38.71***	.402
Drugs only	17.2 (16)	56.5 (83)	41.3 (99)		
Alcohol and drugs	25.8 (24)	19.0 (28)	21.5 (52)		
Violent index offence committed to obtain substance?	16.0 (19)	62.9 (112)	44.1 (131)	63.78***	.463

Note. Numbers may not add up to 100% due to rounding; Φ or V = Phi or Cramer's V effect size.

^a $n = 257$; substance use during index was not provided for $n = 68$; $n = 18$ did not have a violent index offence; no significant differences were present between violent offender subtypes with respect to the proportion of missing or unknown data.

^b $n = 240$ (RVOs = 93, IVOs = 147).

^c $n = 297$ (RVOs = 119, IVOs = 178).

Demographic Characteristics within Violent Offender Subtypes

The majority of the sample (59.5%) was Caucasian ($n = 232$), with a sizeable proportion of Aboriginal participants (32.3%, $n = 126$) and smaller representations of Black (6.2%, $n = 24$) and other (2.1%, $n = 8$) minority groups²² (see Table 9). Approximately half of the participants (51.6%, $n = 204$) were single or widowed, 41% ($n = 162$) were married or in common-law relationships, and the remaining 7.3% ($n = 29$) were divorced or separated. Differences between groups with respect to ethnicity and marital status were non-significant (See Table. 9).

The average age of offenders at admission was 29.8 ($SD = 7.72$) years of age, and the age difference between groups did not reach statistical significance ($F(1, 393) = 2.35$, $p = .126$, $\eta_p^2 = .006$). However, with respect to age at program commencement, IVOs ($M = 32.8$, $SD = 8.61$) were significantly older than RVOs ($M = 30.9$, $SD = 7.85$; $F(1, 393) = 4.61$, $p = .032$, $\eta_p^2 = .012$), although the effect size was small.

²² Other minority groups included South Asian, Southeast Asian, Korean, Hispanic, Latin American, and those unable to specify.

Table 9

Demographic Characteristics of Reactive and Instrumental Violent Offenders

	RVOs <i>n</i> = 148	IVOs <i>n</i> = 247	Overall <i>n</i> = 395	χ^2 or <i>F</i>	<i>p</i>	Φ , <i>V</i> or η_p^2
Ethnicity ^a						
Caucasian	61.1 (88)	58.5 (144)	59.5 (232)	0.732	.866	.043
Aboriginal	31.9 (46)	32.5 (80)	32.3 (126)			
Black	5.6 (8)	6.5 (16)	6.2 (24)			
Other ^a	1.4 (2)	2.4 (6)	2.1 (8)			
Marital status						
Single/widowed	52.7 (78)	51.0 (126)	51.6 (204)	5.60	.061	.119
Married/common-law	43.9 (65)	39.3 (97)	41 (162)			
Divorced/separated	3.4 (5)	9.7 (24)	7.3 (29)			
Age at intake	29.0 (7.33)	30.2 (7.92)	29.8 (7.72)	2.35	.126	.006
Age at program start	30.9 (7.85)	32.8 (8.61)	32.2 (8.61)	4.61*	.032	.012
Aggregate sentence length (years) ^c	5.2 (4.24)	7.7 (6.84)	6.7 (6.1)	14.56***	.000	.040

Note. RVOs = reactive violent offenders, IVOs = instrumental violent offenders, Φ or *V* = Phi or Cramer's *V* effect size, η_p^2 = partial eta squared.

^a*n* = 390 (RVO *n* = 144; IVO *n* = 246).

^bVisible minorities including South Asian, Southeast Asian, Korean, Hispanic, Latin American, or unable to specify.

^c*n* = 351; offenders serving a life or indeterminate sentence (*n* = 44) were excluded from sentence-length calculation.

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

Offence- and Sentence-Related Characteristics within Violent Offender Subtypes

Aggregate sentence length and sentence type. Overall, the mean aggregate sentence length of offenders serving a determinate sentence was 6.7 years ($SD = 6.1$) (see Table 9). Eleven percent of offenders were serving an indeterminate sentence, which includes life sentences (11%, $n = 44$). With respect to group differences, IVOs (7.7 years, $SD = 6.8$) were serving significantly longer sentences than RVOs (5.2 years, $SD = 4.24$; $F = 14.56$, $p < .001$, $\eta_p^2 = .040$). Also, a statistically similar proportion of RVOs (9.5%, $n = 14$) and IVOs (11.7%, $n = 29$) were serving indeterminate sentences ($\chi^2(1, 395) = .50$, $p = .481$).

Static risk. In terms of overall static risk for general reoffending, 85.6% ($n = 338$) of participants were assessed as high risk and 13.9% ($n = 55$) were assessed as medium risk to reoffend. There were no differences between violent offender subtypes for static risk.

Dynamic factor assessment/criminogenic need. The dynamic factor assessment is an assessment of the degree or severity of need across seven criminogenic needs domains. The overall score, based on a structured professional judgement, is determined by the number of identified target domains and the severity rating of each domain. At intake, the majority of offenders were assessed as having a high dynamic risk rating, at 87.3% ($n = 345$). Only 12.7% ($n = 50$) of participants were classified as moderate, and there were no participants assessed as low risk on the overall dynamic factor rating. There were no differences between violent offender subtypes in overall dynamic factor rating ($\chi^2(1, 395) = 2.19$, $p = .139$).

Table 10

Static Risk, Dynamic Risk, Reintegration Potential, and Motivation Level at Intake for Reactive and Instrumental Violent Offenders

Variable	RVOs	IVOs	Overall	χ^2	<i>p</i>	Φ or <i>V</i>
	<i>n</i> = 148	<i>n</i> = 247	<i>n</i> = 395			
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
Static risk ^a						
Low	0.7 (1)	.4 (1)	0.5 (2)	1.25	.263	.057
Medium	11.5 (17)	15.4 (38)	13.9 (55)			
High	87.8 (130)	84.2 (208)	85.6 (338)			
Dynamic factors						
Low	--	--	--	2.19	.139	.074
Medium	9.5 (14)	14.6 (36)	12.7 (50)			
High	90.5 (134)	85.4 (211)	87.3 (345)			
Reintegration potential ^b						
Low	79.1 (117)	78.5 (194)	78.7 (311)	.00	.995	.000
Medium	19.6 (29)	19.4 (48)	19.5 (77)			
High	1.4 (2)	2.0 (5)	1.8 (7)			
Motivation level						
Low	16.9 (25)	21.1 (52)	19.5 (77)	1.21	.547	.055
Medium	75.0 (111)	70.0 (173)	71.9 (284)			
High	8.1 (12)	8.9 (22)	8.6 (34)			

Note. RVOs = reactive violent offenders, IVOs = instrumental violent offenders, Φ or *V* = Phi or Cramer's *V* effect size.

^aGiven the small cell counts, the chi-square statistic tested only for high and moderate risk by groups, whereas the percentages provided are for all three levels.

^bGiven the small cell counts, the chi-square statistic tested only for low and moderate levels of reintegration potential by groups, whereas the percentages provided are for all three levels.

Reintegration potential. Most offenders were assessed as demonstrating a low level of reintegration potential (78.7%, *n* = 311), and about one-fifth of participants showed a moderate level of reintegration potential (19.5%, *n* = 77). There were no differences between violent offender subtypes in reintegration potential at intake.

Motivation level. The majority of offenders (71.9%) demonstrated moderate levels of motivation for treatment at intake (*n* = 284), with approximately one-fifth of participants demonstrating a low level of motivation (19.5%, *n* = 77). Very few

participants (8.6%) were assessed as being high in motivation at intake ($n = 34$). There were no differences between violent offender subtypes in motivation level at intake.

Dynamic Factors/Criminogenic Needs

Each of the seven domains was assessed for overall levels of endorsement and to determine whether violent offender group differences were present. In order to focus the results on the key elements, Table 11 presents only the proportion of offenders assessed as having considerable need within 6 of the 7 domains. Conversely, for one of the domains, community functioning, the proportion of offenders assessed as demonstrating *factor is an asset or no immediate need for improvement* was reported.

Personal/emotional domain. Within the personal/emotional domain, the majority of the sample (81.3%, $n = 321$) was assessed as having considerable need for improvement. Examining the differences between groups revealed that a greater proportion of RVOs (88.5%, $n = 131$) demonstrated considerable need compared to IVOs (76.9%, $n = 190$), whereas a greater proportion of IVOs (20.6%, $n = 51$) had some need for improvement compared to RVOs (10.1%, $n = 15$; $\chi^2(2, 395) = 8.18, p = .017$) (see Table 11).

Substance abuse domain. The majority of the sample (71.1%, $n = 281$) was assessed as having considerable need for improvement with respect to the substance abuse domain. Similar proportions were present in each subgroup, with 73.3% ($n = 181$) of IVOs and 67.6% ($n = 100$) of RVOs demonstrating considerable substance abuse needs. No statistically significant group differences were present within this domain ($\chi^2(2, 395) = 2.24, p = .327$) (see Table 11).

Criminal Attitudes domain. The endorsement of criminal attitudes was an area of considerable need for 54.9% ($n = 217$) of the overall sample. Results disaggregated by group resulted in similar proportions, with 51.4% ($n = 76$) of RVOs and 57.1% ($n = 141$) of IVOs demonstrating a need for improvement with respect to criminal attitudes. No statistically significant difference was identified between violent offender subtypes ($\chi^2(2, 395) = 3.63, p = .163$).

Criminal Associates domain. The presence of criminal associates was an area of considerable need for 43.8% ($n = 173$) of the entire sample, with a similar proportion assessed as demonstrating some need for improvement (43.3%, $n = 171$). In terms of group differences, a statistically smaller proportion of RVOs (34.5%, $n = 51$) was assessed as demonstrating a considerable need compared to IVOs (49.4%, $n = 122$, $\chi^2(2, 395) = 8.70, p = .013$).

Employment and education domain. Nearly half (49.4%, $n = 195$) of the sample was assessed as having some need with respect to employment and education. Group differences within this domain were not statistically significant ($\chi^2(2, 395) = 1.40, p = .498$).

Marital family domain. In terms of criminogenic needs related to marital and family relationships, 40% ($n = 158$) of the overall sample was assessed as having no immediate need for improvement or factor an asset. A comparable proportion (40.3%) was assessed as having some need for improvement ($n = 159$). Although a greater proportion of RVOs (25.0%, $n = 37$) were determined to have considerable need than IVOs (16.6%, $n = 41$), the group differences were not statistically significant ($\chi^2(2, 395) = 4.41, p = .110$).

Table 11

Proportion of Offenders with “Considerable Need” within Each Criminogenic Need Domain for Reactive and Instrumental Violent Offenders

Criminogenic Need Domain	RVOs	IVOs	Overall	χ^2	<i>p</i>	Φ or V
	<i>n</i> = 148	<i>n</i> = 247	<i>n</i> = 395			
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
Personal/emotional	88.5 (131)	76.9 (190)	81.3 (321)	8.18*	.017	.144
Substance abuse	67.6 (100)	73.3 (181)	71.1 (281)	2.24	.327	.075
Criminal attitudes	51.4 (76)	57.1 (141)	54.9 (217)	3.63	.163	.096
Criminal associates	34.5 (51)	49.4 (122)	43.8 (173)	8.70*	.013	.148
Employment/education	19.6 (29)	22.7 (56)	21.5 (85)	1.40	.498	.059
Marital/family	25.0 (37)	16.6 (41)	19.7 (78)	4.41	.110	.106
Community function ^a	54.1 (80)	38.9 (96)	44.6 (176)	9.73*	.008	.157

Note. RVOs = reactive violent offenders, IVOs = instrumental violent offenders, Φ or V = Phi or Cramer’s V effect size.

^aResults are reported for *factor is an asset or no immediate need for improvement*, unlike the other domains, which are the proportion of offenders with *considerable need for improvement*.

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

Community functioning domain. Overall, 44.6% ($n = 176$) of the sample demonstrated characteristics (leisure, financial stability, use of community resources) associated with positive outcomes (no immediate needs for improvement, factor an asset) in the community. Forty-one percent ($n = 160$) of the sample was assessed as having some need for improvement. Examination of group differences revealed that a greater proportion of RVOs (54.1%, $n = 80$) was assessed as having no immediate need in terms of community functioning relative to IVOs (38.9%, $n = 96$, $\chi^2(2, 395) = 9.73$, $p = .008$). Exploratory analyses were conducted in order to examine if select items for most of the Criminogenic Needs domain (See Appendix K).

SIR-R1. The SIR-R1, which assesses static risk, was conducted on non-Aboriginal participants. The results were similar to other indicators of risk in that the majority of participants assessed had very poor (57.6%, $n = 174$) or poor (31.8%, $n = 96$) risk of

reoffending. Overall group differences were non-significant $\chi^2 (3, 302) = 6.89, p = .076, V = .151$); however, there was a trend toward IVOs demonstrating greater risk to reoffend (see Table 12). Exploratory analyses were conducted in order to examine if group differences were present for specific SIR scale items. (See Appendix L).

Table 12

Statistical Information on Recidivism–Revised 1 (SIR-R1) for Reactive and Instrumental Violent Offenders

SIR-RI Category	RVOs	IVOs	Overall	χ^2	<i>p</i>	Φ or V
	<i>n</i> = 107	<i>n</i> = 195	<i>n</i> = 302			
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
Very poor	51.4 (55)	61.0 (119)	57.6 (174)	6.89	.076	.151
Poor	32.7 (35)	31.3 (61)	31.8 (96)			
Fair	7.5 (8)	5.1 (10)	6.0 (18)			
Very good/good	8.4 (9)	2.6 (5)	4.6 (14)			

Note. RVOs = reactive violent offenders, IVOs = instrumental violent offenders, Φ or V = Phi or Cramer’s V effect size.

Most serious offence of the sentence. The majority of the sample was serving a sentence for a violent offence (88.9%, *n* = 351) (see Table 13). In terms of the most serious offence for the current sentence, an equal proportion of RVOs were incarcerated for manslaughter 27% (*n* = 40) and major assault 27% (*n* = 40). The most common most serious offence for IVOs was robbery (61.1%, *n* = 151). Given the small sample sizes between groups on a number of offences, offence categories were collapsed into six Schedule I categories of interest: homicide/manslaughter, attempted murder, robbery, major assault, common assault, and kidnapping/abduction. A chi-square analysis demonstrated significant differences between groups, with a significantly larger proportion of RVOs convicted of homicide or manslaughter and major assault offences and a significantly larger proportion of IVOs convicted of robbery-related offences ($\chi^2 (3, 344) = 72.23, p < .001, V = .458$).

Table 13

Most Serious Index Offence by Reactive and Instrumental Violent Offenders

Offence Categories	RVOs	IVOs	Overall
	<i>n</i> = 148	<i>n</i> = 247	<i>n</i> = 395
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)
Violent offences			
Homicide/manslaughter	27.0 (40)	13.0 (32)	18.2 (72)
Attempted murder	4.7 (7)	3.2 (8)	3.8 (15)
Robbery	17.6 (26)	61.1 (151)	44.8 (177)
Major assault	27.0 (40)	8.5 (21)	15.4 (61)
Common assault	2.7 (4)	2.0 (5)	2.3 (9)
Kidnapping	2.0 (3)	5.7 (14)	4.3 (17)
Nonviolent offences			
Sexual offences	0.7 (1)	0.4 (1)	0.5 (1)
Drug offences	3.4 (5)	0.4 (1)	1.5 (6)
Arson	0.7 (1)	--	0.3 (1)
Weapons/explosives	1.4 (2)	--	0.5 (2)
Fraud	0.7 (1)	--	0.3 (1)
Breaking and entering	4.1 (6)	2.8 (7)	3.3 (13)
Theft	0.7 (1)	--	0.3 (1)
Other nonviolent crime	7.4 (11)	2.8 (7)	4.6 (18)

Note. RVOs = reactive violent offenders, IVOs = instrumental violent offenders. Given the limited cell sizes, χ^2 results are only for Schedule I violent offences between groups, categorized as follows: homicide-related, robbery, assault, and other violent offences.

Psychometric Measures Assessing Treatment Targets

As part of a larger CSC evaluation of the VPP, a subsample of program participants completed a battery of self-report questionnaires assessing program constructs at the beginning and end of the correctional program. In the present study, results on each psychometric measure were examined to assess whether subgroup differences existed prior to or after program participation and whether there was an interaction effect between violent offender subgroup in treatment change. Mixed between–within ANOVAs were conducted for each psychometric measure and, if applicable, each subscale.

Results for each measure are reported in three sections: 1) examining the main effect of treatment change from pre-program to post-program levels irrespective of violent offender subgroup, 2) examining differences between violent offender subgroups on given psychometric measures, and 3) examining the potential presence of an interaction effect between treatment change (pre- to post-program) as a function of violent offender subgroups.

Pearson product–moment correlation coefficients were calculated to examine the relationship between self-report measures and socially desirable responding as assessed by BIDR. As described previously, in an effort to assess the impact of impression management on program outcomes and to control for socially desirable responding, the BIDR_TOT_POST was used as a covariate of each of the mixed between–within ANOVAs. Results without adjusting for the BIDR are presented for each measure and subscale. Results adjusting for the BIDR are presented in Appendix M.

Unless stated otherwise, assumptions related to Box's test of equality of covariance matrices²³ and Levene's test of equality of error variances were met.²⁴

Pearson product-moment correlation coefficients were calculated amongst psychometric measures (see Appendix M for coefficients). Significant correlations between measures are described within the results section of each measure (i.e., all significant correlations with the BPAQ are described in the BPAQ results section).

Sample sizes varied by measure and by type of comparison based on the availability of data. Because the present study examined the psychometric data to assess whether there are differential construct profiles in violent offender subtypes rather than to assess the outcomes of the treatment program, pre-program data for both completers and non-completers was included in order to provide a valid representation of program participants and not solely of program completers.

BPAQ. Overall levels of aggression for both subgroups, as assessed by the BPAQ_{TOT}, were classified as high in comparison with normative data as group means were in excess of 80 (range: 29–145) prior to program participation (Buss & Perry, 1992; Kingston, Yates, & Olver, 2013; William, Boyd, Cascardi, & Poythress, 1996). Levels of aggression for both subgroups were lower post-program, with mean scores at the moderate level (RVOs: BPAQ_{TOT_POST}, $M = 62.55$, $SD = 16.71$; IVOs: $M = 64.51$, $SD = 19.17$). Within subscales, physical aggression scores were the highest, followed respectively by hostility, anger, and verbal aggression (see Table 14).

²³ Box's test of equality of covariance matrices tests the hypothesis that observed covariance matrices of the dependent variables are equal across groups (IBM, 2012).

²⁴ Levene's test of equality of error variances tests the hypothesis that the error variance of the dependent variable is equal across groups (IBM, 2012).

The type or form of aggression (i.e., physical aggression, anger, hostility), level of aggression, and extent of treatment change associated with correctional programming may differ between violent offender subtypes. To test these relationships, mixed between–within subject ANOVAs were conducted to compare mean BPAQ scores between RVOs and IVOs at pre- and post-program. BPAQ subscales and BPAQ_{TOT} were analyzed independently.

Treatment change. Results revealed a significant main effect of treatment change for overall aggression, as assessed by the BPAQ_{TOT}. Offenders demonstrated a significant decrease in aggression post-program relative to pre-program levels (BPAQ_{TOT}: $F(1, 182) = 129.65, p < .001, \eta_p^2 = .416$). See Table 14 for mean scores and Table 15 for ANOVA results.

Table 14

Pre- and Post-Program Means and Standard Deviations on the Buss–Perry Aggression Questionnaire (BPAQ) and Eysenck Impulsivity Scale (I₇) by Violent Offender Subgroups

Measures	RVOs <i>n</i> = 64		IVOs <i>n</i> = 120	
	Pre-program <i>M</i> (<i>SD</i>)	Post-program <i>M</i> (<i>SD</i>)	Pre-program <i>M</i> (<i>SD</i>)	Post-program <i>M</i> (<i>SD</i>)
BPAQ				
Physical	26.94 (8.44)	20.09 (6.83)	27.78 (8.24)	21.12 (7.52)
Verbal	15.47 (4.44)	12.95 (3.07)	15.49 (3.88)	13.03 (4.03)
Anger	18.89 (5.57)	13.94 (4.51)	18.90 (6.12)	14.74 (5.27)
Hostility	20.48 (6.48)	15.53 (5.77)	20.40 (6.90)	15.54 (5.70)
BPAQ total	81.78 (21.24)	62.55 (16.71)	82.08 (20.82)	64.51 (19.17)
Eysenck's I ₇ ^a	8.34 (4.70)	4.70 (3.93)	8.87 (4.62)	5.35 (4.25)

Note. RVOs = reactive violent offenders, IVOs = instrumental violent offenders, BPAQ = Buss–Perry Aggression Questionnaire, Eysenck's I₇ = Eysenck Impulsivity Scale.

^a*n* = 56 RVOs, *n* = 111 IVOs.

Violent offender subgroups \times treatment change. Between-subject results indicated statistically non-significant differences between RVO and IVO mean scores on the BPAQ_{TOT} ($F(1, 185) = .860, p = .324, \eta_p^2 = .005$). Further, no significant interaction

was reported, which indicated that participants across both violent offender subgroups demonstrated similar profiles of treatment change from pre- to post-program (BPAQ_{TOT}: $F(1, 182) = .266, p = .606, \eta_p^2 = .001$) (see Table 15 for ANOVA results).

BPAQ subscale results were similar to BPAQ_{TOT} results in that participants' levels of self-reported physical aggression, verbal aggression, anger, and hostility significantly decreased post-program. Effect sizes were large, ranging from $\eta_p^2 = .231$ to $.363$.

Further, between-subject results indicated non-significant differences between RVOs and IVOs on BPAQ subscale scores. No significant interactions were reported, demonstrating that participants, regardless of violent offender subgroup, had similar patterns of aggression pre- and post-program.

Table 15

Pre- and Post-Program Treatment Change (Main Effect) on the Buss–Perry Aggression Questionnaire (BPAQ) and Eysenck Impulsivity Scale (I₇) as a Function of Violent Offender Subgroup (Interaction)

Measure	df Error	Main Effect:		Interaction:	
		Treatment Change	η_p^2	Change x VO Group	η_p^2
BPAQ					
Physical	185	105.26***	.363	.020	.000
Verbal	188	56.41***	.231	.009	.000
Anger	187	96.08***	.339	.728	.004
Hostility	186	90.11***	.326	.009	.000
BPAQ total	182	129.65***	.416	.266	.001
Eysenck's I ₇	165	89.66***	.352	.038	.000

Note. VO group = violent offender subgroup, BPAQ = Buss–Perry Aggression Questionnaire, Eysenck's I₇ = Eysenck Impulsivity Scale, *df* = degree of freedom error, η_p^2 = partial eta squared. ****p* < .001.

Eysenck's Impulsivity Scale (Eysenck's I₇). Scores on the Eysenck's I₇ for both RVOs and IVOs were comparable to normative data from offender and forensic samples reported in previous research (Aluja & Blanch, 2007; Mooney et al., 2008; Young,

Gudjonsson, Carter, Terry, & Morris, 2012), and they were slightly higher than other samples (Gordon & Egan, 2011).²⁵

Violent offender subgroup differences. Between-subject results indicated non-significant differences between RVOs and IVOs regarding impulsivity as assessed by Eysenck's I₇ ($F(1, 165) = .977, p = .324, \eta_p^2 = .006$) (see Table 15).

Treatment change. The main effects of treatment change, however, were significant, indicating that impulsivity scores significantly decreased from pre- to post-program for program completers (Eysenck's I₇ ($F(1, 165) = 89.66, p < .001, \eta_p^2 = .352$)).

Violent offender subgroups x treatment change. Interaction effects were not significant, suggesting that participants, regardless of violent offender subtype, had lower levels of impulsivity post-program than pre-program (Eysenck's I₇ ($F(1, 165) = .038, p = .845, \eta_p^2 = .000$)).

NAS and PI. Mean scores on anger (NAS) and provocation (PI) for both RVOs and IVOs were comparable to levels reported in previous studies that used this measure within an offender sample (Baker, Van Hasselt, & Sellers, 2008; Mills, Kroner, & Forth, 1998; Novaco, 2003) (see Table 16). Mixed between–within subject ANOVAs were conducted to compare mean scores on anger and reactions to provocations at pre- and post-program between RVOs and IVOs.

Violent offender subgroup differences. Overall, IVOs demonstrated higher mean scores on all subscales on both the NAS and PI; however, between-subject analyses indicated non-significant differences between RVOs and IVOs on the NAS ($F(1,$

²⁵ Although age-normative data are available for Eysenck's I₇ (based on age categories), these comparisons were made based on the mean age of the sample and are therefore less precise.

175) = 2.69, $p = .103$, $\eta_p^2 = .015$) and PI ($F(1, 174) = 2.49$, $p = .116$, $\eta_p^2 = .014$) (see Table 16).

Treatment change. The main effect of treatment change was significant, indicating a significant decrease in reactions to provocation ($F(1, 174) = 70.94$, $p < .001$, $\eta_p^2 = .290$) and anger scores ($F(1, 175) = 90.89$, $p < .001$, $\eta_p^2 = .342$) after program completion. The main effects of treatment were also reflected in each of the three subscales of the NAS. More specifically, cognitive components of anger (rumination, hostility, suspicion) significantly decreased post-program for program completers ($F(1, 183) = 102.03$, $p < .001$, $\eta_p^2 = .358$). Also, the degree of arousal related to anger significantly decreased post-program ($F(1, 184) = 59.64$, $p < .001$, $\eta_p^2 = .245$), as did behaviour associated with anger (impulsive reaction, verbal aggression, physical confrontation ($F(1, 182) = 101.18$, $p < .001$, $\eta_p^2 = .357$).

Table 16

Pre- and Post-Program Means and Standard Deviations on the Novaco Anger Scale (NAS) and Provocation Inventory (PI) by Violent Offender Subgroups

Measure	RVOs <i>n</i> = 56		IVOs <i>n</i> = 110	
	Pre-Program <i>M</i> (<i>SD</i>)	Post-Program <i>M</i> (<i>SD</i>)	Pre-Program <i>M</i> (<i>SD</i>)	Post-Program <i>M</i> (<i>SD</i>)
NAS				
Cognitive	29.35 (4.12)	25.11 (4.08)	29.87 (5.22)	26.21 (4.39)
Arousal	26.79 (4.74)	23.35 (4.46)	28.00 (6.40)	24.19 (5.29)
Behavioural	26.98 (5.72)	22.12 (4.36)	28.02 (6.13)	22.84 (5.10)
NAS total	82.85 (13.12)	70.32 (11.83)	86.12 (16.81)	73.22 (14.37)
PI total	51.83 (12.23)	42.19 (10.19)	55.01 (15.01)	44.39 (12.65)
Total NAS and PI	134.98 (24.56)	111.84 (20.17)	141.38 (30.26)	117.15 (25.66)

Note. NAS = Novaco Anger Scale, PI = Provocation Inventory, RVOs = reactive violent offenders, IVOs = instrumental violent offenders

Violent offender subgroups x treatment change. Non-significant interactions for the NAS and subscales indicated that participants, regardless of violent offender subgroup, showed similar change profiles of anger and reactions to provocation as assessed by the NAS-PI. Specifically, both groups demonstrated lower levels of anger (cognitive, arousal, and behaviour, ($F(1, 175) = .019, p = .889, \eta_p^2 = .000$)) and reactions to provocation post-program ($F(1, 174) = .163, p = .687, \eta_p^2 = .001$). Results relating to arousal subscales violated the assumption of Levene’s test of equality of error variances (pre-program NAS total, $p = .04$) (see Table 17).

Table 17

Pre- and Post-Program Treatment Change (Main Effect) on the Novaco Anger Scale (NAS) and Provocation Inventory (PI) as a Function of Violent Offender Subgroup (Interaction)

Measure	<i>df</i> Error	Main Effect: Treatment Change	η_p^2	Interaction: Change x VO Group	η_p^2
NAS					
Cognitive	183	102.03***	.358	.564	.003
Arousal	184	56.64***	.245	.155	.001
Behavioural	182	101.78***	.357	.099	.001
NAS total ⁺	175	90.89***	.342	.019	.000
PI total	174	70.94***	.290	.163	.001
Total NAS and PI	164	87.42***	.348	.047	.000

Note. NAS = Novaco Anger Scale, PI = Provocation Inventory, RVOs = reactive violent offenders, IVOs = instrumental violent offenders, VO = violent offender, η_p^2 = partial eta squared.

⁺Assumption of Levene’s test of equality of error variances was violated (pre-program NAS total, $p = .04$).

*** $p < .001$.

RFA. Normative data were not available for the RFA measure; however, the range of potential scores for each subscale is as follows: subscale scores ranged from 5 to 25, and overall scores ranged from 55 to 275, with higher scores demonstrating a greater endorsement for a given subscale or “reasons for aggression.” In terms of subscales, the

four highest mean subscale scores for subgroups were for revenge, ego, control, and emotional.

ANOVAs were conducted to compare mean scores for each subscale and the total scores of the RFA scale at pre- and post-program between RVOs and IVOs.

Violent offender subgroup differences. Overall RFA scores were higher for IVOs pre-program than for RVOs pre-program (IVOs: $M = 106.76$, $SD = 32.42$; RVOs: $M = 99.35$, $SD = 31.03$). Mean subscale scores were the highest for the revenge and the ego subscales pre- and post-program; however, between-subject analyses indicated non-significant differences between RVOs and IVOs on the RFA_{TOT} ($F(1, 115) = 1.52$, $p = .220$, $\eta_p^2 = .013$) and non-significant differences with respect to specific RFA subscales (see Table 18).

Treatment change. In terms of treatment change, the main effect of treatment change for RFA_{TOT} was non-significant ($F(1, 115) = .615$, $p = .435$, $\eta_p^2 = .005$). Similarly, for the majority of the subscales, the main effect of treatment was non-significant, with the exception of the revenge ($F(1, 131) = 4.94$, $p = .028$, $\eta_p^2 = .036$) and intimacy subscales ($F(1, 131) = 4.31$, $p = .040$, $\eta_p^2 = .032$); scores on both of these subscales significantly decreased post-program.

Table 18

Pre and Post-Program Means and Standard Deviations on the Reasons for Aggression (RFA) Scale by Violent Offender Subgroups

Measure	RVOs <i>n</i> = 56		IVOs <i>n</i> = 110	
	Pre-Program	Post-Program	Pre-Program	Post-Program
	<i>M</i> (<i>SD</i>)			
RFA				
Communication	8.50 (2.77)	8.55 (3.31)	8.68 (3.08)	8.11 (3.23)
Revenge	11.05 (3.54)	10.02 (4.22)	11.37 (3.89)	10.63 (3.64)
Control	9.93 (3.33)	9.45 (4.26)	10.13 (3.53)	9.53 (3.28)
Intimacy	8.52 (2.83)	7.83 (2.80)	8.64 (3.50)	7.85 (3.33)
Relationship	7.55 (2.94)	7.19 (2.81)	7.85 (3.00)	7.55 (3.12)
Emotional	9.62 (3.65)	8.95 (3.46)	10.21 (4.00)	9.75 (3.71)
Impairment	8.98 (3.45)	8.43 (3.07)	9.01 (3.53)	8.90 (3.29)
Distress	8.98 (3.57)	8.71 (3.15)	9.37 (3.43)	9.32 (3.70)
Social	9.19 (3.13)	9.21 (3.91)	9.22 (3.53)	3.69 (4.04)
Ego	10.74 (3.55)	9.88 (4.24)	10.75 (3.72)	10.41 (3.68)
Goal oriented	9.52 (3.30)	9.60 (4.14)	10.01 (3.85)	9.86 (3.56)
RFA total score	99.35 (31.03)	97.24 (29.86)	106.76 (32.42)	103.17 (32.88)

Note. RVOs = reactive violent offenders, IVOs = instrumental violent offenders, RFA = Reasons for Aggression.

Violent offender subgroups x treatment change. Interactions between treatment change and violent offender subgroup were non-significant for the RFA subscales and RFA_{TOT} ($F(1, 115) = .041, p = .435, \eta_p^2 = .000$). Regardless of violent offender subgroup, participants demonstrated similar profiles of pre- to post-program treatment change (although this change was limited) as assessed by RFA (see Table 19.)

Table 19

Within Pre- or Post-Program Results on the Reasons for Aggression (RFA) Scale Across Violent Offender Subgroups

Measure	<i>df</i> Error	Main Effect: Treatment Change	η_p^2	Interaction: Change x VO Group	η_p^2
RFA					
Communication	131	.546	.004	.765	.006
Revenge	131	4.94*	.036	.121	.001
Control	131	2.13	.016	.030	.000
Intimacy	131	4.32*	.032	.020	.000
Relationship	131	1.19	.009	.010	.000
Emotional	131	2.48	.019	.082	.001
Impairment	131	1.19	.009	.528	.004
Distress	131	.182	.001	.078	.001
Social	131	.464	.004	.379	.003
Ego	131	2.52	.019	.469	.004
Goal oriented	131	.011	.000	.084	.001
RFA total score	115	.615	.005	.041	.000

Note. VO = violent offender, RFA = Reasons for Aggression, η_p^2 = partial eta squared.

* $p < .05$.

AES. This scale examines beliefs about the efficacy of using aggression in the community and in prison. Scores range from 0 to 15 for each subscale and 0 to 45 for each scale (i.e., prison, street). Higher scores support a stronger belief that aggression may be an effective and viable “means to an end” in certain circumstances. Mixed between–within subject ANOVAs were conducted to compare mean scores for street and prison subscales of the AES scale, pre- and post-program, between RVOs and IVOs.

Violent offender subgroup differences. Overall scores were higher for the prison subscale than for the street subscale for both violent offender subtypes. Scores on the AES were higher for RVOs pre-program than for IVOs pre-program (prison, RVOs: $M = 25.88$, $SD = 10.03$; IVOs: $M = 21.80$, $SD = 11.07$; street, RVOs: $M = 18.73$, $SD = 8.16$; IVOs: $M = 17.56$, $SD = 9.93$). Between-subject analyses indicated non-significant differences between RVOs and IVOs on the AES subscale scores for street

($F(1, 92) = .165, p = .685, \eta_p^2 = .002$) and prison ($F(1, 90) = 1.23, p = .271, \eta_p^2 = .013$) and indicated non-significant differences with respect to specific subcomponents of subscales (i.e., efficacy, righteousness, or social support) (see Table 20.).

Treatment change. Results revealed a significant main effect of treatment change for prison and street subscale scores as well as for each component. Specifically, after completing the program, offenders demonstrated a significant decrease in street ($F(1, 92) = 21.07, p < .001, \eta_p^2 = .186$) and prison scores ($F(1, 90) = 19.64, p < .001, \eta_p^2 = .179$) relative to pre-program levels (see Table 20 for mean scale scores).

Table 20

Pre- and Post-Program Means and Standard Deviations on the Aggression Efficacy Scale (AES) by Violent Offender Subgroups

Measure	RVOs <i>n</i> = 31		IVOs <i>n</i> = 80	
	Pre-Program	Post-Program	Pre-Program	Post-Program
	<i>M</i> (<i>SD</i>)			
AES				
Street subscale				
Efficacy	6.58 (3.91)	5.58 (3.64)	7.09 (4.14)	4.88 (3.45)
Righteousness	5.31 (2.48)	4.23 (2.86)	5.50 (2.99)	4.57 (2.86)
Social support	6.35 (4.15)	4.19 (3.42)	5.74 (3.61)	4.45 (3.70)
Street total	18.73 (8.16)	13.85 (9.12)	17.56 (9.93)	13.50 (8.63)
Prison subscale				
Efficacy	8.47 (4.49)	7.74 (4.57)	8.07 (4.50)	6.94 (4.40)
Righteousness	7.26 (3.68)	5.43 (3.65)	6.72 (3.49)	5.75 (3.41)
Social support	8.50 (4.14)	6.79 (4.01)	8.14 (3.91)	6.76 (4.14)
Prison total	25.88 (10.03)	19.77 (9.95)	21.80 (11.07)	18.95 (10.30)

Note. AES = Aggression Efficacy Scale, RVOs = reactive violent offenders, IVOs = instrumental violent offenders.

Violent offender subgroups x treatment change. No significant interactions were reported for any of the scales or subscales, indicating that participants across both violent offender subgroups demonstrated similar profiles of treatment change from pre-program to post-program for each of the subscales, both street ($F(1, 92) = .180, p = .673$,

$\eta_p^2 = .002$) and prison ($F(1, 90) = 2.61, p = .110, \eta_p^2 = .028$) (see Table 21 for ANOVA results).

Table 21

Pre- and Post-Program Results on the Aggression Efficacy Scale (AES) Across Violent Offender Subgroups

Measure	<i>df</i> Error	Main Effect: Treatment Change	η_p^2	Interaction: Change x VO Group	η_p^2
AES					
Street subscale					
Efficacy	109	18.30***	.144	2.61	.023
Righteousness	115	9.43*	.075	.058	.001
Social support	107	16.29***	.132	1.02	.009
Street total	92	21.07***	.186	.180	.002
Prison subscale					
Efficacy	114	4.79*	.040	.218	.002
Righteousness	116	12.01**	.094	1.11	.009
Social support	112	13.82***	.110	.159	.001
Prison total	90	19.64***	.179	2.61	.028

Note. VO = violent offender.

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

Discussion

The purpose of this study was to examine the prevalence and characteristics of offenders classified as either predominantly reactive or predominantly instrumental violent offenders. Examined was the prevalence of each subtype classified within an archival sample of male offenders enrolled in a high-intensity, violent offender treatment program in Canadian federal institutions. Demographic characteristics, offence types, static and dynamic risk levels, and psychometric measures assessing constructs related to aggression were examined to assess whether distinctive needs of violent offender subtypes existed and, if so, to gain further insight into the nature and profile of these subgroups.

Presence and Prevalence of Violent Offender Heterogeneity

In the literature, there is an ongoing dialogue about the tangible presence of violent offender subtypes (Bushman & Anderson, 2001). Researchers refuting the existence of subtypes have argued that a bimodal approach is an unrealistic depiction of violence, as real-world events are seldom purely instrumental or purely reactive (Bushman & Anderson, 2001). These researchers contend that numerous factors contribute to each violent incident and that a multitude of events, factors, and characteristics influence the outcomes; as such, a bimodal classification system is unreliable, because the boundaries of each subtype are not distinct. Conversely, researchers in support of violent offender heterogeneity have argued that differences amongst subtypes are based on the degree of planning, goal directedness, perceived provocation, and affective response associated with the violent incident (Cornell et al., 1996; Vitacco et al., 2006). They maintain that

these traits can be assessed and that individuals can be rated on these characteristics to determine their corresponding subtype.

The results of the present study are consistent with the latter perspective. They support the existence of violent offender heterogeneity and suggest that offenders can be classified into subgroups based on the characteristics of their offences. Within this study's sample of 395 male violent offenders, 62% were classified as predominantly IVOs and 37% as predominantly RVOs.

Further, classification in the present study was based on an offender's reported violent offence history (as a youth and an adult), whereas the majority of prior research in this domain has based classification solely on an offender's index offence. This study's method allowed for a more comprehensive assessment of the factors related to an offender's violent behaviour by examining patterns across numerous violent offences with respect to victim relationships, offence severity, perceived provocation, and degree of planning.

In terms of the prevalence of violent offender subtypes, a greater proportion of offenders were classified as IVOs than as RVOs in the present study, which is in contrast to several previous studies in this area (Cornell et al., 1996; Levi, 2004).

When interpreting these results in view of previous research, it is important to consider the differences in methodology and samples across studies. The present study's sample represents a high-risk, high-need group, as inclusion criteria for program participation requires an assessment of moderate- to high-risk and moderate- to high-criminogenic needs (CSC, 2000) in order to be considered for participation. VPP is a

high-intensity violent offender treatment program for federal offenders.²⁶ Therefore, this sample may represent a higher risk subsample than the general population of incarcerated offenders that may be reported in other studies (Levi et al., 2010).

Also, the present study considered both an offender's index offence and his known violent history, whereas previous studies focused on index offences only. In coding all previous violent convictions, different patterns may emerge that are reflected in the proportion of each subgroup. For example, Cornell et al. (1998) examined only an offender's violent index offence in a sample of 106 medium-security male offenders and 50 violent criminal defendants referred for a pre-trial forensic evaluation. The Levi et al. (2010) sample consisted of 89 provincial incarcerated male offenders in Canada. Differences in jurisdictional approaches add a further layer of variability to the sample comparison. As such, one should expect variability in the proportion of IVOs versus RVOs across studies.

Characteristics of Violent Offender Subtypes

The group membership of each offender was determined by the results of the ARF (Vitacco et al., 2006). This form involves classifying offenders according to five key characteristics: 1) planning, 2) goal directedness, 3) provocation, 4) anger expression, and 5) victim relationship. These characteristics have previously been demonstrated in order to differentiate between violent offenders (Vitacco et al., 2006; Vitacco et al., 2009).

In addition to coding each offender's offence history using the ARF, each offender's index offence was coded using Cornell's VIC as a secondary check.

Spearman's correlations indicated a significant positive correlation between the two

²⁶ These offenders received sentences of two years or more, whereas offenders who received a sentence shorter than two years served their sentence in a provincial prison.

measures ($r = .744, p < .001$). As expected, the results between measures were similar in determining group membership, and this additional coding provided further information related to characteristics of the violent offender's index offence. Specifically, the index offence of RVOs was characterized by the following: 1) severe injury or homicide, 2) higher likelihood of familiarity with the victim, 3) a high degree of anger or rage, and 4) minimal planning or goal directedness related to the incident. These characteristics are in contrast to IVOs, who were characterized by the following: 1) higher likelihood of being calm during the incident, 2) lower likelihood of harming the victim, and 3) lower likelihood of familiarity with the victim prior to the incident. However, IVOs were more likely to have planned the incident and acted to meet a specific objective (i.e., robbery). Offenders in both groups were equally as likely to have been intoxicated during the index offence, but differentially by type of substance. Cornell et al. (1996) reported similar characteristics between RVOs and IVOs with the exception of the degree of victim injury, as there were no significant differences between subtypes on this construct in their study.

In terms of differences in group membership based on the classification approaches, although the majority of individuals, regardless of coding methodology, were within the same group, there was a small subset that differed. That is, for 8.9% ($n = 35$) of offenders, ARF results classified their offence history as predominantly reactive, whereas VIC coding, examining their index offence only, resulted in their classification as predominantly instrumental. In the majority of these cases, participants demonstrated histories of reactive violence, and their most recent offence tended to be more

instrumental in nature. This finding will be discussed in more detail in the general discussion.

Demographic characteristics of violent offender subtypes. Factors such as ethnicity, marital status, and age at intake did not vary by violent offender subtypes. Aboriginal offenders comprised approximately 32% of the sample, which was slightly larger than the approximately 20% of all male federal offenders at the time of program participation (Public Safety, 2004). This over-representation of Aboriginal offenders is comparable to other studies that have reported ethnicity in violent offender populations in Canada. Both male and female Aboriginal offenders are over-represented within federal institutions in Canada, and this finding is even more prominent when considering violent offenders specifically (Public Safety, 2013). Although the overall proportion of Aboriginal offenders was higher than the typical population, there were no differences between subgroups with regard to ethnicity.

Age at intake did not differ between groups, but age at program commencement varied by subgroup, with RVOs being significantly younger than IVOs. Age has been reported to be correlated to a person's degree of self-control and is related to increased levels of aggression; in a number of studies, younger male offenders have demonstrated higher levels of behavioural disinhibition than older offenders (Cherek, Moeller, Dougherty, & Rhoades, 1997; Gottfredson & Hirschi, 1990; Plutchik & van Praag, 1995; Seager, 2005). Further, there are well-documented relationships between impulsivity and both antisocial behaviour and institutional aggression (Barratt, Stanford, Kent, & Felthous, 1997; Wang & Diamond, 1999). Presumably, then, younger offenders are more likely to be impulsive and consequently more likely to engage in institutional misconduct

and misbehaviour during the program. Moreover, if in fact RVOs tend to be more impulsive than IVOs, then RVOs, as a younger subgroup, may consequently have higher rates of misconduct and program drop-out.

Violent Offender Subgroups and Assessment of Risk and Criminogenic Need

It was hypothesized that compared to IVOs, RVOs would 1) be serving longer sentences, 2) have more extensive violent histories, 3) reflect greater levels of risk, 4) demonstrate greater criminogenic need, 5) reflect lower motivation, and 6) exhibit lower reintegration potential. For the sample used in the present study, the hypotheses were only partially supported, as there were more similarities with respect to subgroups in terms of overall assessment within each area (i.e., overall risk, need) than anticipated.

Sentence length. Given that an offenders' sentence length is related to the offence in which they were convicted, we begin by examining the most serious offence for each subgroup. Previous studies have reported that IVOs are more likely to be serving a sentence for robbery-related offences than RVOs, who are more likely to be serving a sentence for homicide/manslaughter or major assault. Consistent with previous research, a large proportion IVOs were convicted of robbery (61%), which supports the goal-directed nature of their offences (i.e., to obtain money, goods) (Cornell, 1996).

In a related vein, the hypothesis that RVOs served longer sentences was only partially supported, as the aggregate sentence length was significantly longer for IVOs than for RVOs. In recent years, mandatory minimums have been implemented within the Canadian judicial system, making it a requirement that offenders convicted of selected violent offences, including robbery using a firearm (or an indictable offence), receive a mandatory minimum sentence. As a result, the average sentence length for robbery

convictions has increased. Consequently, the longer sentence length for IVOs is likely attributable to the high proportion of robbery convictions. The original hypothesis indicating that RVOs would have longer sentences was based on the previous research indicating that a greater proportion of RVOs had convictions for homicide-related offences and accordingly were more likely to have an indeterminate or life sentence. However, in the present study's sample, the proportion of life sentences between groups was similar, and the hypothesis that RVOs have longer sentences was not supported.

Criminal history. In regard to violent offending history, the majority of offenders had convictions for previous violent offences both as adults and as youths.²⁷ Based on this indicator of violent history, there is no apparent group difference, and RVOs did not demonstrate more extensive violent histories than IVOs; accordingly, this hypothesis was not supported. However, in regard to domestic violence, RVOs were significantly more likely to have a history or an index offence that involved domestic violence than were IVOs. This difference reflects the only divergence in violent offence history between subtypes. Further, it speaks to the utility of aggression within the context of interpersonal relationships for RVOs, who are characterized as using violence as a means to solve interpersonal problems and who are more likely to know their victims than are IVOs (Cornell, 1996).

Risk level. Overall risk levels, as assessed by the SIR-R1 and Static Risk, did not significantly differ by violent offender subgroup. Contrary to the a priori hypothesis, a greater (non-significant) proportion of IVOs were classified as very poor in terms of risk

²⁷ Details related to the convictions of youth violent offences were occasionally limited; therefore, these proportions are likely an underestimation of the extent of the participants' violent offence history.

on the SIR-R1 ($p = .076$). Overall, the majority of offenders in the present study were classified as high risk on Static Risk and classified as poor or very poor on the SIR-R1.

As a whole, violent offenders tend to be assessed as having a higher risk to reoffend than nonviolent offenders; within the present study's sample, the source of the data may be a confound to our assessment of risk. That is, this sample originated from a list of enrollees for a high-intensity violent offender treatment group. Selection criteria for participation included having been assessed as medium to high risk on the SIR-R1 scale and Static Risk; therefore, being considered as a potential program participant required that the offender be in one of the two highest risk levels. Presumably, this resulted in limited variability in terms of risk within the sample; the absence of violent offenders at lower risk levels in the sample may have restricted our capacity to accurately assess risk within violent offender subgroups. Nonetheless, because there were no significant differences between subgroups on Static Risk or the SIR-R1 assessment of risk, the hypothesis was not supported.

Criminogenic needs. As expected, the criminogenic needs domains recognized in the literature to be associated with criminal behaviour were identified as relevant factors within the current sample of violent offenders subtypes. Both subtypes were assessed as having considerable need across the majority of the criminogenic need domains. The proportion of offenders assessed as high on overall dynamic risk was substantial. Overall levels of criminogenic needs or dynamic risks were not significantly different between violent offender subtypes and consequently, the hypothesis that RVOs would have greater criminogenic need was not supported. However, examination of the seven specific criminogenic need domains between subgroups indicated significant differences

within three domains: community functioning, associates, and the personal/emotional domain.

With respect to community functioning, a greater proportion of RVOs were assessed as having fewer challenges within this domain compared to IVOs. This domain captures characteristics such as accommodation, health, and leisure, which, based on this finding, are reported to be less problematic for RVOs than for IVOs.

Within the associates domain, a larger proportion of IVOs demonstrated greater needs compared to RVOs. This domain assesses characteristics such as gang affiliation, having criminal friends and family, and living in a high-crime neighbourhood.

The personal/emotional domain assesses elements such as aggression, impulsivity, problem-solving ability, and frustration tolerance. A greater proportion of RVOs than IVOs was assessed as having considerable issues within this domain. Post hoc exploratory analyses examining selected items within this domain yielded some interesting findings. Specifically, RVOs were more likely to have difficulties solving interpersonal problems, be aggressive, and have low frustration tolerance. IVOs were more likely to have issues with managing their time poorly and being thrill seeking. However, impulsivity, often considered a characteristic with RVOs, was similar between RVOs and IVOs.

Substance use. No differences emerged within the substance use domain of the DFIA. Given the importance of substance abuse as a major criminogenic need, as part of the offence classification, type of substance use during the commission of the index offences was coded. Although intoxication levels were comparable between subgroups, a greater proportion of RVOs used alcohol, whereas a greater proportion of IVOs used

drugs prior to or while committing their offence, with cocaine and heroin being the most common. Notably, a considerable portion of both groups used a combination of alcohol and drugs while committing their index offence.

Substance use as an antecedent of violent offences is well documented in the literature; however, few studies have considered the use of different types of substances and their role in the heterogeneity of violent offending (Brochu et al., 2001; Kunic & Grant, 2006). Ternes and Johnson (2010) reported findings partially in support of these results by classifying offenders into individuals who were under the influence of either drugs or alcohol during their index offence. A greater proportion of male offenders under the influence of drugs committed acquisitive offences (82%; e.g., robbery, theft, fraud, drug-related crimes, and kidnapping) rather than expressive ones (31%; assault, murder, arson, and sexual assault). Interestingly, offenders under the influence of alcohol were equally likely to have committed an expressive violent crime (53%) as an acquisitive crime (51%). It is worth noting that the sample used by Ternes and Johnson (2010) was not limited to violent offences, but it illustrates the variation amongst offenders with respect to the relationship between substance use type and offence type. This variation is reflected in the present study within a smaller, narrower subgroup of offenders.

Motivation level. The motivation level to participate in a correctional treatment program did not differ significantly between the groups. Therefore, the hypothesis that RVOs would have lower levels of motivation was not supported. Motivation and readiness for treatment are discussed in greater detail in Study 2.

Reintegration potential. The hypothesis that RVOs would have lower levels of reintegration potential was not supported as there were no significant differences between

groups. A large proportion of both groups were assessed as having low levels of reintegration potential. These results speak to the high-risk, high-need nature of the sample.

Treatment Change on Program-Related Constructs

There were no specific hypotheses with respect to the results on the psychometric measures; however, consistent with the original hypothesis for this study, it was expected that overall, RVOs would demonstrate elevated levels of aggression and behavioural issues related to aggressiveness (i.e., problem-solving deficits, impulsivity) as assessed by the self-reported measures pre- and post-program. Further, based on the literature, instrumental violent offenders were predicted to score higher on aggression self-efficacy and goal-directed reasons for aggression.

Aggression between violent offender subtypes. In the present study, aggression was assessed in a number of ways. There were three measures of self-reported levels of aggression: 1) hostility, anger, physical aggression, and verbal aggression as assessed by the BPAQ; 2) reason for aggression (e.g., revenge, intimacy, goal oriented) as assessed by the RFA; and 3) aggression efficacy (prison and street contexts) as assessed by the AES. Levels of self-reported aggression prior to program participation were reported to be high for both subgroups. Physical aggression and hostility were the subscales with the highest mean scores, both pre- and post-program.

Given that the violent offender subtypes were coded based on motivations for violence, one may anticipate differences amongst the subgroups on the self-report RFA measure (Bettman & Serin, 1996). Although interesting trends were reported, no significant differences emerged. Patterns within the results illustrated that IVOs had

higher scores and therefore greater endorsement of reasons for aggression. Generally speaking, pre-program rates suggest that IVOs had higher scores on all subscales, demonstrating results in the expected direction; however, these differences were not statistically significant.

The results from the AES do not support the hypothesis that IVOs have greater levels of self-efficacy than RVOs. Although the results were statistically equivalent, overall, RVOs had higher levels of efficacy in terms of aggression. Specific to the total prison aggression efficacy scale, which includes prison efficacy (e.g., People say I am a good fighter), prison righteousness (e.g., People who cross me deserve what they get), and prison social support (e.g., I can rely on my friends to back me in a fight), scores were greater for RVOs than for IVOs.

Many of the items within this measure, albeit it not all, reflect the use of aggression to resolve or respond to an interpersonal conflict or provocation (e.g. My friends believe that refusing to fight is a coward's way). The pattern in the current result is consistent with the conceptualization of RVOs utilizing aggression as response to frustration. Recall, results from the DFIA indicated that a greater proportion of RVOs were classified as aggressive and had difficulties solving interpersonal problems compared to IVOs. Their scores on the AES are consistent with the DFIA ratings.

Although less relevant for the current study, given that there were no significant differences between groups across any of the aggression measures, future studies aiming to assess self-reported attitudes toward violence may find value in examining patterns of responding across specific items within psychometric measures.

Many of the existing aggression measures have been developed and validated on homogenous samples of violent offenders. Further, many self-report measures vary with respect to the aspects or underlying attitudes of aggression that are assessed. That is, many are comprised of items related to the expression of anger and also include items assessing attitudes toward using violence as means to an end. Presumably, if *items* are examined by subtypes, distinct patterns may emerge with a greater endorsement of items related to the use of violence for instrumental reasons for IVOs relative to items related to the use of violence in response provocation or conflict for RVOs. These are all inferred by the hypothesis that there will be differences between violent subtypes with respect to attitudes towards violence. This hypothesis was not supported in the current study. Nevertheless, the results demonstrate that further research is required in order to better understand the areas of divergence and convergence in violent cognitions within violent offender subtypes.

Treatment change in aggression. Within each group, there was significant treatment change after participation in the treatment program according to both the BPAQ and AES total and subscale scores.

Pre- to post-program results as assessed by the RFA were not significantly different. This measure asks participants to respond to a series of statements regarding reasons for previous “physical fights.” Given that this measure assesses prior behaviour rather than current attitudes toward violence, little change would be expected.

In summary, no significant differences emerged between violent offender subtypes on psychometric measures assessing aggression. There were significant differences within groups pre- and post-program for two of the three measures, indicating that both

groups of offenders reported lower levels post-program; however, the degree of change did not differ significantly by group, as the groups were comparable in their degree of change on the self-report measures.

Reactions to provocations. The NAS-PI (Novaco, 1994) assesses the cognitive, arousal, and behavioural responses to provocation. Overall, IVOs demonstrated higher scores on the majority of the subscales. By nature of their reactive tendencies, one would suspect RVOs to have higher levels of reactions to provocation, but a significant difference between groups did not emerge. The degree of endorsement on this measure demonstrates that anger in all its forms is commonly expressed within the sample. Change scores did not significantly differ between subgroups, demonstrating similar amounts of intra-individual treatment change between groups.

Impulsivity. Eysenck's I₇ was used to assess impulsivity across subgroups. Again, groups were not different with respect to levels of impulsivity, and overall levels were above normative data for the mean age of the sample. Post-program levels decreased significantly for both groups by a similar amount.

Taken as a whole, there were very few differences between groups on the psychometric measures included as part of the program assessment of intra-individual treatment change. It is difficult to determine whether these findings are a reflection of the subgroups as a whole or an artefact of the assessment process. The psychometric measures were available for only a small subsample of offenders that were included as part of the larger study. Given the voluntary aspect of the questionnaire completion, it is unclear why specific individuals were included or not included in this component of the data collection.

An additional concern relates to the smaller sample size. There were considerably fewer RVOs than IVOs with self-report measures. Although this difference reflects the overall pattern within the larger sample, the limited and imbalanced sample size raises the question of whether or not there was sufficient power to detect differences between RVOs and IVOs using these measures. In many cases, the sample size for IVOs was twice that of RVOs and consequently power was likely a concern for results on a number of the psychometric measures (e.g., reasons for aggression, aggression efficacy).

Despite underlying cognitive processes distinguishing between aggressive subtypes purported in the literature in domains such as underlying levels of impulsivity, reactions to perceived provocation, goal-oriented aggression, and trait anger hostility and physical aggression, in the present study, self-report measures assessing these constructs failed to distinguish between violent offender subtypes. The only factors that significantly differed between subgroups were previous domestic violence history, personal/emotional factors, community functioning and associated domain scores within the DFIA, and type of substance used during the commission of the index offence.

Interestingly, only the measures based on clinical ratings by trained correctional staff reflected differences between groups (i.e., the DFIA), whereas self-report measures failed to differentiate between groups. Correlation results between social desirability measures and each psychometric measure indicate a moderate degree of socially desirable responding, or “faking good,” in the present study. Findings while controlling for socially desirable responding were similar to those not controlling for this construct. That said, it is plausible that the lack of significant differences on self-report measures may have been confounded by impression management regardless of our efforts to

control for it. Literature within impression management with violent offenders is mixed (Mills & Kroner, 2005, 2006; Richards & Pai, 2003), and it has been suggested that controlling for impression management decreases the strength of the relationship in question. Additionally, it has been reported that impression management is negatively associated with criminal risk and recidivism because those who manage their impression are generally at lower risk to reoffend (Mills & Kroner, 2005). Research examining the relationship within violent offender subtypes and differences or similarities in the degree of socially desirable responding has not been examined to date. As such, given the differences in the number and magnitude of significant correlations between violent offender subtypes on various measures (e.g., the greater number of significant negative correlations for IVOs than RVOs as assessed by the BPAQ), further research is needed to improve the understanding of this construct and its manifestation with violent offender subtypes.

Limitations

A number of limitations have been discussed within preceding sections, however there are a number of additional limitations associated with the methodology and design of the current study. First, the limited representation of offenders from the Quebec region negatively impacts the generalizability of the results to the federal offender population as a whole. Moreover, the high-risk, high-need nature of the current sample further limits the generalizability, levels of offending patterns, and criminal attitudes may be more variable within offenders incarcerated within a provincial facility or even within medium or minimum security federal institutions.

Second, given the archival nature of the sample, there were issues with data quality with respect to the self-report measures and quality of data from the OMS. That is, the amount of missing self-report data is a considerable limitation in terms of the generalizability of the results to the larger sample within this study and the offender population as a whole. Further, the psychometric measures utilized in the current study were selected in order to assess treatment changes in order to evaluate the outcomes of the correctional program. Hence the measures were not selected nor designed with the intent to capture differences in attitudes towards violence. This may have influenced the limited difference with respect to self-report measures within violent offender subtypes, as well as the limited variability in risk and needs within the current sample.

Additionally, the archival sample also limited the amount of information available within the CPR for coding. In recent years, the CSC has standardized the format and type of information reported in the CPR to improve its consistency. Although the vast majority of offenders were successfully classified into one of two violent offender groups, the accuracy of these classifications may have been less precise as a result of the limited information provided in the CPR reports.

Despite these limitations, the current study is one of only a handful of studies examining the profile and prevalence of violent offenders subtypes. Further research is required to parcel out if and how violent offender subtypes are different regarding attitudes and constructs related to aggression.

Study 2: Readiness for Treatment, Institutional Misconducts, and Return to Custody in Reactive and Instrumental Violent Offenders

Participants

Participants for Study 2 were drawn from the same sample used in Study 1. As such, the reader is referred to the methodology used in Study 1 for details on sample characteristics and classification. This study focuses on readiness for treatment, institutional behaviour, and release outcomes of violent offender subgroups.

Measures

Offender Management System (OMS). Program participation, institutional misconduct, and release information were extracted from the OMS. These variables were aggregated and examined for group comparison (i.e., reactive violent offenders [RVOs] vs. instrumental violent offenders [IVOs]). A description of the key OMS variables within the current study is as follows.

Program outcomes. Participants for Study 1 and Study 2 consisted of individuals who met the referral criteria to participate in the Correctional Service of Canada's (CSC) Violence Prevention Program (VPP). The first treatment-related variable was the completion rate of program participants: those offenders who successfully completed the program or attended all sessions.²⁸ The proportions of dropouts and non-completers were

²⁸ Less than five offenders within each group were categorized as *attended all sessions*, and the majority successfully completed the program. Both of these program outcome categories indicate that all or most sessions were attended. *Successfully completed the program* indicates that an offender was successful in completing the program and all its requirements. *Attended all sessions* indicates that an offender completed the program but may not have fully met all of the program requirements (Cortoni, Nunes & Latendresse, 2006; Nunes & Cortoni, 2006). Both are operationally used to classify offenders who have completed a correctional program. Additionally, within the CSC, offenders who are categorized as having *attended all sessions* or *successfully completed* a correctional program are not referred to repeat that program at the same intensity or be "cascaded" from one level of intensity of programming to another within the same

calculated as well to assess if there were differences between RVOs and IVOs in treatment completion. Finally, the proportion of offenders who failed to complete treatment for administrative reasons, including those who were a) transferred, b) released, c) placed in segregation, and d) hospitalized were reported as well.

Institutional charges. Institutional charges are incidents that occur within a federal institution that result in a formal charge and sanction (CSC, 2002). The current study examined the monthly rate of charges during an offender's sentence. Given the varying length of sentences and incarceration, this method allowed for the reporting of a standardized rate of institutional charges as the main index of institutional charges.²⁹ This information was further disaggregated by major and minor charges. Examples of minor charges include being disrespectful to staff and disobeying an order. Examples of major charges consist of assaults, fights, threats of violence, and possession of contraband; both types of charges are reported during the entire period of incarceration for both RVOs and IVOs.

Release type. The granting or release by the Parole Board of Canada was examined between violent offender groups. The first type of release was examined for each participant, if applicable. Offenders may be granted a discretionary release option in the form of day or full parole. Offenders who do not receive a discretionary release are often incarcerated for two-thirds of their sentence and are released on statutory (or non-

program area (e.g., from high to moderate) during the same sentence unless new convictions have been added to the criminal history (CSC, 2009).

²⁹ It is common practice when assessing the outcomes of a correctional program to examine the rates of institutional charges prior to program participation and compare rates post-program participation. For this sample of offenders, previous research examined the misconduct charges within the current sample (Cortoni, Nunes, & Lantendresse, 2006) in three-month intervals for up to 12 months pre- and post-program completion.

discretionary) release. Offenders may also be incarcerated for their entire sentence and only be released at their warrant expiry date or at the end of their sentence. Generally speaking, offenders who receive discretionary releases are considered to be a lower risk to the community and more amenable to supervision. The categories in the current study include the following: 1) day parole, 2) full parole, 3) statutory release, 4) warrant expiry, and 5) not released (i.e., the offender was still in custody on October 17, 2014, which was the day of data extraction). The proportion of each release type was compared across violent offender subgroups.

Returns to custody. For the released offenders, post-release outcomes were examined. Results of the two groups were compared to assess the proportions of offenders who returned to custody with and without an offence prior to warrant expiry.

Post-release outcomes of the two groups were examined comparatively from a number of different perspectives: 1) *any* return to custody: the proportion of each violent offender subgroup that returned to custody for any reason (i.e., revocations without an offence, return to custody with a new offence, return to custody with a new violent offence); 2) return to custody for a new offence: the proportion of each violent offender subgroup that returned to custody for a new offence (i.e., return to custody with a new offence, which includes violent, nonviolent, and sexual offences); 3) return to custody for a new violent offence: the proportion of each violent offender subgroup that returned to custody for a new violent conviction; and (4) no return to custody.

Cox regression analysis. Cox regression analyses were conducted to examine the differential rates of return to custody between the RVOs and IVOs. Age at release and static factor assessment (SFA) were included as covariates.

Time-at-risk. An offender's time-at-risk is defined as the number of days for which a participant is in the community following release. More specifically, an offender's time-at-risk is the difference in days between the offender's release date and either the date of his first readmission (or death, deportation, or warrant expiry) or, for offenders who did not return, the date of data collection (i.e., October 17, 2014).

Psychometric Measures

University of Rhode Island's Change Assessment scale (URICA). The URICA scale (McConaughy, DiClemente, Prochaska, & Velicer, 1989; McConaughy, Prochaska, & Velicer, 1983; Prochaska & DiClemente, 1983) assesses an individual's current readiness for change. The scale comprises 32 items, which are rated on a five-point Likert scale from "strongly disagree" to "strongly agree." Four stages of change, each of which are represented by subscales composed of eight items, are as follows: 1) pre-contemplation: when an individual is not intending to or considering making any changes (e.g., As far as I'm concerned, I don't have any problems that need changing); 2) contemplation: when an individual is considering changing his/her behaviour (e.g., I think I might be ready for some self-improvement); 3) action: when an individual has made changes to his/her behaviour (e.g., I am doing something about the problems that have been bothering me); and 4) maintenance: when changes have been made and the focus is on sustaining or maintaining these changes (e.g., I'm here to prevent myself from having a relapse of my problem). For the purposes of this study, participants were asked to respond in relation to their violence or anger management and to participate in a violence prevention program.

The URICA was developed originally for use with psychotherapy clients (McConaughy et al., 1983) and has since been adapted for numerous treatment settings, from smoking cessation clinics to forensic mental health facilities. Within offender samples, an adapted version was used with domestic violence offenders (Levesque, Driskell, Prochaska, & Prochaska, 2008), female offenders (El-Basell et al., 1998), substance abusers (Carney & Kivlahan, 1995; Willoughby & Evans, 1996), and violent offenders (Lewis, 2004). In each case, the text or instructions were adapted to direct the individual to respond with “problems” or issues related to his or her treatment context.

Scoring. Within the literature, there are a number of different methods for scoring and interpreting the URICA. The most common method, and the method chosen for the current study, involves summing each of the stages of change subscales and considering the highest subscale as an indication of the participant’s stage of change pre- and post-program. Other methods of scoring involve calculating “readiness to change,” which requires subtracting a participant’s (mean/totals) scores on the contemplation, action, and maintenance questions from the pre-contemplation subscale. This method is not recommended if the research/clinic is examining treatment changes attributable to program completion (DiClemente, Schlundt, & Gemmell, 2004). Consequently, this method was not considered in the current study as a viable scoring option. Another method of scoring involves developing cluster profiles of stages of change (Rossi, Rossi, Velicer, & Prochaska, 1995). In this process, the URICA scale results with a sample of violent offenders with demonstrated associations with recidivism (Lewis, 2004). This method is complex because cluster analysis is used to develop the cluster profiles, which are sample-dependent. Given the limited sample size of data available by subgroup, the

most straightforward method, the highest stage score, was selected to explore readiness for change within the violent offender subtypes.

Validity. In the original development studies, the results of the factor analysis supported the existence of the four stages of change within the URICA scale (McConaughy et al., 1983; McConaughy et al., 1989). Previous research has demonstrated the predictive validity of stage of change in offenders as pre-program stage of change, and stage of change difference scores were reported to be associated with re-offence rates (Anstiss et al., 2011).

Reliability. In early studies on the development of the URICA scale with psychotherapy clients, the authors reported good consistency, with alphas of .88 to .89 for each stage (McConaughy et al., 1983). Similar findings were reported in a subsequent study, with alphas ranging from .79 to .84 across the four stages of change (McConaughy et al., 1989).

Within the present study, reliability values of the URICA subscales were adequate, ranging from $\alpha = .65$ to $\alpha = .83$. Refer to Appendix I for internal consistency levels of each subscale, pre- and post-program.

Violence Risk Scale (VRS) (Wong & Gordon, 2006). The VRS is a risk assessment tool that was designed originally to evaluate changes in risk associated with treatment completion. It comprises 6 static and 20 dynamic predictors on a four-point Likert scale, with item scores ranging from 0 to 4. Total VRS scores range from 0–78, with higher scores indicating a greater level of risk and, therefore, a stronger association with violent recidivism. The cut-off scores of 0–35 (low risk), 35–49 (moderate), and 50–78 (high) are commonly used to classify offenders into risk categories (Wong &

Gordon, 2006; Wong & Parhar, 2011). Specific treatment targets for participants are the dynamic factors with a rating of two or three. The six static factors include the following: 1) current age, 2) age at first violent conviction, 3) number of young offender convictions, 4) violence throughout the lifespan, 5) prior release failures, and 6) stability of family upbringing. The 20 dynamic items are as follows: 1) violent lifestyle, 2) criminal personality, 3) criminal attitudes, 4) work ethic, 5) criminal peers, 6) interpersonal aggression, 7) emotional control, 8) violence during institutionalization, 9) weapon use, 10) insight into violence, 11) mental disorder, 12) substance use, 13) stability of relationships, 14) community support, 15) release into a high-risk situation, 16) violence cycle, 17) impulsivity, 18) cognitive distortion, 19) compliance with community supervision, and 20) security level at release.

Based on the Prochaska and Di Clemente's (1986) stages of change model, for each of the 20 dynamic factors, a "stage of change" is determined for each dynamic factor pre- and post-treatment. For example, pre-treatment, a participant may be rated as being in the contemplation stage with respect to the dynamic item "insight into violence." That is, the individual recognizes the problem and may have begun to identify specific triggers associated with violence; however, thus far, any behavioural changes have not been observed within this domain. Post-program, this person may have progressed to the action stage and have better insight into the cause of previous violent behaviour (e.g., feelings, triggers) for a respectable period of time but is yet to demonstrate the expected behavioural changes across a variety of situations. Therefore, this individual has advanced from the contemplation stage to the action stage of change with respect to the dynamic item "insight into violence" and would receive a change score of 1 in the two-

stage progress of this item. Essentially, each factor is assessed for its stability, sustainability, and generalizability (Wong & Gordon, 2006; Wong, Gordon, Gu, 2007).

Scoring. Pre-treatment scores include the total static factor subscale score and the total dynamic factor subscale score, with the overall pre-treatment risk level being a summation of the static and dynamic subscales. Similarly, post-treatment scores have the same total static and total dynamic factor scores in addition to an overall stage of change score reflecting the effects of treatment on each of the 20 dynamic factors. This total subscale score is subtracted from the summed static and dynamic factor score, resulting in the post-treatment risk level (Wong & Gordon, 2000; 2006).

Validity. In terms of predictive accuracy, the VRS has been demonstrated to be a good measure to predict recidivism with a significant area under the curve (AUC) of .74 and .71 for violent and nonviolent reconvictions, respectively, with a two-year follow-up (Wong & Gordon, 2006). Subsequent research has continued to demonstrate the predictive validity of VRS with both institutional (Lewis, Olver, & Wong, 2012) and community samples (Wong & Parhar, 2011).

Reliability. Internal consistency of the VRS has been reported with an alpha of .93 in a sample of 918 male offenders (Wong & Gordon, 2006). Subsequent studies have continued to support the homogeneous structure of VRS with an overall alpha of .84, pre-treatment $\alpha = .80$, and pre-treatment static $\alpha = .65$ (Lewis et al., 2012). Lower levels of internal consistency demonstrated on the static factor subscale are likely because the subscale score comprises only six items.

Psychopathy Checklist–R (PCL-R) (Hare, 1991, 2003). The PCL-R is a 20-item rating scale for assessing the construct of psychopathy. Each item is rated on a three-

point scale, where 0 = does not apply, 1 = may apply or in some respects applies, and 2 = does apply. The PCL-R comprises four facet scores and two factor scores. Facet 1: inter-personal items related to superficial charm, glibness, pathological lying, grandiose sense of self-worth, and conning and manipulative behaviour. Facet 2: affective characteristics such as lack of remorse or guilt, calloused/lacking empathy, failure to accept responsibility for action, and shallow affect. Facet 3: lifestyle items such as need for stimulation, proneness to boredom, irresponsibility, impulsivity, parasitic orientation, and lack of realistic long-term goals. Facet 4: antisocial items related to poor behaviour controls, juvenile delinquency, revocation of conditional release, criminal versatility, and early behavioural problems. Although various structures of the measure exist in the literature, for the purpose of the current study, the original two-factor structure was used. Factor 1 (Interpersonal/Affective) consisted of Facets 1 and 2, and Factor 2 (Lifestyle/Antisocial) consisted of Facets 3 and 4. Scores ranged from 0–40, with scores > 30 serving as a cut-off for classifying psychopathy (Hare, 1991).

Validity. The PCL-R tool is used widely to assess psychopathy in offenders. To date, many researchers have demonstrated the relationship between psychopathy and criminal behaviour with regard to treatment efficacy, institutional charges, and recidivism (Hart, Kropp, & Hare, 1988; Harris, Rice, & Cormier, 1991; Serin, 1991; Serin, Peters, & Barbaree, 1990). Given the archival source of the database, inter-rater reliability was not available for the PCL-R.

PCL-R scores are only available for a subsample of offenders as CSC conducts supplementary psychological assessments with offenders who have a history of gratuitous or persistent violence (i.e. 3 or more Schedule 1 convictions) (CSC, 2014).

Results

Research Question 2: How do reactive and instrumental violent offenders differ in terms of treatment-related variables such as readiness for treatment, institutional adjustment, program completion rates, and release outcomes? Moreover, is there a relationship between readiness for treatment and program completion?

Study 2 assessed treatment-related variables within violent offender subtypes. It is hypothesized that within violent offenders, RVOs will be assessed as having higher treatment readiness compared with IVOs, as RVOs are more emotionally labile compared with IVOs, who are more goal oriented (Bushman & Anderson, 2002; Howells & Day, 2006). Furthermore, it is hypothesized that IVOs and RVOs will have similar program completion rates; however, overall treatment success, as assessed by the proximal measure of institutional adjustment (i.e., institutional misconduct) and program performance, will demonstrate that RVOs are more successful at completing such programs. Finally, it is proposed that treatment readiness will accurately predict treatment outcomes for all offender groups.

As part of the original study, it was proposed that nonviolent offenders (NVOs) be examined on various treatment-related variables, but given the changes in the sources of data for this study, the results of only violent offenders were included. Consequently, analyses and outcomes for NVOs in relation to violent offender subtypes were not examined in the current study.

Program Outcomes

As described previously, the sample for Study 1 and Study 2 consisted of offenders who had been referred to participate in the CSC's VPP. Of those referred, the majority (65.3%) completed the program ($n = 258$) (see Table 22). Excluding those who failed to

complete the program for administrative reasons (i.e., institutional transfer, referral to another program), a significantly greater proportion of RVOs (28.4%, $n = 42$) dropped out of treatment than IVOs (18.6%, $n = 46$, $\chi^2 (1, 346) = 4.59, p < .05, \Phi = -.115$). That is, a greater proportion of RVOs relative to IVOs either dropped out of treatment or were asked to no longer participate in treatment owing to behavioural issues that arose during the program delivery. Consequently, a greater proportion of IVOs completed treatment (68.0%, $n = 168$) than RVOs (60.8%, $n = 90$).

Table 22

Proportion of Program Completers, Dropouts, and Administrative Dropouts as a Function of Violent Offender Subgroup

Program Outcomes	RVOs	IVOs	χ^2	Φ or V
	$n = 142$	$n = 229$		
	% (n)	% (n)		
Program completers	60.8 (90)	68.0 (168)	4.59*	-.115
Dropouts	28.4 (42)	18.6 (46)		
Administrative/personal reasons	10.8 (16)	13.4 (33)		

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; Φ or V = Phi or Cramer’s V effect size.

* $p < .05$

Readiness to Change (URICA)

Approximately 50% of the participants were classified within the contemplation stage of change pre-program, with a slightly smaller proportion (43%) being categorized within the action stage of change. There were no significant differences between violent offender subgroups prior to program participation ($\chi^2 (2, 132) = .249, p = .883$) (see Table 23). The distribution shifted post-program, with a greater proportion of offenders (72%, $n = 87$) classified as being in the action phase. A greater proportion of IVOs (78.3%, $n = 65$) relative to RVOs (66.7%, $n = 22$) were categorized as being in the action

stage of change; however, this difference was not statistically significant ($\chi^2(2, 116) = 1.74, p = .418$) (see Table 23).

Table 23

Readiness to Change Pre-Program by Violent Offender Subtype

URICA Subscale	RVOs	IVOs	χ^2	<i>p</i>	V
	<i>n</i> = 40	<i>n</i> = 92			
	% (<i>n</i>)	% (<i>n</i>)			
Pre-contemplation	--	--	.249	.883	.043
Contemplation	47.5 (19)	52.2 (48)			
Action	45.0 (18)	41.3 (38)			
Maintenance	7.5 (3)	6.5 (6)			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; URICA = University of Rhode Island Change Assessment; V = Cramer’s V.

Table 24

Readiness to Change Post-Program by Violent Offender Subtype

URICA Subscale	RVOs	IVOs	χ^2	<i>p</i>	V
	<i>n</i> = 33	<i>n</i> = 83			
	% (<i>n</i>)	% (<i>n</i>)			
Pre-contemplation	--	--	1.74	.418	.123
Contemplation	30.3 (10)	19.3 (16)			
Action	66.7 (22)	78.3 (65)			
Maintenance	3.0 (1)	2.4 (2)			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; URICA = University of Rhode Island Change Assessment; V = Cramer’s V.

In terms of individual change, a greater proportion of IVOs (40.7%, *n* = 33) increased their readiness to change level post-program relative to RVOs (29.0%, *n* = 9). A chi-square analysis performed to examine the proportion of offenders at each level (excluding -2 level, given the limited cell size) indicated that this difference was not statistically significant ($\chi^2(2, 112) = 1.31, p = .519$) (see Table 25).

Table 25

Readiness to Change: Level Changes by Group from Pre- to Post-Program

Number of Levels of Change	RVOs	IVOs	χ^2	<i>p</i>	V
	<i>n</i> = 33	<i>n</i> = 83			
-2 Levels	--	1.2 (1)	1.31	.519	.108
-1 Level	16.1 (5)	12.3 (10)			
No difference	54.8 (17)	45.7 (37)			
+1 Level	29.0 (9)	40.7 (33)			

Note. V = Cramer's V.

A logistic regression analysis was conducted to examine the role of readiness to change as a predictor of program completion. Pre-program readiness to change and VRS collectively as a model was statistically significant, demonstrating that as a set of variables, the two differentiated reliably between program completers and dropouts ($\chi^2 (2, 77) = 6.37, p = .041$). Nagelkerke's R^2 of .208 demonstrates a moderate association between the predictors and program completion. Group membership was successful overall, with a classification percentage of 94.8%. However, the readiness to change category pre-program was not a significant predictor. VRS scores pre-program were a significant predictor of treatment completion.

Two additional logistic regression analyses were conducted to examine the predictive ability of variables known to be related to treatment dropout (Nunes & Cortoni, 2006), specifically, risk, age at intake, motivation for intervention, marital family domain, and attitude. Separate models were examined for each violent offender subgroup. The results indicated that for RVOs, a test of the full model was statistically significant, suggesting that as a set, the predictors distinguished reliably between treatment completers and non-completers ($\chi^2 (5, N = 148) = 19.00, p = .002$).

Nagelkerke's R^2 of .216 demonstrates a moderate association between the predictors and program completion. Group membership was successful overall, with a classification percentage of 73%. Age at intake was the only significant predictor in the model of treatment completion.

Table 26

Logistic Regression Predicting Treatment Dropout for Reactive Violent Offenders (RVOs)

Variables in Model	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp(B)</i>	95% <i>CI</i> <i>Lower</i>	95% <i>CI</i> <i>Upper</i>
Static risk	-.380	.691	.303	.684	.176	3.10
Age	-.114	.035	10.45***	.892	.832	.956
Motivation	-.588	.521	1.27	.556	.200	1.54
Marital Family	.527	.309	2.92	1.70	.925	3.10
Criminal Attitude	.553	.312	3.13	1.74	.943	3.21

Note. CI = confidence interval.

*** $p < .001$.

For IVOs, a test of the full model was not statistically significant, indicating that as a set, the predictors did not reliably distinguish between treatment completers and non-completers ($\chi^2(5, 247) = 5.59, p = .348$). Nagelkerke's R^2 of .045 demonstrated a weak association between the predictors and program completion. Group membership was successful overall, with a classification percentage of 72.6%. Criminal attitude was the only significant predictor in the model of treatment completion.

Table 27

Logistic Regression Predicting Treatment Dropout for Instrumental Violent Offenders (IVOs)

Variables in Model	<i>B</i>	<i>SE</i>	<i>Wald</i>	<i>Exp(B)</i>	95% <i>CI</i> <i>Lower</i>	95% <i>CI</i> <i>Upper</i>
Static risk	-.138	.436	.099	.871	.369	2.06
Age	.007	.023	.085	1.00	.962	1.05
Motivation	-.100	.372	.076	.903	.435	1.87
Marital Family	.112	.243	.211	1.12	.694	1.80
Criminal Attitude	.581	.278	4.37*	1.79	1.04	3.08

Note. CI = confidence interval.

* $p < .05$.

Institutional Charges

Monthly rates of institutional charges indicated a trend toward higher rates of minor charges (e.g., disobeying authority) for RVOs ($M = 0.19$, $SD = 0.25$) than IVOs ($M = 0.14$, $SD = .19$), $F(1, 375) = 3.14$, $p = .078$). Levine's test of homogeneity of variance was significant (minor charges: $p = .006$; serious charges: $p = .001$); therefore, Welsh's F test was performed for both minor and serious charges.

Monthly rates of serious institutional charges demonstrated a similar pattern, in that RVOs had higher rates relative to IVOs; however, differences between the groups were not statistically significant (See Table 28).

Table 28

Monthly Rate of Institutional Charges by Reactive and Instrumental Violent Offenders

Type of Institutional Charge	RVOs <i>n</i> = 148	IVOs <i>n</i> = 247	<i>F</i>	<i>p</i>	η_p^2
	Monthly Rate	Monthly Rate			
Minor charge ^a	.19 (.253)	.14 (.193)	3.14	.078	.009
Serious charge ^a	.11 (.158)	.08 (.130)	2.32	.129	.006

Note. η_p^2 = partial eta squared

^aLevine's test of homogeneity of variance is significant; therefore, Welsh's *F* test is reported.

An additional analysis was conducted to examine whether the proportion of offenders that were guilty of one or more institutional charges (both minor and serious charges) varied between groups. The results indicate that similar proportions of both IVOs (85.4%, *n* = 211) and RVOs (81.1%, *n* = 120) were guilty of one or more minor or serious institutional charges (RVOs: 66.9%, *n* = 99; IVOs: 73.3%, *n* = 181) (see Table 29).

Table 29

Proportion of Offenders with Institutional Charges in Reactive and Instrumental Violent Offenders

Type of Institutional Charge	RVOs <i>n</i> = 148	IVOs <i>n</i> = 247	χ^2	<i>p</i>	Φ or <i>V</i>
	% (<i>n</i>)	% (<i>n</i>)			
Minor Charges					
No	18.9 (28)	14.6 (36)	1.29	.257	.057
Yes	81.1 (120)	85.4 (211)			
Serious Charges					
No	43.1 (33.1)	26.7 (66)	1.83	.176	.068
Yes	66.9 (99)	73.3 (181)			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; Φ or *V* = Phi or Cramer's *V* effect size.

Given that program completion is related to institutional behaviour and compliance with program expectations, receiver operator characteristic (ROC) analyses were conducted to examine the predictive accuracy of rates of institutional charges for differentiating between those who dropped out from the violence prevention program in comparison with those who completed it. AUC values were significant for both minor charges (AUC = .651, 95% CI = .59–.71, $p < .001$) and monthly rate of serious charges (AUC = .659, 95% CI = .60–.72, $p < .001$), with both indicating a weak to moderate level of prediction for treatment non-completion. That is, higher rates of minor or serious charges are significantly predictive of program dropout across the complete sample. Considering each subgroup separately, for RVOs, AUCs for charges approached the moderate level of predictive accuracy for treatment dropout for both minor (AUC = .687, 95% CI = .59–.78, $p < .001$) and serious charges (AUC = .699, 95% CI = .61–.79, $p < .001$). For IVOs, AUCs were lower for both minor charges (AUC = .621, 95% CI = .54–.71, $p = .005$) and monthly rate of serious charges (AUC = .636, 95% CI = .56–.72, $p = .001$), indicating a modest level of prediction for treatment non-completion.

Psychopathy Checklist-Revised (PCL-R)

PCL-R scores were only available for a small subset of the sample ($n = 87$). The overall levels of psychopathy were relatively high, with an overall mean score over 25, ($M = 25.85$, $SD = 2.86$) among participants with PCL-R scores.

Overall, RVOs ($M = 26.82$, $SD = 6.12$) demonstrated higher total PCL-R scores than IVOs ($M = 25.28$, $SD = 5.66$), although the results were not significantly different ($F(1, 85) = 1.40$, $p = .241$, $\eta_p^2 = .016$). An exploratory analysis was conducted across all four facets and two factors of the PCL-R to determine group differences. No significant

differences emerged between the groups across facets or factors of the PCL-R. Refer to Table 30 for *M* and *SD* values.

Hare (2003) reported a cut-off of 30 as the level at which individuals could be diagnosed with psychopathy. Each violent offender subtype was examined for the proportion of offenders assessed as meeting the PCL-R threshold for psychopathy (i.e., > 30). The results suggested that there were no significant differences in the proportion of RVOs (28.1%, *n* = 9) classified as psychopaths compared to the proportion of IVOs classed similarly (21.46%, *n* = 12) ($\chi^2(4, 88) = .503, p < .05$).

Table 30

PCL-R Scores by Violent Offender Subgroup

PCL-R Subscales	RVOs	IVOs	<i>F</i>	<i>p</i>	η_p^2
	<i>n</i> = 32	<i>n</i> = 55			
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
Factor 1	10.09 (3.37)	8.85 (3.09)	3.01	.086	.034
Facet 1: Interpersonal	4.28 (2.30)	3.65 (1.91)	1.87	.175	.022
Facet 2: Affective	5.82 (1.76)	5.20 (1.84)	2.38	.127	.027
Factor 2	15.05 (4.46)	15.20 (3.89)	0.028	.867	.000
Facet 3: Lifestyle	7.38 (1.90)	6.90 (1.92)	1.24	.270	.014
Facet 4: Antisocial	7.49 (2.29)	7.62 (1.94)	0.076	.783	.001
Total PCL-R score	26.82 (6.17)	25.28 (5.66)	1.40	.241	.016

Note. PCL-R = Psychopathy Checklist–Revised; RVOs = reactive violent offenders; IVOs = instrumental violent offenders; η_p^2 = partial eta squared.

Violence Risk Scale (VRS)

Normative data indicates a mean of 50 as the cut-off of high risk for violent recidivism. Both RVOs (*M* = 54.68, *SD* = 9.02) and IVOs (*M* = 58.18, *SD* = 8.67) were classified as high risk pre-program (Wong & Gordon, 2006). In terms of group differences, IVOs demonstrated significantly higher levels of risk, as assessed by the

VRS total scores, pre-program ($F(1, 156) = 5.57, p = .019$) and post-program ($F(1, 145) = 4.62, p = .033$) (refer to Table 31).

The results of a t-test conducted to examine the pre- and post-risk scores within each group indicated that the post-program mean scores on the dynamic subscale scores and overall VRS scores decreased significantly for both RVOs and IVOs. Furthermore, for both groups, the level of risk post-program fell below the threshold of high risk.

Change scores between violent offender subgroups. The mean change scores did not differ significantly on any of the VRS subscales or total scores between RVOs ($M = 8.02, SD = 4.20$) and IVOs ($M = 8.30, SD = 4.23$). Relative to previous research utilizing the VRS with violent offender samples, change scores reflect a moderate to high degree of change on the VRS (Lewis et al., 2012; Olver, Lewis, & Wong, 2013). Moreover, the degree of change, for each group, was comparable from pre- to post-program on the VRS (despite the IVOs starting with higher levels of risk), thus suggesting that VPP, for this subset of participants (with VRS scores), is effective in yielding change for both groups equally (see Table 33).

Table 31

Between Pre- and Post-Comparison of Violence Risk Scale (VRS) by Violent Offender Subgroup

	Pre-Program by Group				Post-Program by Group			
	RVOs <i>n</i> = 43	IVOs <i>n</i> = 104	<i>F</i>	η_p^2	RVOs <i>n</i> = 43	IVOs <i>n</i> = 104	<i>F</i>	η_p^2
<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>			<i>M (SD)</i>			
Static risk	13.06 (2.74)	13.51 (2.92)	.867	.005	13.07 (2.69)	13.48 (3.00)	.644	.004
Dynamic risk	41.11 (8.37)	43.82 (7.84)	2.64	.026	33.97 (7.80)	35.51 (7.26)	.815	.010
Total VRS score	54.68 (9.02)	58.18 (8.69)	5.57*	.031	46.66 (8.55)	49.88 (8.14)	4.62*	.031

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; η_p^2 = partial eta squared.

Static risk: RVO = 50, IVO = 113; Dynamic risk: RVO = 37, IVO = 62;

**p* < .05.

Table 32

Within Pre- and Post-Comparison of Violence Risk Scale (VRS) by Violent Offender Subgroup

	Pre- and Post-Program by Group					
	RVOs <i>n</i> = 43	RVOs <i>n</i> = 43	<i>t</i> (42)	IVOs <i>n</i> = 104	IVOs <i>n</i> = 104	<i>t</i> (42)
<i>M (SD)</i>	<i>M (SD)</i>	<i>M (SD)</i>		<i>M (SD)</i>		
Static risk	13.06 (2.71)	13.07 (2.69)	.000	13.54 (2.94)	13.48 (3.00)	1.97 ^a
Dynamic risk	41.52 (7.85)	33.50 (7.53)	12.64***	44.67 (7.71)	36.43 (7.00)	19.89***
Total VRS score	54.68 (9.02)	46.66 (8.55)	12.52***	58.18 (8.69)	49.88 (8.14)	20.03***

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; η_p^2 = partial eta squared.

p* < .05, *p* < .01, ****p* < .001. ^a*p* = .052.

Table 33

Violence Risk Scale (VRS): Change Scores

Violence Risk Scale	RVOs <i>n</i> = 43	IVOs <i>n</i> = 104	<i>F</i>	<i>p</i>	η_p^2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
Static risk	.000 (.21)	.065 (.34)	1.40	.239	.009
Dynamic risk	8.02 (4.16)	8.24 (4.22)	.085	.771	.001
Total VRS change score	8.02 (4.20)	8.30 (4.23)	.134	.715	.001

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; η_p^2 = partial eta squared.

Release Types

Of those released into the community, the majority of each subgroup was released on statutory release (RVOs: 75.4%, *n* = 104; IVOs: 78.3%, *n* = 177). A significantly higher proportion of IVOs were released on day parole (RVOs: 2.9%, *n* = 4; IVOs: 11.5%, *n* = 26); conversely, a significantly higher proportion of RVOs were released on warrant expiry than IVOs (RVOs: 13.8%, *n* = 19; IVOs: 4.4%, *n* = 10) (χ^2 (3, 346) = 17.82, *p* < .001, *V* = .221) (see Table 34).

Table 34

First Release Type by Violent Offender Subgroup

Release Type	RVOs <i>n</i> = 138	IVOs <i>n</i> = 226	χ^2	<i>V</i>
	% (<i>n</i>)	% (<i>n</i>)		
Day parole	2.9 (4)	11.5 (26)	17.82***	.221
Full parole	8.0 (11)	5.8 (13)		
Statutory release	75.4 (104)	78.3 (177)		
Warrant expiry	13.8 (19)	4.4 (10)		

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders.
p* < .05, **p* < .001; *V* = Cramer’s *V*.

Release Outcomes

Examining only those with a release of interest,³⁰ 84.8% ($n = 335$) of the overall sample served the remainder of their sentence under supervision in the community. The mean number of days of community supervision differed between violent offender subtypes, as IVOs ($M = 993$ days ($SD = 747$) $Mdn = 742$ days) had a significantly longer period of potential supervision in the community than RVOs ($M = 741$ days ($SD = 781$) $Mdn = 453$ days) ($F(1, 332) = 8.39, p = .004, \eta_p^2 = .025$).

However, for those who returned to custody, the mean follow-up did not significantly differ by group: IVOs ($M = 387$ days ($SD = 369$) $Mdn = 253$ days); RVOs ($M = 444$ days ($SD = 613$) $Mdn = 253$ days) ($F(1, 332) = 1.15, p = .285, \eta_p^2 = .003$).

Returns to custody. Overall, 69.3% ($n = 232$) of the release sample returned to custody (with or without a new offence) prior to the end of their supervision term. However, when examining violent offender group differences, the proportion varied, and a significantly larger proportion of IVOs (73.1%, $n = 158$) returned to custody than RVOs (62.2%, $n = 74, \chi^2(1, 335) = 4.33, p = .037, v = .114$) (see Table 35).

Examining the differences between treatment completers and non-completers revealed an interesting, albeit non-significant, trend that may partially account for the differences between the groups. Specifically, a smaller proportion of RVOs (59.5%, $n = 47$) who completed treatment returned to custody relative to IVOs (71.5%, $n = 108$), $\chi^2(1, 230) = 3.42, p = .065$). Conversely, when examining group differences among those who did not complete treatment, the differences were non-significant: $\chi^2(1, 65) = 1.58, p = .209$). That is, although a greater proportion of RVOs failed to complete

³⁰ Excluding offenders who were not released, offenders released at Warrant Expiry Date (WED), or offenders who were deceased during the follow-up period.

treatment, those who completed it may have better outcomes relative to IVOs who completed correctional programming. However, differences were non-significant and speculative. Additional analyses are needed to examine this further. With regard to reconviction, 20.3% ($n = 47$) of the released sample of offenders returned to custody with a new conviction. Rates amongst violent offender subtypes were similar, with approximately 20% of both subtypes being returned to custody due to a new offence.

Table 35

Proportion of Offenders Returned to Custody by Violent Offender Subgroup

Type of Return	RVOs	IVOs	χ^2	Φ or V
	$n = 119$	$n = 216$		
	% (n)	% (n)		
Any return to custody	62.2 (74)	73.1 (158)	4.33*	.114
Reconviction	$n = 74$	$n = 158$		
Any new offence	21.6 (16)	19.6 (31)	0.125	.023
Any new violent offence	4.05 (3)	4.43 (7)	0.101	.050

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders. Φ or V = Phi or Cramer's V effect size.

* $p < .05$.

As expected, the rates of reconviction with a new violent offence were even lower, as 4.3% ($n = 10/232$) of the sample, of those returned to custody of a new violent offence conviction. There were no significant group differences between RVOs and IVOs with respect to the rate of return to custody for a new conviction or a new violent conviction (see Table 35).

Cox regression analyses for rate of return to custody. In order to control for time-at-risk across groups, a series of Cox regression survival analyses were conducted to examine the rate of returning to custody between RVOs and IVOs.

Two Kaplan-Meier survival analyses were conducted to compare the differences between groups while controlling for follow-up time. In addition to including violent offender subtypes based on violent history coding (VOgrp_history) (i.e., primary measure of group membership, Aggression Rating Form [ARF] coding), differences were also compared based on violent offender membership for index offence (VOgrp_index) (i.e., secondary measure of coding based on Cornell's Violence Index Coding [VIC]). Differences in return to custody rates were examined between RVOs and IVOs for both VOgrp_history and VOgrp_index.

Additionally, Cox regression analyses allowed for the examination of associations amongst violent offender subtypes and rates of return while controlling for relevant variables known to influence the rates of return or recidivism (i.e., age, risk). In total, four Cox regression analyses were conducted: 1) VOgrp_history: violent offender subtype based on violent history coding (i.e., primary measure of group membership, ARF coding) for *program completers* and *dropouts* combined; 2) VOgrp_history: for *program completers* only; 3) VOgrp_index: violent offender subtypes based on index coding (i.e., secondary measure of coding based on Cornell's VIC) for *program completers* and *dropouts* combined; and 4) VOgrp_history: for *program completers* only.

Kaplan-Meier survival analyses conducted for examining rates of return to custody over time indicated non-significant group differences in failure rates between RVOs and IVOs based on violent offence history and log rank ($\chi^2(334) = 1.05, p = .306$). Results examining group membership based on an offender index offence only, RVOs_Index and IVOs_Index, was significant, indicating that RVOs had a longer survival time in the community relative to IVOs and log rank ($\chi^2(317) = 5.42, p = .020$).

Refer to Table 36 for Cox regression survival analyses results for any returns to custody by violent offender subgroup with age and SFA as covariates. These four analyses examined any returns to custody in subgroups based on the violent offender group by violent offence history (VOgrp_history) and violent offence index (VOgrp_index) based on index.

Only one model (Model 3) was significant overall ($\chi^2(3) = 9.87, p = .020$), and within this model, both age at release ($p = .044$) and VOgrp_index were significant ($p = .013$) predictors. These results indicate that while controlling for static risk, younger offenders and IVOs based on index offence had a higher failure rate.

Age at release emerged as the only predictor of the length of survival in the community. No group differences based on violent history contributed significantly toward predicting return to custody. Examinations of treatment completers only were not significant.

Table 36

Cox Regression Results for any Returns to Custody by Violent Offender Subtype with Controls for Age and Static Risk

Model	<i>B</i>	<i>SE</i>	Wald	<i>e^b</i>	95% CI
1. VOgrp_history, all participants					
Static risk	.077	.170	.206	1.08	.774–1.51
Age at release	-.015	.008	3.92*	.985	.970–1.00
RVO vs. IVO group	.186	.143	1.69	1.20	.910–1.59
2. VOgrp_history, treatment completers only					
Static risk	-.215	.210	1.05	.807	.535–1.22
Age at release	.000	.009	.001	1.00	.981–1.02
RVO vs. IVO group	.166	.177	.887	1.18	.835–1.67
3. VOgrp_index, all participants					
Static risk	.016	.171	.008	1.02	.726–1.42
Age at release	-.015	.008	4.04*	.985	.970–1.00
Violent index offence	.416	.167	6.21*	1.52	1.09–2.10
4. VOgrp_index, treatment completers only					
Static risk	-.239	.210	1.30	.787	.521–1.18
Age at release	.000	.009	.001	.974	.982–1.02
Index offence	.318	.205	2.40	1.37	.919–2.05

Note. *SE* = standard error. *CI* = confidence interval.

Model 1: $\chi^2(3) = 5.21, p = .157$.

Model 2: $\chi^2(3) = 2.02, p = .569$.

Model 3: $\chi^2(3) = 9.87, p = .020$.

Model 4: $\chi^2(3) = 2.28, p = .517$.

As depicted in Figure 2, the patterns for returning to custody over time are relatively similar between RVOs and IVOs. These findings reflect the results from Model 1 in Table 36. Although it appears that IVOs return to custody at a slightly faster rate, this difference was not statistically significant after controlling for age at release and static risk at intake.

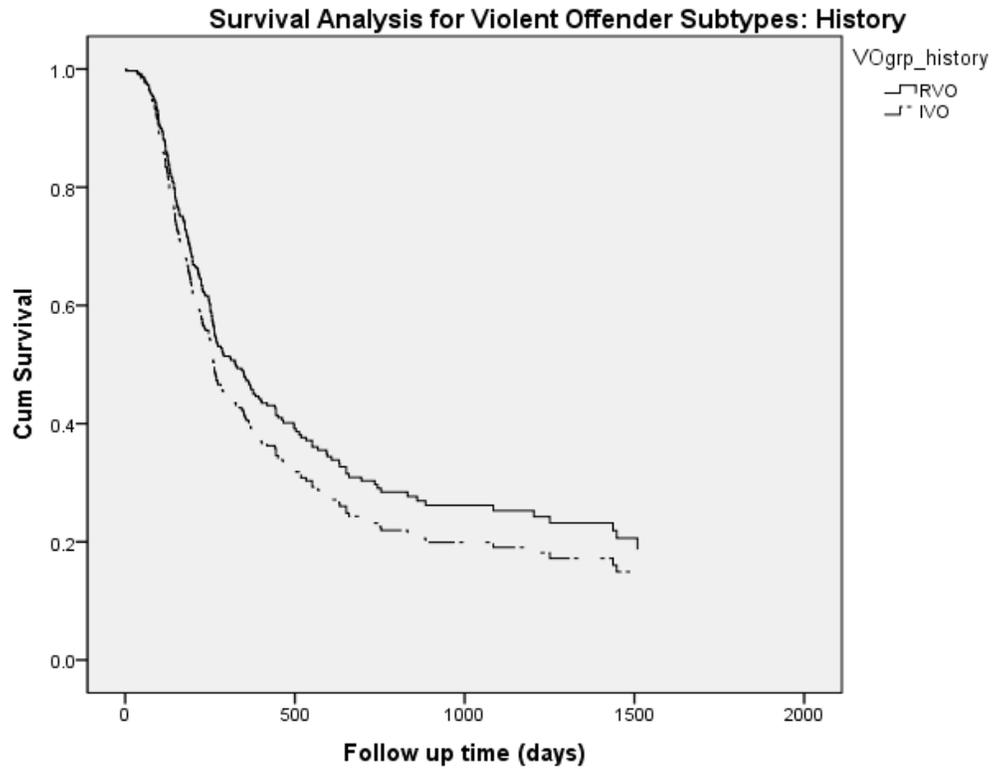


Figure 2. Survival curves of RVOs and IVOs with age at release and static risk as covariates based on VOgrp_history (i.e., ARF coding).

Survival curves of Model 3, examining the rates of return for VOgrp_index are depicted in Figure 3. IVOs return to custody at a statistically faster rate than RVOs after controlling for age at release and static risk at intake.

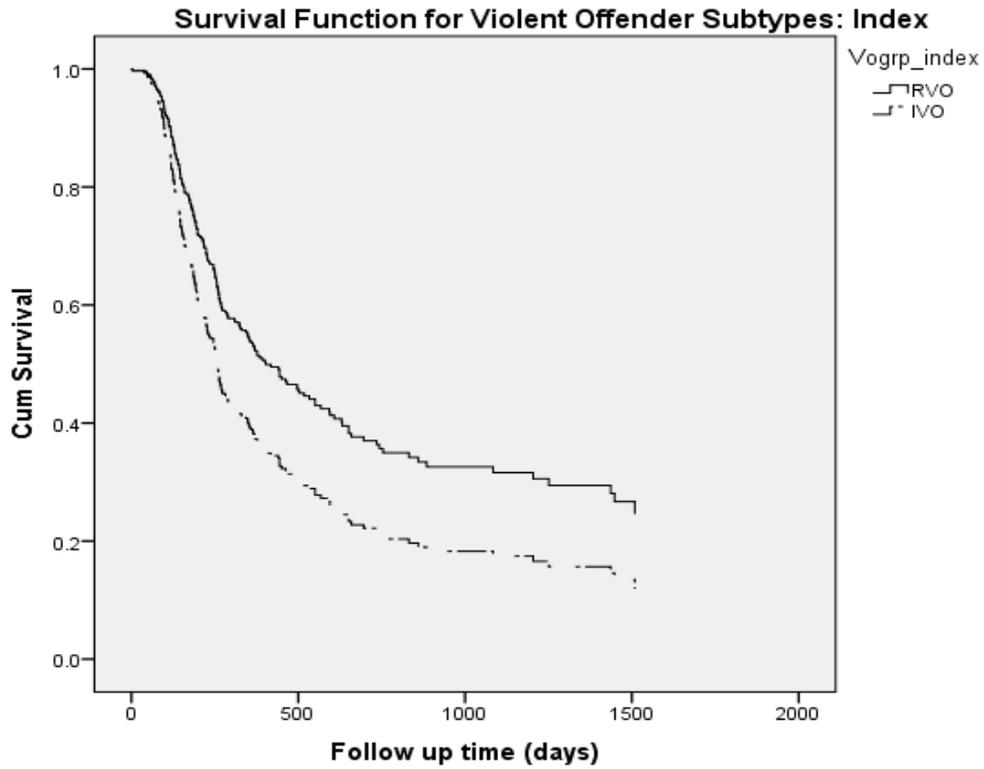


Figure 3. Survival curves of RVOs and IVOs with age at release and static risk as covariates based on VOgrp_Index (i.e., VIC coding).

Given the limited rates of returns to custody for a new offence or a new violent offence, the results of Cox regression analyses are not reported. There were no significant differences in survival rates of return for new offences or new violent offences within either type of categorization (VOgrp_history or VOgrp_Index).

Discussion

The second study aimed to examine treatment-related variables, such as readiness to change, program completion rates, and release outcomes across violent offender subtypes. It was hypothesized that within violent offenders, RVOs would be assessed as having higher treatment readiness compared to IVOs, as in previous theoretical conceptualizations of violent offenders subtypes, RVOs were found to be more emotionally labile, found to have greater access to emotional states, and found to be able to express themselves within the context of a correctional treatment environment (Bushman & Anderson, 2002; Howells & Day, 2006). Conversely, IVOs were more goal-oriented and less emotionally invested in treatment, given their increased likelihood to be motivated by external goals other than treatment (i.e., externally motivated to complete treatment for release, less likely to change psychologically) (Howells & Day, 2006; Sheldon, Howells, & Patel, 2010).

An evaluation of readiness to change between violent offender subtypes found no differences between violent offender subgroups. The majority of offenders were assessed to be in the contemplation or the action phase pre-program. Post-program results demonstrated a shift in the expected direction, whereby a greater proportion of offenders had transitioned to the action phase. Although not a significant difference, a greater proportion of RVOs remained within the contemplation phase post-program, and a greater proportion of IVOs improved their readiness to change than RVOs. Finally, treatment readiness was not predictive of treatment outcomes for either group within the current study.

Regardless of the specific indicator (i.e., pre-program levels, post-program levels, amount of change) of treatment readiness within the current study, amongst violent offender subgroups, the hypothesis that RVOs would demonstrate higher treatment readiness compared with IVOs was not supported. In fact, the trend is in the opposite direction and suggests that RVOs may be more likely to have lower levels of treatment readiness. Furthermore, the hypothesis regarding the ability of readiness to change in predicting program completion was not supported. Although previous studies using the URICA scale have demonstrated support for the reliability and validity of the stages of change model in offender samples, outcome studies assessing its predictive validity in terms of program completion and recidivism are limited (McMurran, Theodosi, & Sellen, 2006; Polaschek, Anstiss, & Wilson, 2010).

Nunes, Cortoni, and Serin (2010) developed a screening measure to predict treatment dropout. Motivation for intervention, which is related conceptually to treatment readiness, was a significant predictor, as well as age, risk, marital family domain, and the criminal attitudes domain of the Dynamic Factor Intake Assessment (DFIA) (Nunes & Cortoni, 2006; Nunes, Cortoni, & Serin, 2010). Exploratory results in the current study, which adapted the model, demonstrated that age was a predictive factor in the current sample for RVOs, while criminal attitude was a significant predictor for IVOs. This latter finding reflects the results from Study 1, in which a greater proportion of IVOs were assessed as having elevated needs on criminal associates. Although preliminary, these findings suggest that age and criminal attitudes may be differential factors influencing treatment dropout in violent offender subtypes. This remains

speculative, and further research is needed to elucidate such a relationship between the subgroups.

Recall as well, the assessment of readiness for treatment in the current study was performed using self-reported data based on a small subsample of offenders; as such, it may be influenced by social desirability. No significant correlations were reported between social desirability and self-reported readiness to change; however, the individuals within the sample may have represented a biased subset of offenders, given the voluntary completion of the assessment battery as part of the program participation requirements.

Literature pertaining to the application of the Trans-Theoretical Model (TTM) within offenders is mixed. The URICA scale is the most commonly applied psychometric measure based on the TTM. However, results related to its predictive validity when applied to programming have been limited (Casey, Day, & Howells, 2005; Mossière & Serin, 2014; Yong, Williams, Provan, Clarke, & Sinclair, 2015). While positive applications of the stages of change model and its predictive validity have been demonstrated (Anstiss, Polaschek, & Wilson, 2011; Wong & Gordon, 2006), others have attempted to question its application. For instance, a recent analysis of the URICA scale within an offender sample has called into question its four-factor structure for the 32-item measure. Structural equation modeling results proposed a 21-item scale as a better fit and highlighted concerns regarding item loading onto other subscales (e.g., action item loading to contemplation) (Yong et al., 2015).

Concerns regarding the validity of each stage as well as the concern that the stages of change are not mutually exclusive or as distinct as originally proposed have also been

raised (Littell & Girvin, 2002). Moreover, the cyclical progression through the states as proposed in the model has not been tested empirically. Another concern is the failure of the model to consider contextual factors influencing motivational change because the model presumes that the greatest influences are internal or subject to the individuals' decision to change (Littell & Girvin, 2002).

In terms of alternative indicators of readiness to change, clinical ratings or assessment by program staff may be more reliable. For example, the VRS (Wong & Gordon, 2003) has successfully incorporated ratings of stages of change for all dynamic factors related to violent risk for offenders. The VRS reflects an application of the tenets of the Trans-Theoretical Model (Stages of Change) to the assessment of risk and treatment change in offenders. A further strength of the VRS is its demonstrated predictive validity, which is exceptional in research adapting self-report measures of readiness to change (McMurrin, Theodosi, & Sellen, 2006; Polaschek, Anstiss, & Wilson, 2010). Furthermore, additional factors may need to be more fully considered to capture an offender's treatment readiness, both contextually and internally to the offender. Conceptually, treatment readiness is linked to other characteristics such as engagement and motivation. Additional models of treatment readiness exist theoretically, but limited empirical data relevant to such models are currently available (i.e., the Multifactor Offender Readiness Model (MORM); Ward et al., 2004; and Treatment Readiness and Treatment Responsivity model (TRR); Serin & Kennedy, 1997). Both of the above models consider contextual factors in addition to individual factors as sources of influences on treatment readiness.

Similar to the VRS, Serin and Kennedy's (1997) conceptual model of treatment responsivity is based on clinical ratings and, as such, its predictive utility with offenders within a treatment setting may be worthy of assessing, given that the model is generic enough to be used with subtypes of offenders. Additionally, the TRR model is dynamic in its assessment of treatment readiness rather than being based on rigidly defined stages of change. Another strength of this model is that it considers the domains of treatment readiness or responsivity as behaviours on a continuum rather than viewing them as fitting into a series of discrete stages similar to the stages of change (Serin & Kennedy, 1997; Serin et al., 2010).

Although the stages of change model is the most commonly employed theoretical approach to date, its ability to capture the true process of change in offenders has been questioned. It has been postulated that offenders do not transition sequentially from stage to stage during treatment; rather, they zigzag from stage to stage or even regress stages. That is, offenders may initially have rated themselves as being within the action stage pre-program, but participating in treatment may have heightened their awareness, and as a result, they realized they overestimated their current level of change (Yong et al., 2015).

Given the mixed findings within the literature and the limited research conducted within violent offender subtypes, the best approach may be to examine more global and context-based predictors of motivation, responsivity, and readiness for treatment.

With respect to treatment-related outcomes, it was hypothesized that IVOs and RVOs will have similar program completion rates and that overall treatment success, as assessed by a proximal measure of institutional adjustment (i.e., institutional charges) and program performance, would be more deficient for RVOs. These hypotheses were not

supported, in that RVOs were less likely to complete programming because of their higher rates of program expulsion. However, as a group, RVOs were less likely to return to custody after release, thereby suggesting better release outcomes despite higher levels of treatment dropout. This difference was not maintained after controlling for static risk and age at release in the survival analysis assessing the primary categorization of violent offender subtypes (i.e., history). Survival analyses, including violent offender subtypes based on index offence, after controlling for risk and need reported significantly higher rates of return for IVOs than RVOs.

Together, these findings suggest that RVOs, relative to IVOs, have more problematic behaviour while incarcerated; however, when released, their rates of reoffending are lower compared to IVOs. Nonetheless, given the high-risk, high-need nature of the current sample, level of risk and need for both groups are problematic, albeit the emergence of differential patterns warrant further investigation that may provide insight into future offending patterns.

Examining more closely the differential pattern in characteristics between subtypes may help explain the differences in results related to treatment outcomes. For example, results from Study 1 provided preliminary support that RVOs may demonstrate greater need with respect to personal and emotional elements such as impulsivity, problem solving, and emotional liability (e.g., DFIA results related to the personal or emotional domain), which may contribute to misbehaviour during program participation. These results have not been assessed directly in relation to program performance, but the abovementioned characteristics may inhibit offenders' capacity to complete treatment and lead to higher rates of program dropout. Sheldon, Howells, and Patel (2010)

examined reasons for non-completion in high-risk offenders and reported affective factors as a key area of influence. RVOs may demonstrate greater levels of distress in relation to the previous offending behaviour, given the impulsive nature of the offence (i.e., homicide in response to perceived provocation).

It is likely that numerous factors are related to desistance or program performance in violent offenders. Another factor to consider is age, as *age at intake* predicted treatment dropout and return to custody. These results were most relevant for the RVOs, in that younger RVOs were more likely to drop out of programming than older offenders. Age has been reported as a predictor or as being related to program drop-out in numerous other studies (e.g., Jewell & Wormith, 2010; Nunes, Cortoni, & Serin, 2010). By definition, RVOs are typically deemed to be more impulsive. Results related to neuropsychological measures indicate that reactive offenders are more deficient on tests of impulsivity than IVOs (Levi et al., 2010). Although self-reported measures of impulsivity in the current study indicated that RVOs and IVOs are similar in terms of degree of impulsivity, it is possible that the combination of elevated levels and impulsivity and being younger within a small subsample of RVOs are factors contributing to their program expulsion.

Rates of institutional misconduct between the subgroups demonstrated a trend toward RVOs representing a greater rate of minor charges during their sentence than IVOs. Therefore, the hypothesis that RVOs would demonstrate lower levels of institutional misconduct was not supported. The elevated rates of misconduct between RVOs and IVOs might partially explain the greater proportion of dropouts within the RVO group. Nevertheless, these points of difference between the groups are worthy of

further investigation. Perhaps even an examination of the type of misconduct would be useful, as there may not be differences in the number or rate of misconduct but rather in the type of misconduct. If institutional behaviour is a proxy of criminal behaviour, presumably, RVOs would have higher rates of misconduct related to interpersonal conflict (fights, arguments), whereas IVOs may have higher rates of misconduct related to disobeying authority (i.e., presence of contraband).

The VRS was completed both pre-and post-program to assess changes in risk owing to treatment. This measure is both an assessment of risk and of treatment change, and the results indicated that IVOs were at greater static risk of reoffending than RVOs before and after treatment. Additionally, both groups met the pre-program threshold of being classified as a high-risk sample. Post-program results were lower for both groups and were below the high-risk cut-off, but the degree of treatment change, as assessed by the stages of change related to the dynamic factors as part of the VRS, did not differ significantly between the groups. Also, further research should examine the subcomponents of this measure to better understand the domains that contribute to this significant difference in risk between groups. Conceivably, IVOs may reflect greater risk in items of the VRS that provide explanations of these differences (e.g., potentially, IVOs are higher on criminal peers, weapon use, and less insight into violence items than RVOs).

Results of the PCL-R were only available for a small subset of the sample. Previous research related to violent offender subtypes has demonstrated that IVOs typically show higher levels of psychopathy than RVOs. More specifically, Blais and Forth (2014) reported that Factor 1 results (interpersonal factors) may be higher in IVOs;

however, this was not supported by the results of the current study. However, group difference was not significant, and these findings may be attributable to limited and uneven sample sizes. In addition, the sample employed in this study represents a high-risk (i.e., security level, static risk) subgroup of violent offenders. Perhaps a future sample with more variability in terms of levels of risk may offer different insights regarding the prevalence of psychopathy within a broader representation of violent offenders.

Interesting results emerged with respect to the survival analyses; specifically, violent offender subtypes based on coding violent offence history indicated no significant difference in the rates of re-offence after controlling for age at release and static risk. However, when the same survival analysis was conducted to determine violent offender subtypes based on coding on the current violent index offence, the rate of return to custody was higher for IVOs relative to RVOs.

Without further analysis and exploration, it is unclear why differences emerged when only coding based on violent index offence. Conceivably, the temporal proximity of coding group membership based on an offender's index offence versus violent offence history may offer a more accurate classification of an offender's current offence pattern. Future research should compare results between coding based on index offence versus history and explore the individuals that resulted in different classifications between the two classification systems—that is, based on history, they are classified as RVOs, whereas based on index, they are classified as IVOs. Perhaps examining these cases will provide insight into the differences between classification approaches.

Additionally, examining only returns to custody during the remainder of each offender's sentence was a limitation of the current study. Examining the rates of recidivism or reoffending after sentence completion (post-WED) or for a specific follow-up time (e.g., two years after release) would have allowed for a more accurate assessment of release outcomes between the subgroups, given longer follow-up periods. Furthermore, examining the nature of and the motivation underlying new violent offences would be a worthy area of investigation. That is, are new violent convictions by RVOs and IVOs reactive or instrumental in nature? Future research examining these factors in more detail would further contribute to our conceptualization and understanding of violent offender subtypes.

Conclusions

To date, literature related to treatment outcomes and characteristics of violent offender outcomes has been absent or limited in scope (i.e., only examining psychopathic offenders). As such, the current study offers a preliminary examination of outcomes related to violent offender subtypes within a sample of high-risk, high-need violent offenders. Generally, limited differences were reported between the groups, as few or no significant differences emerged with respect to institutional misconduct and readiness to change. Age was a significant predictor of drop-out for RVOs, whereas pro-criminal attitudes predicted drop-out for IVOs. Results indicated that despite RVOs having greater concerns related to program completion and being less likely to receive a discretionary release, they were less likely to return to custody relative to IVOs. Conversely, IVOs were assessed as having greater needs with respect to violent risk (as

determined by the VRS), were more likely to receive discretionary release, but were more likely to return to custody.

Study 3: Examination of Executive Cognitive Functioning and its Contribution to the Heterogeneity of Violent Offenders

As established in the literature review, the theoretical and operational distinctions of violent offender subtypes have been demonstrated in numerous studies. Further, impairments in ECF have been implicated in determining both criminal behaviour and violent offending; however, the relationships amongst violent offender subtypes have not been consistently established. Therefore, the objective of this study is to examine underlying ECF in order to ascertain its role in contributing to the heterogeneity of violent offender subtypes.

The current study assesses the following research question and associated hypotheses:

Research Question 3: To what extent and in what way does underlying cognitive impulsivity and executive cognitive functioning (ECF) contribute to the heterogeneity of violent offenders?

Hypothesis 6. Violent offenders, as a group relative to nonviolent offenders (NVOs), will have greater deficits in executive functioning in such elements as planning, cognitive flexibility, and impulsivity.

Hypothesis 7. Overall, reactive violent offenders (RVOs) will exhibit the greatest deficits in ECF relative to instrumental violent offenders (IVOs) and NVOs.

Hypothesis 8. On tasks involving a motivational inhibition element (i.e., the Iowa Gambling Task [IGT]), IVOs will exhibit deficits that are more similar to those of reactive aggressors than the deficits exhibited by the nonviolent comparison group.

Method

Participants

One hundred and seventy-four offenders were recruited from two medium-security federal penitentiaries in the Ontario Region. Data were collected at Fenbrook Institution in Gravenhurst, Ontario, during the summer of 2011 and at Joyceville Institution in Kingston, Ontario, during the summer and fall of 2012. Participants were excluded if they were not fluent in English or if they exhibited a mental illness or learning disability that might preclude them from completing the assessment battery. Participants were all male offenders ranging from 20.5 to 70.5 years of age, with a mean age of 35.5 years old ($SD = 10.8$) at the time of testing.

Data Sources

The study utilized data from two sources: 1) data extracted from the offenders' computerized files in the Correctional Service of Canada's (CSC) Offender Management System (OMS),³¹ and 2) neuropsychological tests and psychometric self-report measures administered using paper-and-pencil questionnaires and computer-based tasks.

Materials

OMS. Demographic characteristics and sentence-related variables, including ethnicity, age, marital status, most serious offence, security level, sentence type, and aggregate sentence length, were extracted by the researcher from the OMS. These variables were aggregated and examined for group comparison (i.e., violent vs. NVOs; RVOs vs. IVOs). These were the same variables described and included in Study 1;

³¹ The OMS is an automated database utilized by the CSC to manage information on federal offenders.

therefore, only variables unique to Study 3 will be discussed below. The reader is referred to the method section of Study 1 for further details.

Measures

In the present study, the data were collected by asking participants to complete a battery of neuropsychological measures and two self-report psychometric measures.

Neuropsychological and psychometric measures. The Delis-Kaplan Executive Function System (D-KEFS™) (Delis, Kaplan, & Kramer, 2001) is a battery of neuropsychological measures that assesses components of ECF. In total, there are nine stand-alone subtests within the battery, which are: trail making, verbal fluency, design fluency, colour–word interference, sorting, twenty questions, word context, tower, and proverb. Each test falls within one of four domains: concept formation, fluency and productivity, flexibility, and planning. The entire battery takes about 90 minutes to administer, or approximately 10 minutes per task. The current study used five of the tests: trail making (TMT), verbal fluency (VF), design fluency (DF), colour–word interference (CWIT), and the tower test (TT). For each of the D-KEFS subtests, raw scores were transformed into standard scores ranging from 1 to 20 with a mean of 10 and a standard deviation of 3. Each test is corrected for age groups (e.g. 20-29, 30-39, 40-49 etc.). Contrast measures, which directly quantify relative performance based on a baseline task and a higher level task are also reported ($M = 10$; $SD = 3$) (Delis et al., 2001).

These measures were chosen based on the subcomponents of ECF that they are designed to assess. Specifically, two key domains were assessed: switching (i.e., cognitive flexibility) and inhibition. The cognitive process of switching requires an

individual to shift back and forth between tasks or mental sets. This is also referred to as attention switching or task switching and involves “the disengagement of an irrelevant task set and the subsequent active engagement of a relevant task set” (Miyake, Friedman, Emerson, Witzki, & Howerter, 2000, p. 55). Switching tasks in the current study include components of the TMT, VF, DF, and CWIT.

Inhibition is one’s ability to “deliberately inhibit dominant, automatic, or prepotent responses when necessary” (Miyake et al., 2000, p. 57). Tasks of inhibition in the current study include the CWIT, which is conceptually based on the Stroop Task, the Tower Test, and the GoStop Impulsivity Paradigm (GoStop) (Miyake et al., 2000).

The TMT assesses inhibitions, switching, planning, and working memory. There are five conditions in this subtest: 1) visual scanning, 2) number sequencing, 3) letter sequencing, 4) number–letter switching, and 5) motor speed. Each condition is timed, and participants are asked to work as quickly as possible, but also as accurately as possible. The first condition, visual scanning, involves the participant crossing out all of the threes on a two-page response sheet. The second condition, number sequencing, asks the participant to sequentially connect a line through the numbers 1 through 16. There are additional numbers on the response sheet that act as distracters. The third condition, letter sequencing, is similar in structure to the second condition; however, it involves letters (A through P) instead of numbers. The fourth condition, number–letter switching, requires the participant to sequentially connect numbers and letters by alternating between the two (i.e., 1, A, 2, B, 3, C, etc., to 16, P). The fifth condition, motor speed, asks participants to draw over an existing dotted line as quickly as possible while connecting with the circles. This is a measure of the participant’s motor-drawing speed.

Conditions 1, 2, 3, and 5 are baseline measures of the skills necessary for the higher-order Condition 4, which involves number–letter switching. In the current study, TMT:

Condition 4: Switching, All Errors was an indication of switching.

The VF test requires participants to list all the words they can think of that begin with a specific assigned letter (e.g., F) within 60 seconds. A second component of this task asks participants to list words within a specific category (e.g., animals, food), again within 60 seconds. This test assesses the participants' fluency with or ease of verbal responses. The conditions were letter fluency, category fluency, and category switching. In the current study, VF: Category Switching, Total Correct is an index of switching.

The CWIT is a test of cognitive flexibility and verbal inhibition. The participants are required to attend to a task (e.g., naming a colour of text) while inhibiting a competing verbal response (e.g., reading the word). This task is a version of the original Stroop Task (Stroop, 1935), wherein a participant is asked to name the colour of the ink used to write a word. The Delis-Kaplan version of the task involves four conditions that increase in complexity (i.e., basic color naming, word reading, inhibition, inhibition/switching) and in the required level of inhibition. In the current study, CWIT: Condition 3: Inhibition, Total Time and CWIT: Condition 4: Inhibition/Switching minus (-) (Condition 1 plus (+) Condition 2) are indices of inhibition. Also, CWIT: Condition 4 Inhibition/Switching minus (-) CWIT Condition 3, Inhibition is an index of switching.

The DF test assesses inhibition and cognitive flexibility. Participants are required to draw as many different original designs as possible within a 60-second time limit. The response booklet has rows of boxes with dots in them. In Condition 1: Filled Dots, participants are asked to draw original designs using only filled dots. Similarly,

Condition 2: Empty Dots, requires participants to draw original designs using only empty dots. Finally, Condition 3: Switching, requires participants to draw original designs by switching between empty and filled dots. In the current study, DF: Condition 3: Switching is an index of switching.

The TT assesses problem solving, planning, and the inhibition of impulses and responses. In this task, participants are asked to move three rings among three pegs within the confines of a series of rules. In the current study, the total number of rule violations represents an index of inhibition.

Numerous reviewers have indicated that the D-KEFS is adequate as a measure of frontal systems (Baron, 2004; Shunk, Davis, & Dean, 2006). Moreover, the D-KEFS has been normed on a sample of over 2,000 individuals and was developed from decades of neuropsychological literature and testing.

Iowa Gambling Task (IGT) (Bechara, Damasio, Damasio, & Anderson, 1994).

The IGT is a computerized gambling task in which participants are asked to choose a card from one of four decks, with the goal of maximizing their profit. In total, 100 trials of card selections are completed across five 20-trial blocks. The task takes approximately 10 to 15 minutes to complete. The participant is unaware that each deck has an assigned schedule of reinforcement. More specifically, some decks initially pay large dividends per card, but eventually incur large losses as well, whereas other decks pay low dividends per card, but are less risky overall. The low-paying decks are more profitable over the course of the task. The IGT in the current study assesses a participant's ability to inhibit a response option—and more specifically, tests the hypothesis that instrumental aggressors are less able to inhibit because of their motivational component.

There are two primary IGT scores: 1) total net score (net total) and 2) block net score. The total net score is the difference between the number of cards selected from the two advantageous decks (Decks C and D) and the number of cards selected from the disadvantageous decks (Decks A and B), that is, (Deck C + Deck D) - (Deck A + Deck B). For this index, a positive score demonstrates advantageous decision making and a negative score suggests disadvantageous decision making. A T-score for this measure was also reported. Individuals with T-scores lower than 40 were considered to be impaired in their decision-making capacity. The block net score is the most commonly cited IGT score (Bechara et al., 1994). The scores from each block represent the net score (i.e., (Deck C + Deck D) - (Deck A + Deck B)) for each block of 20 cards. These scores demonstrate the capacity of an individual to adapt to a learning curve during the test or whether a participant responded at random and had limited decision-making capacity. As with the total net scores, positive results indicate advantageous decision making and negative scores demonstrate disadvantageous decision making.

GoStop Impulsivity Paradigm (GoStop) (Dougherty, 2003; Dougherty, Mathias, & Marsh, 2005). GoStop is a computerized impulsivity task that assesses a participant's ability to inhibit a response. A computer screen randomly displays two five-digit strings of numbers for approximately 500 milliseconds. Each trial is random; however, in half of the trials, the numbers match (target trials). In the remaining trials, the second set of the number text turns red. This transition occurs at intervals ranging from 50 to 350 milliseconds upon presentation. The task requires participants to inhibit their response if the matching string of numbers turns red, but to respond regularly otherwise. A number of items are measured, including, but not limited to, the number of

inhibition failures and the reaction times of both response and inhibition. GoStop consists of 320 trials and takes approximately 15 minutes to complete. The primary measure for GoStop as an indicator of an individual's ability to withhold or inhibit a response when a stop signal is present is the percent of inhibited responses. This index is calculated by dividing the number of GoStop trials in which no response occurs by the total number of GoStop trials. Lower scores/percentages demonstrate more impulsive responding. This value is reported for each GoStop interval (i.e., 50 ms, 150 ms, 250 ms, 350 ms), with poorer response inhibition at longer stop signals.

Social Problem-Solving Inventory–Revised Long Form (SPSI–R:L) (D’Zurilla, Nezu, & Maydeu-Olivares, 2000). The SPSI-R:L is a self-report questionnaire assessing an individual's social problem-solving skills. The measure is based on previous work by the same authors, which examines and assesses the major components of a theoretical model of social problem solving (D’Zurilla & Nezu, 1982, 1999). The SPSI-R:L has five subscales, consisting of 52 total items, which are scored on a five-point scale ranging from “not at all true of me” to “extremely true of me.” Two of the scales measure problem-solving orientation—positive problem orientation (PPO) and negative problem orientation (NPO)—and three subscales assess problem-solving styles: rational problem solving (RPS), avoidance style (AS), and impulsivity/carelessness style (ICS). Two of the scales (PPO and RPS) measure constructive problem solving, and the remaining three scales (NPO, AS, and ICS) assess dysfunctional problem solving. The rational problem solving (RPS) subscale can be broken down further into additional subscales assessing problem definition and formulation (PDF), the generation of alternative solutions (GAS), decision making (DM), and solution implementation and

verification (SIV). Additionally, an overall total social problem-solving scale score was calculated.

Standard scores were computed for each individual's total score using the normative data provided in the SPSI-R:L manual and based upon age. This method provided a standard score, which allowed for comparison among groups, with an *M* of 100 and an *SD* of 15. Generally, scores between 86 and 114 were classified within the normal range, relative to normative groups.

Test-retest reliabilities for the SPSI-R:L scale were between .68 and .91, and alpha coefficients were between 0.69 and 0.95 (D'Zurilla, Nezu, & Maydeu-Olivares, 2000). The validity of the SPSI-R:L is supported by way of confirmatory factor analysis and correlations with other problem-solving measures and overlapping psychological constructs (D'Zurilla, Nezu, & Maydeu-Olivares, 2000). All analyses have upheld the validity of the SPSI-R:L as an assessment instrument. Moreover, alpha levels in the present study provided additional support for the reliability of the SPSI-R:L. The internal consistency of the SPSI-R:L in the present study was good, with an overall alpha level of 0.88. Cronbach's alpha levels for each subscale are as follows: AS: $\alpha = .77$; NPO: $\alpha = .90$; GAS: $\alpha = .85$; PPO: $\alpha = .80$; DM: $\alpha = .84$; SIV: $\alpha = .85$; RPS: $\alpha = .96$; and ICS: $\alpha = .87$.

Buss-Perry Aggression Questionnaire-Short Form (BPAQ-SF) (Bryant & Smith, 2001; Diamond & Magaletta, 2005). The BPAQ-SF is a 12-item questionnaire assessing four components of aggression: 1) physical aggression, 2) verbal aggression, 3) anger, and 4) hostility. Items are rated on a five-point Likert scale from 1 = very like me to 5 = very unlike me. The BPAQ-SF is a short form of the original widely used and

cited 29-item Buss–Perry Aggression Questionnaire (BPAQ) (Buss & Perry, 1992). Bryant and Smith (2001) developed the short form of the BPAQ, which was later modified and validated by Diamond, Wang, and Buffington-Vollum (2005). More specifically, Diamond et al. (2005) validated the four-factor structure. In the current study, this measure was used to assess an offender’s level of aggression. Within the current sample, internal consistency ranged from poor ($\alpha = .57$) for the hostility subscale to more acceptable levels for verbal aggression ($\alpha = .73$), anger ($\alpha = .73$), and physical aggression ($\alpha = .75$). The overall internal consistency was good, at $\alpha = .86$.

The Alcohol Dependence Scale (ADS) (Skinner & Horn, 1984). The ADS is a 25-item scale used to investigate alcohol dependency, and it provides an assessment of the degree of use and the level of impairment from thoughts related to drinking, the extent of alcohol withdrawal symptoms, and increased tolerance to alcohol. Individuals are classified into one of five levels of severity based on scores: 0 = none, 1–13 = low, 14–21 = moderate, 22–30 = substantial, and 31–47 = severe. Scores in the current study were collapsed, given the limited small cell sizes. Participants were asked to respond to the question based on their behaviours in the 12 months prior to their arrest. The ADS has been utilized successfully within a correctional setting (Hodgins & Lightfoot, 1988; 1989) and has demonstrated very good levels of internal consistency, ranging from .85 to .94 (Boland et al., 1998; Skinner & Horn, 1984).

Problems Related to Drinking scale (PRD). The PRD is a 15-item self-report measure used to assess the number of problems related to individual alcohol use. Items are summed across dichotomous yes/no questions. Individuals’ total scores are used to assess their level of problems related to drinking: 0 = no problems, 1–3 = some problems,

4–6 = quite a few problems, and 7–15 = a lot of alcohol problems. This scale is derived from the Michigan Alcoholism Screening Test (MAST) (Selzer, 1971).

The Drug Abuse Screening Test (DAST) (Skinner, 1982). The DAST is used to assess the degree of problems related to individual drug use. This self-report measure has dichotomous response options and assessment items, such as symptoms of dependence and frequency of use. Individuals' total scores are used to assess their overall severity of drug use, from 0 = none, 1–5 = low, 6–10 = moderate, 11–15 = substantial, and 16–20 = severe. Normative data for incarcerated offenders are available (Robinson, Porporino, & Millson, 1991). Participants were asked to respond to the question based on their behaviours in the 12 months prior to their arrest.

Materials and Apparatus

A laptop computer was utilized to administer GoStop and the IGT. The other measures—the SPSI-R:L, the BPAQ-SF, and the individual tests from the D-KEFS™—are either paper-and-pencil questionnaires or assessments completed by the researcher. Data analyses were performed using version 21.0 of the Statistical Package for the Social Sciences (SPSS, 2012) for Windows and Statistical Analysis Software (SAS) Version 9.2 (2011). Data were extracted from the CSC's OMS database.

Procedure

The responsibilities of institutional data collection were shared amongst three graduate students from two universities in Ontario (University of Western Ontario and Carleton University) at two medium security federal penitentiaries (Fenbrook Institution, Joyceville Institution). Ethical approval from the Carleton University Research Ethics

Board was obtained prior to the start of the study. Research approval was also gained from the CSC's Research Review Committee (Appendix D).

Recruitment. Participants were recruited at each institution by the student researchers. At Fenbrook Institution, participants were randomly invited to participate in the study. At Joyceville Institution, participants were recruited from the Institutional School or Correctional Programming. Participants at both institutions were approached and asked to participate in a research study. If a participant was interested, he was invited to a session in a private interview room within the institution. At that time, a more detailed verbal description of the project, along with an estimated time commitment, was provided to the participant. Offenders interested in participating in the study were required to provide informed consent by reading and signing the consent-to-participate form.

Consent. As part of the consent process, each offender was asked to provide his name and unique identifying number; that is, his Finger Print Serial (FPS) number. The consent form and data are maintained by the researcher in a secure, locked cabinet at CSC's national headquarters. All test-related materials were labelled only with the participant's number. No identifying information was provided either on paper-and-pencil testing materials or via computerized test files (refer to Appendix N for a copy of the consent form).

Testing sessions. In an effort to diminish order effects, the order of the measures was counterbalanced. The researcher was available to address any questions regarding the measures or testing procedure. Upon completion of the testing session, participants

were debriefed regarding the testing material and thanked for their participation. A complete testing session took an average of 1.5 to 2 hours to complete.

Following data collection from the primary institution, the principle researcher accessed the CSC's OMS files of participants who had consented to participate. One participant who had given consent for the assessment battery did not consent to the follow-up data collection.

Inter-Rater Reliability

Intra-class correlation coefficients (ICCs) were calculated using two-way random effects and a consistency agreement definition. With respect to interpretation of the values of reliability, ICCs lower than .40 were classified as poor, .40 through .59 were fair, .60 through .74 were good, and .75 to 1.00 were excellent (Cicchetti & Sparrow, 1981). Across the individual items for the ARF, ICCs ranged from .66 to 1.00. The lowest agreement was on the item related to the degree of planning involved with violent offences. This item was difficult to rate in general, since the level of planning was not often described in the criminal profile, especially for non-index offences. Agreement on the overall category of violent offence was excellent, at 1.00.

The VIC coding was more consistent across individual items, ranging from .92–1.00. Classification of the overall violent offence category was excellent, at 1.00.

Analytic Strategy

In order to address the research questions and assess the corresponding hypotheses, three phases of analysis were conducted. First, for demographic and descriptive OMS data, chi-square tests were utilized to assess differences within categorical variables amongst NVOs, RVOs, and IVOs. T-tests and analyses of variance (ANOVAs) were

conducted with continuous variables. In order to reduce the chances of a Type 1 error, significant levels were adjusted (Bonferroni corrections) to provide family-wise significance levels of .05, as needed.

Secondly, RVOs, IVOs, and NVOs were compared using key neuropsychological performance-based measures (i.e., D-KEFS, GoStop, IGT) and self-report measures (i.e., SPSI-R:L, BPAQ-SF) through a series of multivariate analysis of variance (MANOVA) and repeated measures ANOVAs. Indices for the five DKEFS subtests were categorized by the ECFs (i.e., inhibition, switching) of interest to the given sample. Therefore, a separate MANOVA was conducted for relevant inhibition-related indices across the five DKEFS subtests. Similarly, another MANOVA was conducted for relevant switching-related indices from the five DKEFS subtests. Further, two additional MANOVAs were carried out for each of the self-report measures (i.e., SPSI-R:L, BPAQ-SF). Finally, two separate repeated ANOVA measures were conducted for the IGT and GoStop tasks, since both were related to performance across separate blocks.

Three stepwise logistic regression analyses were conducted to assess the ability of various indicators of ECF, problem solving, and aggression to predict group membership (i.e., RVOs vs. IVOs, etc.). First, an analysis of predictor variables was used to differentiate between violent and nonviolent membership in general (ANOVAs, MANOVAs, t-tests). Relevant predictor variables assessed each of the key concepts (i.e., switching, inhibition, problem solving, aggression) with regard to their ability to distinguish between instrumental and reactive violent and nonviolent subgroups.

Data Screening

In total, 178 male federal offenders participated in the study. Individuals were excluded from the analyses for the following reasons: 1) two participants were young offenders during their index offences; 2) two participants were deemed not criminally responsible (NCR) for their index offence; 3) one individual completed the assessment battery twice (once at each site); as such, only data from the first testing session were included; 4) one participant was deemed to have invalid data; and 5) one participant only consented to the neuropsychological testing and was, therefore, excluded from the follow-up coding. After excluding these participants, the remaining sample of 171 participants was included in the analyses.

Data entry. Data were inspected for data entry errors and corrected in advance of any further data screening. Two of the measures included in the test battery were computer-based. After exporting the data, the *M*, *SD*, and minimum and maximum values were examined to ensure that the variables were within acceptable ranges.

Missing data. Amongst the 86 variables, the percentage of missing data ranged from 0% to 14% for each individual. The majority of participants ($n = 163$, 95%) did not have any missing data. However, of those with missing data, examples included participants missing responses to questions within a questionnaire or (in a more severe example) missing an entire computer-based task (e.g., GoStop, IGT). The GoStop was the main reason for missing data. Given technical difficulties with installation of the GoStop, this measure was only added to the battery of tests after commencing data collection at Fenbrook Institution. Consequently, this measure was not completed for the first 70 participants, and only 101 participants completed the measure.

Mean substitution was conducted to address the missing response data within the SPSS-R:L. Given the nature of the data (i.e., Likert scale) and the relative infrequency of missing information (a less than 5% omission rate), mean substitution was an appropriate method for addressing the missing data (Tabachnick & Fidell, 2001). Further, this method was recommended within the user manual as a means to address missing data, presuming the proportion of missing data did not exceed 6% (i.e., three items in total, or one to two items per subscale, depending on the number of items in the subscale) (D’Zurilla, Nezu, & Maydeu-Olivares, 2000).

Mean substitution was not conducted for the BPAQ-SF, since this measure has too few items (12 items) to conduct mean substitution. Consequently, pairwise deletion was adapted for all bivariate analyses. In terms of data screening, all continuous variables were assessed for non-normality (skewness and kurtosis) and for the presence of univariate and multivariate outliers. Specifically, histograms, normal probability plots, studentized residuals, and skewness and kurtosis statistics were conducted for each variable. Further, standardized scores and the Mahalanobis distance test were conducted to identify univariate and multivariate outliers, respectively.

Univariate outliers. First, univariate outliers were identified when standardized Z-scores were calculated for each variable for each case. Z-scores of 3.3 or greater were identified as outliers; in total, 15 cases were determined to be univariate outliers across the 12 variables. Scores identified as outliers were recoded to be within three standard deviations of the overall group means for the subscale, as they represented extreme scores (Tabachnick & Fidell, 2001).

Multivariate outliers. Mahalanobis distance values for each case were determined in order to screen for the presence of multivariate outliers. Specifically, the Mahalanobis distance of each case was compared with the χ^2 critical value ($df = 86, p < .001$), using a critical value of 124.84. As a result, four outliers were detected, deleted, and excluded from further analysis.

Skewness and kurtosis. Two key indicators of normality—skewness and kurtosis—were converted to Z-scores. Skewness and kurtosis statistics were identified as issues (i.e., Z_s or Z_k greater than or less than +3.3 or -3.3, respectively) in 34 of the 87 variables (Tabachnick & Fidell, 2001). Positively skewed variables were transformed using a square root, logarithm, or inverse transformation, depending on the severity of the skewness. Negatively skewed variables were transformed using a reflection, a reflection and a square root, a reflection and a logarithm, or a reflection and an inverse transformation, depending on the severity of the skewness.

Homogeneity of variance. Levene's test was conducted to assess the assumption of the homogeneity of variances. Overall, the assumption was violated in three variables, and these variables were subsequently transformed or outliers removed in order to address the violations.

For each variable that was transformed due to non-normality, t-tests and ANOVAs were conducted to compare results amongst the three groups to assess differences. Similarly, for each case identified as a univariate or multivariate outlier, analyses were conducted with the case both included and excluded. If no significant differences were found, the case was retained. Moreover, given that no significant differences were

revealed when comparing transformed variables, non-transformed variables were maintained for all analyses.

Results

Sample Characteristics

As previously described, 174 male federal offenders completed the battery of neuropsychological measures. At the time of data collection, 58.6% ($n = 102$) of the sample were serving sentences for violent index offences, and 4% had domestic violent index offences. Violent offenders were classified into groups based on results from the Aggression Rating Form (ARF) (Vitacco et al., 2006). Specifically, to be classified as a violent offender, an offender must have a previous or current conviction for a violent offence. Conversely, only those offenders without a documented violent index or previous violent charge were classified as nonviolent.

ARF (Vitacco et al., 2006). The coding of offence types was carried out by utilizing ARF results. The results found that an overall proportion of 80% ($n = 139$) of the sample had engaged in either a violent index offence or a historical violent offence. Sixteen percent of the sample had no violent offence convictions on record. Of the complete sample, as assessed by the categorical coding of the ARF measures, 43.1% ($n = 75$) of the inmates met the characteristics for being classified as predominately RVOs, and 36.8% ($n = 64$) could be classified as predominately IVOs. Approximately 4.6% ($n = 8$) of participants had insufficient information to code their offence category (see Table 37).

Table 37

Prevalence of Offence-Based Categories According to the Aggression Rating Form (ARF) (Vitacco et al., 2006)

Offence Category	% (n)
Nonviolent index offence and history	15.5% (27)
Violent index offence and history	80% (139)
Reactive violent index or history	43.1% (75)
Instrumental violent index or history	36.8% (64)
Insufficient offence information to code offence category	4.6% (8)

Note. n = 174.

Previous violent convictions. The majority of the files described the offenders' previous violent convictions; of those with information, 46.6% (n = 81) had documented violent adult convictions and 31.6% (n = 55) had documented violent youth convictions.³² Forty percent (39.7%, n = 69) of the sample was not currently serving a sentence for a violent index offence. In terms of differences between groups, a greater proportion of RVOs than IVOs had a current or previous domestic violence conviction (Table 38).

³² As noted in the Methods section and Study 2, these values are likely an underestimate, given that they are based on internal CSC administrative documentation and not on formal Royal Canadian Mounted Police (RCMP) Canadian Police Information Centre (CPIC) files.

Table 38

Presence of Current Violent Index and Previous Violent History within Reactive and Instrumental Violent Offenders

	RVOs	IVOs	χ^2	<i>p</i>	Φ or V
	<i>n</i> = 75	<i>n</i> = 64			
	% (<i>n</i>)	% (<i>n</i>)			
Violent index	62.7 (47)	85.9 (55)	9.57*	.002	-.262
Domestic violence index	12.0 (9)	1.6 (1)	5.64*	.018	-.201
Violent offence history					
Previous adult history	56.0 (42)	53.1 (34)	0.115	.734	-.029
Previous youth history	30.4 (21)	45.6 (26)	3.08	.079	.156
Previous domestic history	47.3 (35)	4.8 (3)	30.21***	.000	-.471

Note. *n* = 139. Numbers may not add up to 100% due to rounding. Φ or V = phi or Cramer's V.

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

Violence Index Coding (VIC) (Cornell et al., 2006). In addition to coding each offender's index and criminal history using the ARF measure, the researcher coded each index offence using Cornell's VIC form. The intent of using this coding method was to examine whether only coding an offender's index offence to distinguish violent offender subtypes resulted in different subgroup outcomes. This classification system is more restrictive in that it only considers the offender's index offence. Classifying offence type by index offence resulted in only 59% (*n* = 102) of the sample being classified as violent offenders and 40% (*n* = 69) being classified as NVOs. Overall, 21% (*n* = 36) of the offenders were classified as RVOs and 38% (*n* = 66) were classified as IVOs based on their index offences.

Demographic characteristic amongst groups. Forty-five percent of the overall sample (44.6%) was Caucasian (*n* = 74), and nearly a quarter of the participants self-identified as Aboriginal (23%, *n* = 38); there were smaller proportions of Black (19.4%, *n* = 32) and other (12.7%, *n* = 21) minority groups. Other minority groups included South Asian, Southeast Asian, Korean, Hispanic, Latin American, or those unable to specify.

Examining these demographic characteristics amongst violent offender subtypes in relation to NVOs resulted in similar patterns overall. In terms of ethnicity, a greater proportion of RVOs were Aboriginal (31%, $n = 22$), and a greater proportion of NVOs (30.8%, $n = 8$) were classified within the “other” ethnicity category (Table 39). RVOs (36.7 years, $SD = 11.2$) were significantly older at the time of testing than IVOs (32.4 years, $SD = 8.4$). Overall, 45.5% ($n = 75$) of the sample was single, and a nearly equal amount was either married or common-law married (46.1%, $n = 76$); the remaining 8.5% ($n = 14$) was divorced or separated. Although a slightly larger percentage of NVOs were married, no significant differences were present between violent offenders and NVOs with respect to marital status.

Offence and Sentence-Related Characteristics within Violent Offender Subtypes

Aggregate sentence length and sentence type. In terms of aggregate sentence length, excluding indeterminate sentences, IVOs (6.68 years, $SD = 6.11$) had, on average, slightly longer sentence lengths than both RVOs (4.75 years, $SD = 2.85$) and NVOs (5.34 years, $SD = 3.41$); however, although IVOs had longer sentence lengths than either RVOs, the difference was not statistically significant. Refer to Table 39.

Approximately 15% of offenders were serving an indeterminate sentence (14.5%, $n = 24$). RVOs had a larger proportion of offenders serving indeterminate sentences (19.7%, $n = 14$), with its share approaching the average within the CSC (i.e., 23%) (Public Safety, 2013).

Table 39

Demographic Characteristics of Violent Offender Subtypes and Nonviolent Offenders

	RVOs	IVOs	NVOs	χ^2 or F	p	V or η_p^2
	$n = 71$	$n = 68$	$n = 26$			
	% (n) or M (SD)	% (n) or M (SD)	% (n) or M (SD)			
Ethnicity						
Caucasian	47.9 (34)	42.6 (29)	42.3 (11)	18.67*	.005	.238
Aboriginal	31.0 (22)	22.1 (15)	3.8 (1)			
Black	11.3 (8)	26.5 (18)	23.1 (6)			
Other ^a	9.9 (7)	8.8 (6)	30.8 (8)			
Marital Status						
Single, widowed	46.5 (33)	45.6 (31)	42.3 (11)	1.33	.856	--
Married/common-law	43.7 (31)	45.6 (31)	53.8 (14)			
Divorced/separated	9.9 (7)	8.8 (6)	3.8 (1)			
Age at Testing	36.7 (11.2)	32.4 (8.4)	32.9 (12.8)	3.27*	.041	.039
Aggregate Sentence Length (Years) ^b	4.75 (2.85)	6.68 (6.11)	5.34 (3.41)	2.64	.075	--

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders; V = Cramer's V; η_p^2 = partial eta-squared.

^a = visible minorities, including South Asian, Southeast Asian, Korean, Hispanic, Latin American, and those unable to specify.

^b $n = 146$; offenders serving a life or indeterminate sentence were excluded from the sentence length calculation.

* $p < .05$.

Static risk. Given the small cell sizes, chi-square tests were not conducted.

Descriptively, the distribution within violent offender groups was large proportions of RVOs (64.4%, $n = 46$) and IVOs (57.4%, $n = 39$) being assessed as demonstrating high levels of static risk. In terms of non-violent offenders, the distribution of NVOs was more evenly spread across the three categories of risk, with a larger proportion of NVOs 30.8%, $n = 8$) assessed as low risk than either RVOs or IVOs (4.4%, $n = 3$) (See Table 40).

Overall Dynamic risk/criminogenic need. Given the limited cell sizes within the low dynamic risk category, chi-square analyses were conducted to examine the distribution between groups on the moderate- and high-risk categories only. The chi-square results were significant, indicating that across violent offender subtypes, relative to NVOs (42.3%, $n = 11$), a significantly larger proportion of RVOs demonstrated a high dynamic risk (81.7%, $n = 58$), and conversely, a significantly smaller proportion of RVOs (16%, $n = 11$) demonstrated moderate levels of dynamic risk, relative to NVOs (38.5%, $n = 10$), ($\chi^2(2, 156) = 8.89, p = .012, V = .239$).

Reintegration potential. In terms of differences between subtypes and NVOs, a significantly greater number of RVOs (53.6%, $n = 37$) were assessed as having low reintegration potential (43.5%, $n = 27$), in relation to NVOs (8.0%, $n = 2$).

Motivation level. Given the small cell sizes, chi-square tests were not conducted. Descriptively, the distribution across violent offender groups was similar, as the vast majority of RVOs (88.4%, $n = 61$), IVOs (88.7%, $n = 55$) and NVOs (84%, $n = 21$) were assessed as demonstrating moderate levels of motivation.

Table 40

Static Risk, Dynamic Risk, Reintegration Potential, and Motivation Level at Intake for Reactive and Instrumental Violent and Nonviolent Offenders

Intake Variable	RVOs	IVOs	NVOs	χ^2	<i>p</i>	V
	<i>n</i> = 71	<i>n</i> = 68	<i>n</i> = 26			
Static Risk ^a						
Low	--	4.4 (3)	30.8 (8)	--	--	--
Medium	35.2 (25)	38.2 (26)	42.3 (11)			
High	64.8 (46)	57.4 (39)	26.9 (7)			
Dynamic Risk ^b						
Low	2.8 (2)	2.9 (2)	19.2 (5)			
Medium	15.5 (11)	25.0 (17)	38.5 (10)	8.89*	.012	.239
High	81.7 (58)	72.1 (49)	42.3 (11)			
Reintegration Potential						
Low	53.6 (37)	43.5 (27)	8.0 (2)	18.00**	.001	.340
Medium	36.2 (25)	37.1 (23)	56.0 (14)			
High	10.1 (7)	19.4 (12)	36.0 (9)			
Motivation Level ^a						
Low	7.2 (5)	9.7 (6)	--	--	--	--
Medium	88.4 (61)	88.7 (55)	84.0 (21)			
High	4.3 (3)	1.6 (1)	16 (4)			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders.

^aGiven the limited cell sizes across categories, chi-square analyses were not conducted.

^bGiven the limited cell sizes across categories, chi-square analyses were conducted based on the moderate- and high -risk categories only.

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

Dynamic factors/criminogenic need domains. Each of the seven domains was assessed in order to identify the overall levels of endorsement and to determine whether violent offenders differed from NVOs.

Personal/emotional domain. Results across groups were significant, with a larger proportion of RVOs and IVOs meeting the criteria for considerable need (RVOs, 54.2%, *n* = 38; IVOs, 47.1%, *n* = 32) than NVOs (11.5%, *n* = 3).

Substance abuse domain. Substance abuse was an issue for a relatively large proportion of the overall sample: “considerable need” (39.4%, $n = 64$) and “some need” (25.5%, $n = 42$). There were no significant differences across subgroups with respect to substance abuse.

Criminal Attitudes domain. The endorsement of criminal attitudes was an area of “considerable need” for 43.9% ($n = 72$) of the overall sample, and 37.8% ($n = 62$) of the sample required some need of improvement. No significant differences emerged between subgroups with respect to differences in criminal attitudes. (refer to Table 41).

Criminal Associates domain. In terms of group differences across violent offender types, IVOs (51.5%, $n = 35$) demonstrated significantly greater need than both RVOs (20.0%, $n = 14$) and NVOs (11.5%, $n = 3$), ($\chi^2(4, 164) = 23.35, p < .001$).

Employment and education domain. A statistically larger proportion of NVOs (57.7%, $n = 15$) were assessed as having employment and education as a strength (i.e. “factor is an asset”) than of IVOs (26.5%, $n = 18$) and RVOs (32.9%, $n = 23$) ($\chi^2(4, 164) = 10.78, p = .029$).

Marital family domain. In terms of criminogenic needs related to marital and family relationships, RVOs demonstrated a significantly greater need in this domain (22.9%, $n = 16$) than IVOs (4.4%, $n = 3$) and NVOs (3.8%, $n = 1$) (Table 41).

Community functioning domain. Significantly fewer NVOs (11.5%, $n = 3$) were assessed as having some or considerable need within this domain, relative to RVOs (34.3%, $n = 24$) and IVOs (38.2%, $n = 26$) (refer to Table 41).

Table 41

Proportion of Offenders with “Considerable Need” within Each Criminogenic Need Domain for Violence Offender Subtypes and Nonviolent Offenders

Criminogenic Needs Domains	RVOs	IVOs	NVOs	χ^2	<i>p</i>	Φ or V
	<i>n</i> = 70	<i>n</i> = 68	<i>n</i> = 26			
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
Personal/ emotional	54.3 (38)	47.1 (32)	11.5 (3)	24.96***	.000	.390
Substance abuse	41.4 (29)	44.1 (30)	19.2 (5)	8.72	.069	.231
Criminal attitudes	40.0 (28)	51.5 (35)	34.6 (9)	3.26	.516	--
Criminal associates	20.0 (14)	51.5 (35)	11.5 (3)	23.35***	.000	.267
Employment /education ^a	32.9 (23)	26.5 (18)	57.7 (15)	10.78*	.029	.259
Marital /family	22.9 (16)	4.4 (3)	3.8 (1)	21.31***	.000	.255
Community function	34.3 (24)	38.2 (26)	11.5 (3)	6.34*	.042	.192

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders; Φ or V = Phi or Cramer’s V effect size

^aResults are reported for *no immediate need for improvement*, unlike the other domains, which are the proportion of offenders with *considerable need for improvement*.

****p* < .001.

Statistical Information on Recidivism–Revised 1 (SIR-R1). The risk of reoffending was assessed with the SIR-R1 among the non-Aboriginal participants. A greater proportion of violent offenders were classified as “very poor” (28%, *n* = 30) or “poor” (14%, *n* = 15) than were NVOs in terms of the risk of reoffending; however, this difference was not significant (refer to Appendix O, Table O5).

In terms of group differences, a greater proportion of both violent offender subtype were assessed as “very poor” relative to NVOs; however, the largest proportion were within the “very good” and “good” risk categories. These results were not statistically significant (χ^2 (6, 131) = 8.57, *p* = .200) (refer to Table 42).

Table 42

Statistical Information on Recidivism–Revised 1 (SIR-RI) for Reactive and Instrumental Violent Offenders

SIR-RI Group	RVOs	IVOs	NVOs	χ^2	<i>p</i>	Φ or V
	<i>n</i> = 54	<i>n</i> = 53	<i>n</i> = 24			
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
Very poor	31.5 (17)	24.1 (13)	4.2 (1)	8.57	.200	.181
Poor	15.1 (8)	13.0 (7)	12.5 (3)			
Fair	17.0 (9)	25.9 (14)	33.3 (8)			
Very good/good	35.8 (19)	37.0 (20)	50.0 (12)			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders.

Major serious index offence of the sentence. In terms of the major admitting offence for a participant's index offence, the largest proportion of NVOs was admitted for drug-related offences (42.3%, *n* = 11) (Table 43). For RVOs, most offenders were admitted for homicide or manslaughter convictions (27%, *n* = 20). The most common major admitting offence for IVOs was robbery (50%, *n* = 32).

Table 43

Most Serious Index Offence by Reactive and Instrumental Violent Offenders and Nonviolent Offenders

	RVOs <i>n</i> = 74	IVOs <i>n</i> = 64	NVOs <i>n</i> = 26
Most Serious Offence	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)
Violent Offences			
Homicide/manslaughter	27.0 (20)	18.8 (12)	--
Attempted murder	2.7 (2)	--	--
Major assault	14.9 (11)	9.4 (6)	--
Common assault	1.4 (1)	--	--
Kidnapping	--	7.8 (5)	--
Robbery	6.8 (5)	50.0 (32)	--
Nonviolent Offences			
Arson	1.4 (1)	--	3.8 (1)
Possess weapons/explosives	8.1 (6)	4.7 (3)	19.2 (5)
Sexual assault	2.7 (2)	--	3.8 (1)
Drug offences	8.1 (6)	4.7 (3)	42.3 (11)
Fraud	--	--	3.8 (1)
Breaking and entering	9.5 (7)	3.1 (2)	7.7 (2)
Theft	1.4 (1)	--	--
Other nonviolent crime	16.2 (12)	1.6 (1)	19.2 (5)

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders. Given the limited cell sizes and the fact that group membership was based on admitting offences, statistical comparisons between groups were not conducted

Substance use. Given that substance use is a common factor in and is correlated with violent behaviour, the results of each offender's Computerized Assessment of Substance Abuse (CASA), which are assessed at intake, were compared between groups. These findings are reported in Table 44.

The results for the violent offender subtypes and the NVOs on three scales (i.e., PRD, ADS, and DAST) indicated that a significantly larger proportion of RVOs (29%, *n* = 20) were assessed as having "a lot" or "quite a lot" of problems related to drinking than NVOs (4.5%, *n* = 1) or IVOs (12.1%, *n* = 8). These results are reflected in the ADS as

well, as a greater proportion of RVOs (17.4%, $n = 12$) demonstrated, at a minimum, “intermediate needs” in this domain. Only 7.6% of IVOs were classified as having at least “intermediate needs,” and all NVOs were assessed as having “no” or “low” needs on the ADS (Table 44).

With respect to drug abuse, a significantly larger proportion of IVOs (43.9%, $n = 29$) than NVOs (13.6%, $n = 3$) were assessed as having, at a minimum, “intermediate needs” with regard to drug abuse.

The results of violent and non-violent offenders and NVOs indicated no significant differences between groups in relation to the following scales: the Problems Related to Drinking (PRD), the Alcohol Dependence Scale (ADS), and the Drug Abuse Screening Test (DAST). Refer to Appendix O, Table O6, for violent offender and NVO comparison.

Table 44

Computerized Assessment of Substance Abuse (CASA) for Violent Offender Subtypes and Nonviolent Offenders

Substance Use Measure	RVOs	IVOs	NVOs	χ^2	<i>p</i>	Φ or V
	<i>n</i> = 69	<i>n</i> = 66	<i>n</i> = 22			
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
PRD Scale^a						
None/low	56.5 (39)	72.7 (48)	86.4 (19)	11.00*	.027	.187
Some	14.5 (10)	15.2 (10)	9.1 (2)			
Quite a lot/a lot	29.0 (20)	12.1 (8)	4.5 (1)			
ADS						
None/low	82.6 (57)	92.4 (61)	100.0 (22)	6.47*	.039	.203
Intermediate / substantial / severe	17.4 (12)	7.6 (5)	--			
DAST						
None/low	68.1 (47)	56.1 (37)	86.4 (19)	7.06*	.029	.212
Intermediate / substantial / severe	31.9 (22)	43.9 (29)	13.6 (3)			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs =nonviolent offenders; PRD = Problems Related to Drinking; ADS = Alcohol Dependence Scale; DAST = Drug Abuse Screening Test; Φ or V = phi or Cramer’s V

^a 2 cells (22.2 %) have expected counts less than 5

**p* < .05.

Neuropsychological Battery and Psychometric Results

A between-group MANOVA was conducted with the offender subtypes as the independent variables. Separate MANOVAs were carried out by grouping key DKEFS indices into theoretical domains. This approach was adopted for two reasons: 1) to decrease the probability of Type 1 errors, and 2) to provide a theoretical structure for the analyses to clarify the roles of the underlying cognitive constructs and their contributions to offender subtypes. In terms of multivariate statistics, Pillai's Trace Criterion was reported, given that this statistic is the most appropriate for unequal sample sizes and is generally more robust with respect to the homogeneity of variance, covariance, and other statistical violations of normality (Tabachnick & Fidell, 2001).

Inhibition. Scaled scores on the three primary measures of inhibition as assessed by the DKEFS are presented in Table 45. Standard scores indicate that groups performed within the average range (Scaled score between 8-12) on all inhibition tasks.

Violent vs. nonviolent comparison. A one-way MANOVA revealed a non-significant multivariate main effect for the primary measures of inhibition—namely, the scaled scores for each condition: Pillai's Trace Criterion = .009, $F(3, 161) = 1.51$, $p = .280$, $\eta_p^2 = .009$ and power = .152.

Table 45

Performance on Inhibition Measures as a Function of Offence Subtype

DKEFS Measure	Violent <i>n</i> = 138	Nonviolent <i>n</i> = 27	<i>F</i>	<i>p</i>	η_p^2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
			1.51	.280	.009
CWIT: C3: Inhibition, Total Time	9.24 (3.43)	10.00 (3.46)			
CWIT: C4: Inhibition /Switching minus (C1+C2)	9.38 (2.72)	9.59 (2.11)			
TT: Total Rule Violations: Cumulative Percentile Rank	61.80 (37.42)	69.37 (39.25)			

Note. DKEFS = Delis Kaplan Executive Function Test; C = condition; CWIT = Colour–Word Interference Test; TT = Tower Test; η_p^2 = partial eta squared.

Reactive and instrumental violent offender subgroups and nonviolent

comparison. A one-way MANOVA revealed a significant multivariate main effect for the group—specifically: Pillai’s Trace Criterion = .084, $F(6, 322) = 2.35, p = .031, \eta_p^2 = .042$. The power to detect this effect was .808 (refer to Table 46).

Given the significance of the overall test, univariate main effects were examined. A significant univariate main effect for the group was obtained for DKEFS: CWIT, Condition 3, Inhibition, Total Time to Complete ($F(2, 162) = 3.04, p = .05, \eta_p^2 = .036, \text{power} = .582$). In addition, a significant group pairwise difference was obtained for DKEFS: CWIT, Condition 3, Inhibition, and Total Time to Complete Score. Specifically, RVOs were significantly more impaired than IVOs with regard to the total time needed to complete the inhibition-related tasks of the CWIT.

Table 46

Performance on Inhibition Measures as a Function of Violent Offence Subtype

DKEFS Measure	RVOs <i>n</i> = 71	IVOs <i>n</i> = 67	NVOs <i>n</i> = 27	<i>F</i>	<i>p</i>	η_p^2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
				2.35	.031	.042
CWIT: C3: Inhibition, Total Time	8.62 (3.49) ^b	9.91 (3.26) ^a	10.00 (3.46)			
CWIT: C4: Inhibition/ Switching minus (C1+C2)	9.79 (2.48)	8.96 (2.92)	9.59 (2.12)			
TT: Total Rule Violations: Cumulative Percentile Rank	56.39 (37.13)	67.52 (37.14)	69.37 (39.25)			

Note.: RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders; DKEFS = Delis Kaplan Executive Function Test; C = condition; CWIT = Colour–Word Interference Test; TT = Tower Test; η_p^2 = partial eta squared. Superscripts denote significant pairwise comparisons amongst groups (Tukey’s).

Switching. Scaled scores on the three primary measures of switching as assessed by the DKEFS are presented in Table 47. Standard scores indicate that groups performed within the average range (Scaled score between 8-12) on all switching tasks.

Violent vs. nonviolent comparison. A one-way MANOVA revealed a significant multivariate main effect for this group: Pillai’s Trace Criterion = .081, $F(4, 158) = 3.49$, $p = .009$, $\eta_p^2 = .081$. The power to detect this effect was .854.

Given the significance of the overall test, univariate main effects were examined. A significant univariate main effect for the group was obtained for DKEFS: VF, Category Switching, Total Correct ($F(1, 161) = 6.78$, $p = .010$, $\eta_p^2 = .040$, power = .735) and the TMT: Condition 4—All Errors (Scaled Score) ($F(1, 161) = 5.00$, $p = .027$, $\eta_p^2 = .030$, power = .603) (Table 47).

For both indices, violent offenders were more deficient than NVOs. More specifically, NVOs scored a higher number of correct responses on the VF and demonstrated fewer errors on the TMT–Switching Condition than violent offenders.

Table 47

Performance on Switching Measures as a Function of Offence Subtype

DKEFS Measure	Violent <i>n</i> = 138	Nonviolent <i>n</i> = 27	<i>F</i>	<i>p</i>	η_p^2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
			3.49*	.009	.081
CWIT:C4, Inhibition/Switching - (C3, Inhibition)	9.60 (3.06)	9.74 (2.44)			
DF: C3 Switching, Total Correct	10.77 (2.84)	10.48 (3.03)			
VF: Category Switching, Total Correct	9.07 (3.16)	10.85 (3.61)			
TMT: Condition 4: Switching: All Errors	10.00 (2.30)	11.04 (1.55)			

Note. DKEFS = Delis Kaplan Executive Function Test; C = condition; CWIT = Colour–Word Interference Test; DF = Design Fluency; VF = Verbal Fluency; TMT = Trail Making Test; η_p^2 = partial eta squared. Superscripts denote significant pairwise comparisons amongst groups (Tukey's). **p* < .05.

Reactive and instrumental violent offender subgroups vs. nonviolent offender comparison. A one-way MANOVA revealed a significant multivariate main effect for the group: Pillai's Trace Criterion = .120, $F(4, 316) = 2.51$, $p = .012$, $\eta_p^2 = .060$. The power to detect this effect was .909. Given the significance of the overall test, univariate main effects were examined. Significant univariate main effects for the group were obtained for DKEFS: VF, Category Switching, Total Correct ($F(2, 160) = 4.162$, $p = .017$, $\eta_p^2 = .049$, power = .727) and the TMT: Condition 4—All Errors (Scaled Score) ($F(2, 160) = 3.75$, $p = .026$, $\eta_p^2 = .045$, power = .678) (Table 48).

A significant group pairwise difference was obtained for DKEFS: VF, Category Switching, Total Correct. Specifically, RVOs were significantly more impaired than NVOs for the total number correct on the switching task.

A significant group pairwise difference was also obtained for the TMT: Condition 4—All Errors (Scaled Score). RVOs made significantly more errors than NVOs on the Switching Condition of the TMT.

Table 48

Performance on Switching Measures as a Function of Violent Offence Subtype

DKEFS Measure	RVOs <i>n</i> = 71	IVOs <i>n</i> = 67	NVOs <i>n</i> = 27	<i>F</i>	<i>p</i>	η_p^2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
				2.51	.012	.060
CWIT:C4, Inhibition/Switching (C3, Inhibition)	9.96 (2.91)	9.22 (3.20)	9.74 (2.44)			
DF: C3 Switching, Total Correct	10.71 (2.67)	10.85 (3.03)	10.48 (3.03)			
VF: Category Switching, Total Correct	8.75 (3.09) ^c	9.43 (3.22)	10.85 (3.61) ^a			
TMT: Condition 4-Switching: All Errors	9.72 (2.45) ^c	10.31 (2.11)	10.17 (1.56) ^a			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders; DKEFS = Delis Kaplan Executive Function Test; CWIT = Colour–Word Interference Test; DF = design fluency; VF = verbal fluency; TMT = Trail-Making Test.; η_p^2 = partial eta squared. Superscripts denote significant pairwise comparisons amongst groups (Tukey’s).

SPSI-R:L. Standard scores on the SPSI-R:L and its corresponding nine subscales are provided in Table 49. These scores have a normative mean of 100 and a standard deviation of 15.

Violent vs. nonviolent comparison. The overall Pillai’s Trace Criterion was non-significant, at .010 ($F(5,154) = .303, p = .910, \eta_p^2 = .010, power = .125$).

Table 49

Standard Scores on Social Problem-Solving Subscales for Violent and Nonviolent Offenders

SPSI-R:L Subscale	Violent	Nonviolent	<i>F</i>	<i>p</i>	η_p^2
	<i>n</i> = 136	<i>n</i> = 27			
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
			.303	.910	.010
PPO	101.46 (14.73)	100.00 (19.50)			
NPO	90.07 (12.12)	89.56 (13.82)			
RPS	97.17 (17.98)	94.74 (16.57)			
ICS	93.73 (15.13)	93.70 (14.91)			
AS	92.69 (10.98)	92.81 (11.38)			

Note. SPSI-R:L = Social Problem-Solving Inventory–Revised: Long Form; PPO = positive problem orientation; NPO = negative problem orientation; RPS = rational problem solving; ICS = impulsivity / carelessness style; AS = avoidance style; η_p^2 = partial eta squared.

Reactive and instrumental violent offender subgroups vs. nonviolent offender

comparison. The overall Pillai's Trace Criterion was non-significant (Pillai's Trace Criterion = .013, $F(10, 308) = .013$, $p = .996$, $\eta_p^2 = .007$, power = .120) (Table 50).

Table 50

Standard Scores on Social Problem-Solving Subscales for Violent Offender Subtypes and Nonviolent Offenders

SPSI-R:L Subscale	RVOs <i>n</i> = 68	IVOs <i>n</i> = 65	NVOs <i>n</i> = 27	<i>F</i>	<i>p</i>	η_p^2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
				.013	.996	.007
PPO	100.69 (14.24)	102.26 (15.29)	100.00 (19.5)			
NPO	90.07 (12.12)	90.02 (12.94)	89.56 (13.82)			
RPS	96.63 (16.57)	97.77 (19.45)	93.70 (14.91)			
ICS	93.73 (15.13)	93.70 (14.91)	93.70 (14.91)			
AS	94.47 (11.09)	94.92 (10.95)	92.81 (11.38)			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders; SPSI-R:L = Social Problem-Solving Inventory-Revised: Long Form; PPO = positive problem orientation; NPO = negative problem orientation; RPS = rational problem solving; ICS = impulsivity / carelessness style; AS = avoidance style; η_p^2 = partial eta squared.

BPAQ-SF. The overall total scores on the BPAQ-SF and the corresponding four subscales are provided in Table 51.

Violent vs. nonviolent comparison. A one-way MANOVA revealed a significant multivariate main effect for the group: Pillai’s Trace Criterion = .070, $F(4, 151) = 2.85$, $p = .026$, $\eta_p^2 = .070$, power = .76. Given the significance of the overall test, univariate main effects were examined. Significant univariate main effects for the group were obtained for the BPAQ: Physical Aggression Subscale ($F(1, 154) = 10.36$, $p = .002$, $\eta_p^2 = .063$, power = .892) and the BPAQ: Anger Subscale, which approached significance ($F(1, 154) = 3.49$, $p = .064$, $\eta_p^2 = .022$, power = .459). Violent offenders reported higher levels of physical aggression.

Table 51

Total Subscale Scores on Buss-Perry Aggression Questionnaire for Violent and Nonviolent Offenders

BPAQ Subscale	Violent <i>n</i> = 129	Nonviolent <i>n</i> = 27	<i>F</i>	<i>p</i>	η_p^2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
			2.85*	.026	.070
Physical aggression	7.91 (3.38)	5.70 (2.48)			
Verbal aggression	7.34 (2.85)	7.04 (2.65)			
Anger	5.21 (2.71)	4.19 (1.88)			
Hostility	6.60 (2.45)	5.93 (2.56)			

Note. BPAQ = Buss–Perry Aggression Questionnaire; η_p^2 = partial eta squared.

Violent offender subgroups and nonviolent comparison. A one-way MANOVA revealed a non-significant multivariate main effect for the group: Pillai’s Trace Criterion = .088, $F(8, 302) = 1.74, p = .088, \eta_p^2 = .044, \text{power} = .75$). Means and standard deviations are presented in Table 52.

Table 52

Total Subscale Scores on Buss-Perry Aggression Questionnaire for Violent Offender Subtypes and Nonviolent Offenders

BPAQ Subscale	RVOs <i>n</i> = 66	IVOs <i>n</i> = 63	NVOs <i>n</i> = 27	<i>F</i>	<i>p</i>	η_p^2
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)			
				1.74	.088	.044
Physical aggression	7.77 (3.62)	8.06 (3.16)	5.70 (2.92)			
Verbal aggression	7.53 (2.92)	7.14 (2.79)	7.04 (2.82)			
Anger	5.14 (2.37)	5.29 (3.05)	4.19 (1.88)			
Hostility	6.42 (2.46)	6.78 (2.46)	5.93 (2.56)			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders; BPAQ = Buss–Perry Aggression Questionnaire; η_p^2 = partial eta-squared.

Iowa Gambling Task (IGT).

Violent vs. nonviolent comparison. A one-way repeated ANOVA was conducted to compare the *block net scores* of violent offenders and NVOs across five blocks of the IGT. The results across the five blocks are depicted in Figure 4. Although violent offenders demonstrated lower scores overall, the difference between the groups was not significant, Pillai's Trace Criterion = .035, $F(4, 161) = 1.46$, $p = .218$, $\eta_p^2 = .035$. The power required to detect this effect was reported to be .45.

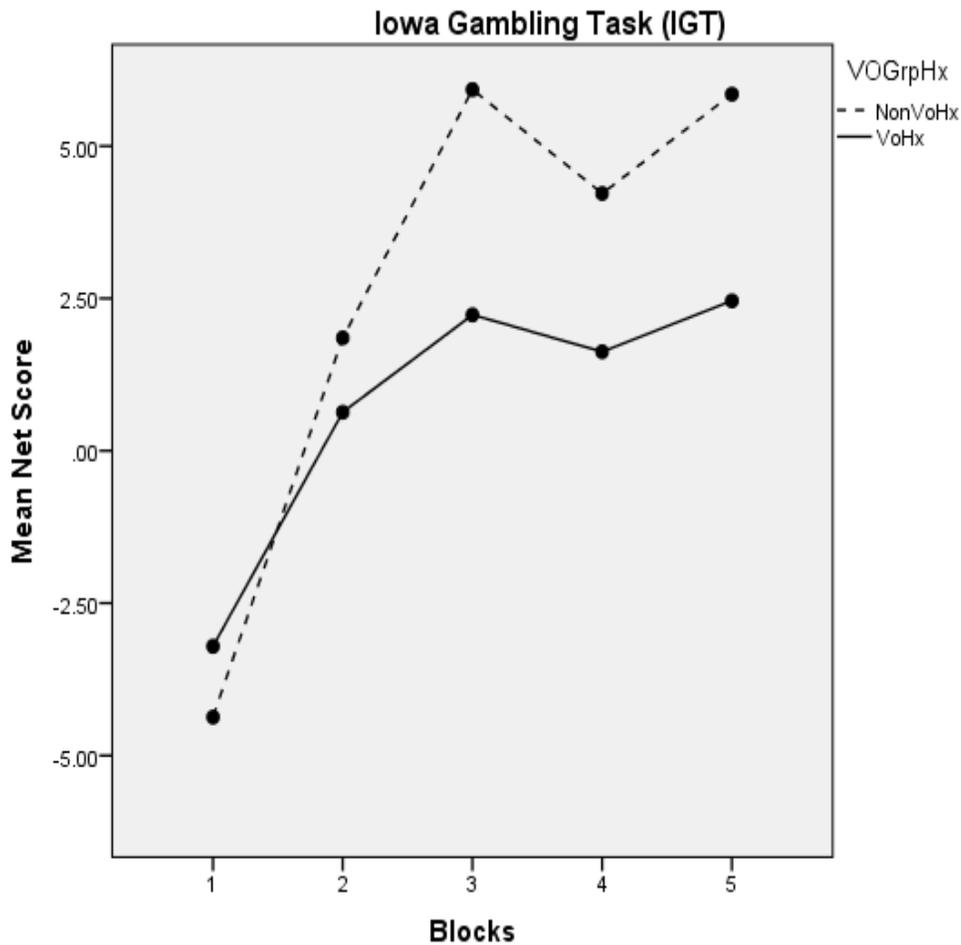


Figure 4. Block net scores across five blocks of the Iowa Gambling Task (IGT) as a function of violent offender (1) and nonviolent offender (0) subgroups.

Violent offender subgroups vs. nonviolent offender comparison. Similar results were found for *block net scores* across all three groups of offender subtypes. Although violent offenders demonstrated lower scores overall, the difference between groups was not significant. The results across the five blocks are depicted in Figure 5. Pillai's Trace Criterion = .065, $F(8, 322) = 1.35$, $p = .215$, $\eta_p^2 = .033$. The power to detect this effect was reported to be .62.

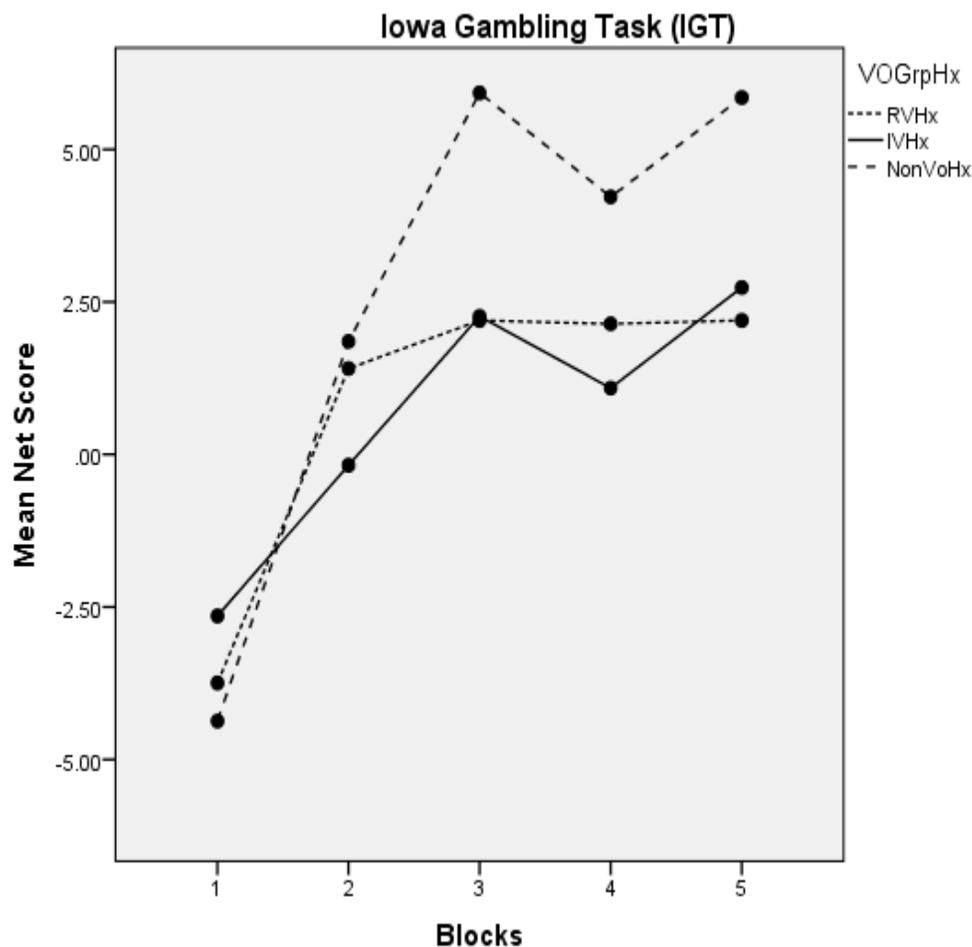


Figure 5. Block net scores across five blocks of the Iowa Gambling Task (IGT) as a function of the violent offender subgroups (RVOs, IVOs) and nonviolent offenders (NVOs).

GoStop. The main index of GoStop was the percentage of correctly inhibited trials (i.e., the percent of stop trials inhibited) for each of the four stop conditions (50 ms, 150 ms, 250 ms, and 350 ms). Specifically, a higher percentage of inhibition indicated better performance and lower levels of impulsivity. A one-way repeated ANOVA was conducted to compare the percentage of inhibited trials across four blocks of the GoStop. Violent offenders were generally more impaired in their capacity to inhibit responses; however, results were non-significant overall. Non-significant results are depicted in Figure 6 via the violent and nonviolent offender groups: Pillai's Trace Criterion = .039, $F(3, 64) = .856$, $p = .469$, $\eta_p^2 = .39$, power = .23. Given the limited sample size across groups, (VOs, $n = 56$; NVOs, $n = 12$), the power for analysis related to GoStop was limited.

Results across all offence subgroups are reported in Figure 7. RVOs performed more similarly to NVOs on 350 ms trials and more similarly to IVOs on 250 ms trials, no significant differences were reported across groups. These results also indicated a non-significant, Pillai's Trace criterion = .099, $F(6, 128) = 1.11$, $p = .359$, $\eta_p^2 = .050$). The power to detect this effect was reported to be .426. Given the small sample size (RVOs, $n = 25$; IVOs, $n = 31$; NVOs, $n = 12$), the power for analyses related to GoStop was limited.

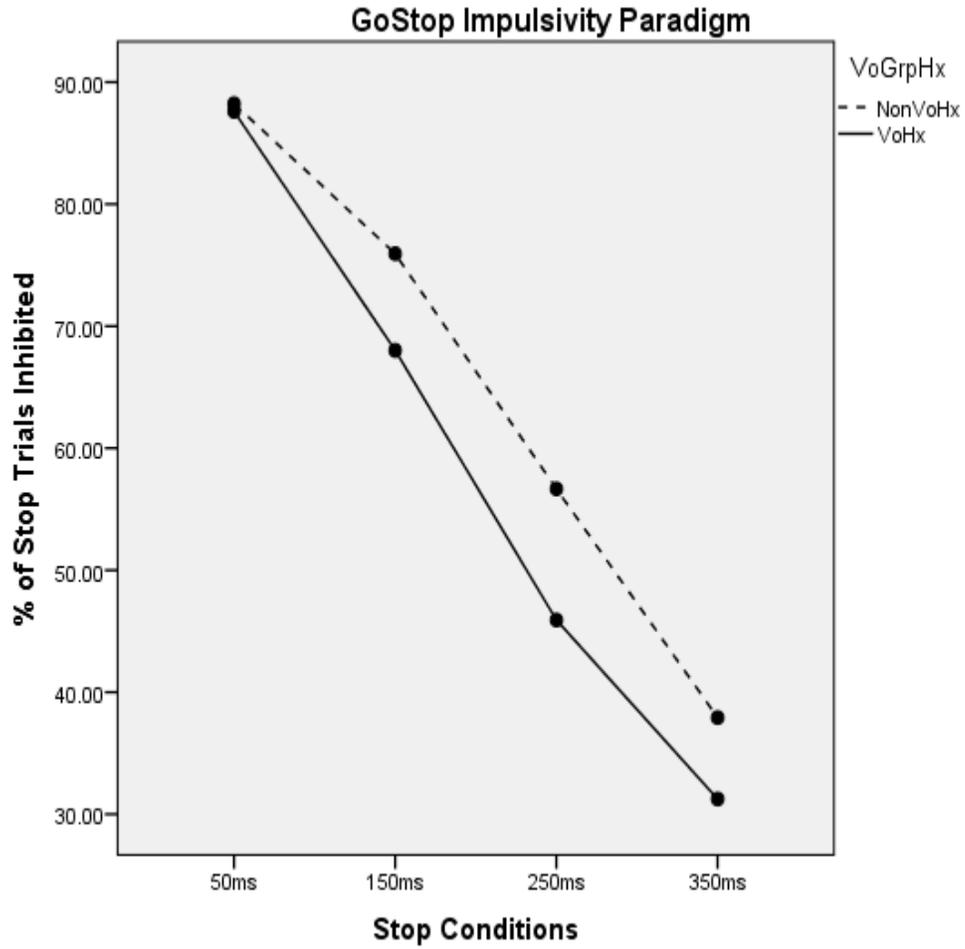


Figure 6. Percentage of inhibition across four stop conditions (50 ms, 150 ms, 250 ms, and 350 ms) as a function of violent offender (VoHx) and nonviolent offender (NonVoHx) subgroups.

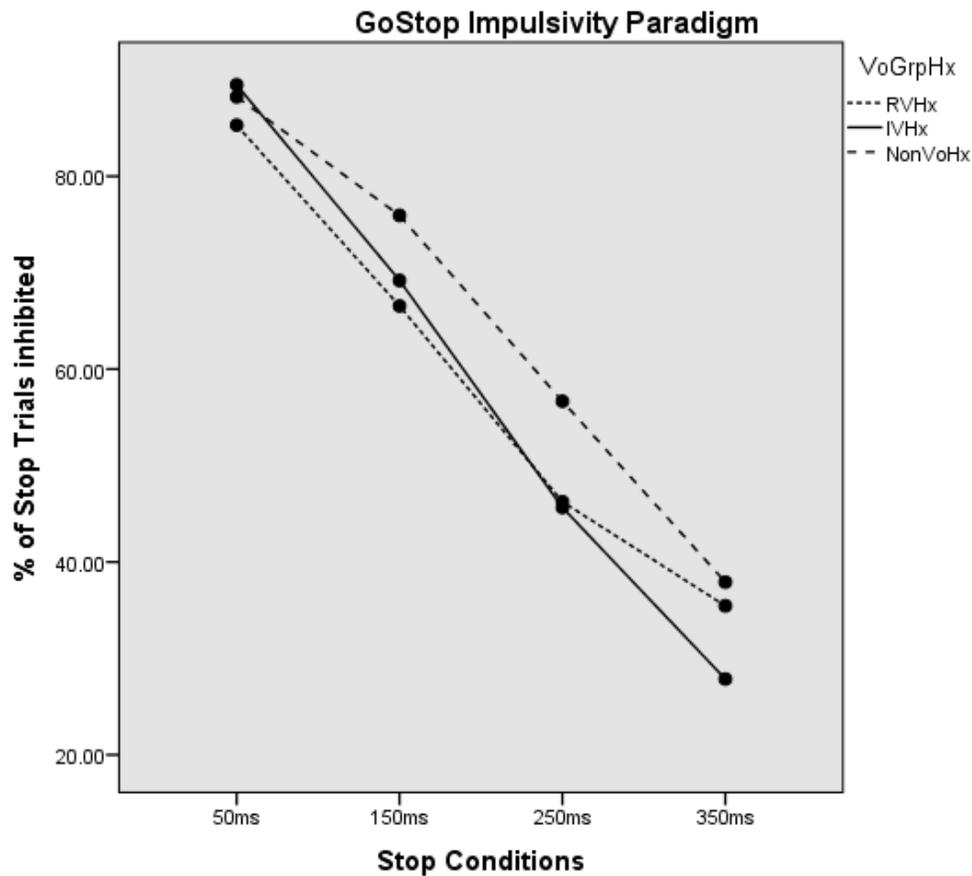


Figure 7. Percentage of inhibition across four stop conditions (50 ms, 150 ms, 250 ms, and 350 ms) for violent offender subtypes and nonviolent offenders.

Prediction of Violent Offender Subtype by Measures

In light of the results across offence categories on the neuropsychological measures, a series of stepwise logistic regressions were conducted to analyse the ability of key variables assessed in each of the domains (i.e., switching, inhibition, problem solving) to predict group membership (i.e., NVO, RVO, IVO).

Variables included in the analyses were of theoretical and statistical significance. For example, the first set of analyses involved seven indices from the DKEFS, three subscales of the SPSI, and one subscale from the BPAQ. For each of the three logistic regressions, the following 12 variables were included to determine their ability to predict the group membership between: 1) *reactive violent offenders* versus *nonviolent offenders*; 2) *instrumental violent offenders* and *nonviolent offenders*; and; 3) *reactive violent offenders* and *instrumental violent offenders*.

DKEFS: CWIT C4, Inhibition/Switching—(C3, Inhibition)
 DKEFS: CWIT C3, Inhibition, Total Time
 DKEFS: CWIT C4, Inhibition/Switching—(C1 + C2)
 DKEFS: Design Fluency, C3 Switching, Total Correct
 DKEFS: Verbal Fluency, Category Switching, Total Correct
 DKEFS: TMT: Condition 4—Switching: All Errors (Scaled Score)
 DKEFS: Tower Test: Total Rule Violations, Cumulative Percentile Rank
 BPAQ: Physical Aggression
 BPAQ: Anger Subscale
 SPSI: Rational Problem Solving
 SPSI: Impulsivity/Carelessness Style
 SPSI: Avoidance Style

Logistic regression to predict: RVOs and NVOs. A step-wise logistic regression analysis was conducted to examine the predictive ability of switching, inhibition, social problem solving, and self-reported aggression for RVOs and NVOs. Of the 12 variables initially included in the model, only three were retained: DKEFS: VF, Category Switching, Total Correct; BPAQ: Physical Aggression Subscale; and DKEFS: TMT: Condition 4—Switching: All Errors (scaled score). These variables, as a whole, distinguished between RVOs and NVOs.

BPAQ: Physical Aggression Subscale; DKEFS: VF, Category Switching; Total Correct and DKEFS: TMT: Condition 4—Switching: All Errors (scaled score) demonstrated that, as a set of variables, this model differentiated between reactive and

nonviolent offenders ($\chi^2 (3, 102) = 25.37, p < .001$) with a Nagelkerke's R^2 of .330.

Classification was correct in 72.4% of cases across the two groups, and three variables of the 12 remained in the model. Specifically, DKEFS switching (VF, TMT) and BPAQ physical aggression variables were retained in the model as significant predictors.

Table 53

Logistic Regression Predicting Reactive Violent Offenders and Nonviolent Offenders Based on Switching, Inhibition, Social Problem Solving, and Self-Reported Aggression

Model	B	SE	Wald	Exp(B)	95% CI Lower	95% CI Upper
TMT: Condition 4- Switching: All Errors	.405	.160	6.43*	1.50	1.10	2.05
VF: Category Switching: Total Correct	.192	.082	5.53*	1.21	1.03	1.42
BPAQ: Physical Aggression	-.260	.091	8.09**	.771	.645	.922

Note. TMT = Trail Making Test; VF = Verbal Fluency; BPAQ = Buss- Perry Aggression Questionnaire. * $p < .05$, ** $p < .01$.

Logistic regression to predict: IVOs and NVOs. The second logistic regression examined the same 12 variables and their capacity to predict the group membership of IVOs and NVOs. In this case, classification was correct in 71% of cases across the two groups, and only 1 of the 12 variables remained in the model. Specifically, BPAQ physical aggression was retained as the sole predictor in the model. Results from the model demonstrated that physical aggression is the only variable that significantly differentiates between IVOs and NVOs. This model differentiated between IVOs and NVOs ($\chi^2 (1, 91) = 11.52 p < .001$) with a Nagelkerke's R^2 of .172. Classification was correct in 69.7% of cases across the two groups.

Table 54

Logistic Regression Predicting Instrumental Violent Offenders and Nonviolent Offenders Based on Switching, Inhibition, Social Problem Solving, and Self-Reported Aggression

Model	B	SE	Wald	Exp(B)	95% CI Lower	95% CI Upper
BPAQ: Physical Aggression	-.287	.093	9.60**	.750	.625	.900

Note. BPAQ = Buss-Perry Aggression Questionnaire.

***p* < .01.

Logistic regression to predict: RVOs and IVOs. The third logistic regression was conducted to predict group membership of RVOs and IVOs. The results are depicted in Table 55. Of the 12 variables included in the model, only two were retained: CWIT C3, Inhibition, Total Time; and DKEFS: CWIT C4, Inhibition/Switching—(C1 + C2), together distinguished between RVOs and IVOs ($\chi^2(2, 139) = 10.31, p = .006$), with a Nagelkerke’s R^2 of .100.

Classification was correct in 53.4% of cases across the two groups, and three variables of the 12 remained in the model. Specifically, DKEFS inhibition on the Stroop-like Task was retained in the model as a significant predictor.

Table 55

Logistic Regression Predicting Reactive Violent Offenders and Instrumental Violent Offenders Based on Switching, Inhibition, Social Problem Solving, and Self-Reported Aggression

Model	B	SE	Wald	Exp(B)	95% CI Lower	95% CI Upper
CWIT: C3: Inhibition, Total Time	.148	.057	6.90**	1.16	1.04	1.30
CWIT: C4: Inhibition/Switching minus (C1+C2)	-.155	.073	4.54*	.856	.742	.988

Note. CWIT = Colour –Word Interference Test, C = Condition;

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

Discussion

Established in the literature is that the interplay between ECF and violent behaviour is complex, as ECF deficits are considered to mediate violent behaviour as well as general criminality. However, the mechanisms by which this occurs are multifaceted (Baker & Ireland, 2007; Bufkin & Luttrell, 2005). Further, it has been proposed that the heterogeneous nature of violent behaviour may be obscuring the results (Giancola, 2000). Few studies have examined the relationship amongst ECF and violent offender subtypes, and as such, the objective of this study was to examine underlying ECF in order to ascertain its role in contributing to the heterogeneity of violent offender subtypes.

The first section of this study provided an overview of the sample with a focus on offender-related characteristics in order to assess if there are any demographic or risk-based differences between the subgroups. Examining a general profile of participants revealed that overall violent offenders demonstrated greater needs than NVOs and were assessed as having higher dynamic risk; they also had lower reintegration potential. Moreover, violent offenders had greater needs with respect to personal emotional needs, substance abuse, associates, community functioning, employment and education, and marital family than nonviolent federal offenders.

The results, when disaggregated by violent offender subtype, replicated many of these same patterns, with differences reported primarily between RVOs and NVOs. In terms of current and previous violent convictions, RVOs were more likely than IVOs to have been convicted of domestic violence in the past or to have been currently serving a sentence for domestic violence. Within the violent offender subgroups, there were no other differences in terms of the extent of their violent histories—an equal proportion of

both IVOs and RVOs had previous violent convictions in both their adulthood and their youth.

Further studies may wish to examine the frequency of violent convictions as an additional factor in an offender's violence history. In terms of offence types, over a quarter of RVOs were serving sentences for homicide-related offences. IVOs were most commonly incarcerated for robbery-related offences, while a large proportion of NVOs were serving sentences for drug-related convictions.

RVOs had significantly lower reintegration potential than NVOs. IVOs had lower overall scores than RVOs for the majority of these assessments; however, these differences were not statistically significant between the subgroups. Similarly, a greater proportion of RVOs demonstrated needs within the personal emotional and marital family domains, thereby replicating results from Study 1.

Results from three, self-report, substance abuse measures revealed distinct substance use problems for the different offender subgroups. Specifically, a greater proportion of RVOs reported issues related to alcohol, whereas a larger number of IVOs reported problems related to drug use. These findings are consistent with results related to type of substance from Study 1, albeit it was assessed differently (i.e., file coding vs. psychometric self-report measure), thus substantiating these patterns. Specifically, in Study 1, a greater proportion of RVOs had consumed alcohol prior to their index offence, whereas IVOs had consumed drugs prior to their index offence. Results within Study 3, based on self-report psychometric measures and relative to a non-violent comparison, further corroborated these findings in that alcohol use and dependency were problematic for a greater proportion of RVOs than both IVOs and NVOs. Results related to drug use,

although less consistent across the studies, remain an issue for IVOs in both Study 1 and 2. However, rates of drug use were not different between RVOs and IVOs in the current study.

In terms of offender-based characteristics, generally, violent offenders consistently demonstrated greater levels of risk and need relative to NVOs. More specifically, RVOs generally had more elevated areas of risk and need; however, many of the differences were only significant with respect to NVOs. Accordingly, few differences emerged between RVOs and IVOs with the exception of personal emotion needs, marital family needs, and substance type.

With regard to the neuropsychological results, the main objective of this study was to examine the differences and similarities in ECF between violent offender subtypes and NVOs. The primary goal was to identify the extent to which underlying cognitive impulsivity and ECF contributed to the heterogeneity of violent offenders. This factor was assessed by grouping a number of ECF tests into the two main constructs of inhibition and switching. Results on the D-KEFS indicated that participants, across all groups, performed within normal limits and did not demonstrate significant cognitive deficits. Although the extent of deficits was less than anticipated, variation in performance across groups did emerge in the expected direction.

The first hypothesis, which specified that violent offenders, as a group, will exhibit greater deficits in executive functioning than NVOs in elements like cognitive flexibility and impulsivity, was only partially supported, depending on the specific measures tested. Violent offenders, as a whole, were more deficient with respect to switching; however, there were no differences in terms of inhibition. These results are reflected in the logistic

regression results as well, with switching and physical aggression being the only two constructs that predicted the group membership of violent offenders and NVOs. This was an interesting finding, given that inhibition and impulsivity are so strongly linked to aggressive/violent behaviour (e.g., Hoaken, Shaughnessy, & Pihl, 2003; Lau, Pihl, & Peterson, 1995).

The second hypothesis in the current study anticipated that RVOs would exhibit the greatest ECF deficits (relative to IVOs and NVOs). Again, this hypothesis was only partially supported. That is, in general, any results related to ECF demonstrated that RVOs displayed greater deficits than IVOs and NVOs (a finding that supports this hypothesis); however, significant differences between RVOs and IVOs were not common, since the majority of the differences in the post hoc analyses indicated that RVOs were significantly more deficient than NVOs. With one exception (i.e., that RVOs were significantly more impaired in terms of the total time needed to complete the CWIT inhibition task), RVOs were only significantly more impaired than NVOs on various indices of switching. That is, as a whole, more ECF deficits were present within RVOs than among any other group—a finding that is largely consistent with previous research examining ECF deficiencies in violent offender subtypes and nonviolent individuals (Broomhall, 2005; Levi et al., 2010; White et al., 2012).

Further, Ogilvie et al. (2011) reported a consistent relationship between ECF and antisocial behaviour and postulated that neuropsychological impairments may play a mediating role in the effects of psychosocial and genetic factors on criminal behaviour (Baker & Ireland, 2007; Bufkin & Luttrell, 2005; Giancola, 1995, 2000; Hawkins & Trobst, 2000; Hoaken et al., 1998, 2003; Moffitt, 1993). Although the mediating role of

ECF was not tested directly in the current study, a relationship between ECF deficits and violence between subtypes in terms of differential facets of ECF functioning. These findings help elucidate the specific underlying ECF profiles of components that contribute to these different patterns of violent offending by offender subtype. Further, they provide insight into the differential results for violent offender subtypes, supporting the classification of violent offender subtypes and their differential needs.

Moreover, the current study informs potential reasons for mixed results in the literature with regard to inconsistent findings related to neuropsychological deficits in the offenders. Specifically, the type of offender comprising the sample may have a considerable influence on the extent of the differences found with regard to neuropsychology. That is, in the current study, IVO and NVO scores on the neuropsychological measures were comparable to normative data, indicating that these groups, as a whole, operated within a normal level of ECF. However, significant differences emerged in the case of RVOs versus NVOs, thereby suggesting that the extent of deficits is more concerning for RVOs, which is consistent with the existing literature (Broomhall, 2005; Levi et al., 2010).

Additionally, a supposed relationship exists between violence and ECF, with impulsivity being the primary influential factor. Aggression has been associated with cognitive inflexibility (Hancock et al., 2010) and disinhibition or impulsivity (e.g., Hoaken, Shaughnessy, & Pihl, 2003; Lau, Pihl, & Peterson, 1995). That is, it has been postulated that individuals with deficient ECF are more impulsive, resulting in aggressive behaviour. As such, inhibition is the defining characteristic of RVOs in relation to IVOs, though it was only a differential factor between subtypes in cognitive-based tasks. That

is, in Study 2, the results of a self-report measure did not differ between subtypes. Notably, in the current study, disinhibition, as assessed by the colour word interference test CWIT, which is a cognitive-based task, was the only measure to differentiate between IVOs and RVOs. It appears that cognitive-based tasks are able to assess aspects of a construct that self-report measures fail to capture. The question remains whether these different measures are capturing different factors of a related construct or different constructs entirely. Performance-based measures have been demonstrated in the literature to be superior in assessing underlying constructs (i.e., problem solving, impulsivity) to self-report measures (Cyders, Coskunpinar, 2012; Rath, Langenbahn, Simon, Sherr, Fletcher & Diller 2004).

Hoaken and colleagues (2003) reported that, within individuals with low ECF, the response time to provocation was slower than in individuals with high ECF. This contrasts with the conceptualization of an “impulsive response.” Consequently, they proposed that individuals with deficits in ECF may also have difficulties with social information processing (e.g., encoding social cues, hostile attribution, the generation of alternative solutions, etc.)—and, as a result, respond aggressively by default (Hoaken, Shaughnessy, & Pihl, 2003; Lau, Pihl, & Peterson, 1995). That is, the interaction between ECF and social information processing is complex, and currently it is unclear the full extent of their interaction. Regardless of the specifics, deficits in both ECF and social information processing increase the likelihood of aggression.

In terms of theory, although it seems that the domains of neuropsychology and social cognitive information processing are divergent in their attempts to explain violent

offender subtypes, there is considerable conceptual overlap, as the results from the current study support both understandings of violent subtypes.

Neuropsychology theory indicates a deficit in the ability to inhibit and/or switch responses to alternative responses as an underlying deficiency of an RVO. The social information-processing model asserts that reactive aggressors are more deficient in that they are more likely to attribute a hostile intent to other individuals, especially in an “ambiguously provocative situation” (e.g., Crick & Dodge, 1994, 1996; Nas, Orbio de Casatro, & Koops, 2005). Moreover, reactive aggressors have demonstrated greater difficulty generating nonaggressive solutions to social problems, as aggressive reactions are more common for reactive aggressors than for proactive aggressors (e.g., Dodge & Coie, 1987; Dodge et al., 1997). Further, reactive aggressors are less able to recall and describe social cues in various situations, thereby inhibiting their capacity to process all necessary social information in their formulation of behaviours (e.g., Dodge, Lochman, Harnish, Bates, & Pettit, 1997). In attempts to draw parallels between the two theories, inhibiting is associated with inhibitions in perceived behaviours (e.g., hostile attribution), and generating and enacting nonaggressive solutions are associated with switching to an alternative response.

It is apparent from the aforecited literature, including literature from both the neuropsychology perspective and the social information-processing perspective, that deficits in information processing are key elements associated with aggressive and/or violent behaviour generally. It is evident that aggression can occur as the result of deficits at any level of information processing; however, as reflected in the current study,

aggression subtypes have been distinguished by deficits at unique stages in the information-processing model.

Evidently, the interplay among these factors and the violent subtypes is multifaceted, and only by examining the results by subtypes and piecing together underlying areas of influence can we begin to better understand the underlying deficits and how they contribute to aggression, thereby informing differential interventions for the subtypes.

The final hypothesis proposed that IVOs would exhibit IGT deficits that were more similar to those of RVOs than those exhibited by NVOs. However, while IVOs did demonstrate results similar to those of RVOs on the IGT, findings related to NVOs were non-significant. As such, this hypothesis was not supported. These results contrast with those reported by both Broomhall (2005) and Levi et al. (2010), in which instrumental aggressors were more different in tasks of disinhibition when contingences were related to their completion. Although the results reflect patterns similar to those found in previous research, the limited significance precludes speculation. That is, neither RVOs nor IVOs exhibited significantly different behaviour from NVOs on this task. Therefore, little can be extrapolated from the null results with respect to behavioural motivations or contingences, with the exception that all three groups reported similar levels of inhibition on this task. Further research is needed to examine this issue.

The evidence accumulated in the current study suggests that distinct neuropsychological differences exist among subtypes of violent offenders. Specifically, differences emerged in relation to switching and inhibition. The hypotheses, though they were not all supported, provide preliminary evidence of differential underlying cognitive

processes within violent offender subtypes, converging with both neuropsychology and the social information-processing theory of aggression.

Overall Discussion

The goal of the current thesis was to explore the profile of treatment-related outcomes and executive cognitive functioning (ECF) among reactive violent offenders (RVOs) and instrumental violent offenders (IVOs). Three studies were conducted to explore the prevalence and profiles of violent offender subtypes in two samples of male federal offenders. The first study examined the prevalence and profiles of RVOs and IVOs with respect to demographic characteristics, offence types, static risks, criminogenic needs, and psychometric measures through an assessment of constructs related to aggression ($n = 395$). The second study, which was based on the first sample, focused on treatment-related variables, such as readiness to change, program completion rates, and release outcomes across violent offender subtypes. Finally, the third study examined Executive Cognitive Functioning (ECF) in RVOs, IVOs, and non-violent offenders (NVOs; $n = 171$). Although the hypotheses were not all supported and the results did not necessarily point in the expected directions, this study provides a comprehensive analysis of the characteristics of violent offender subtypes, as well as some preliminary correctional outcomes across two independent samples. Since many of the findings are preliminary, further replication is required.

Given the differential results related to substance abuse, risk assessment, program outcomes, and ECF, differential treatment programs for violent offenders represent an important direction for consideration in future program development. In the present study, in terms of profile results, violent offender subtypes were differentiated in terms of the severity of the violence, the degree of provocation, the offender's familiarity with the victim, the type of substance used, and the emotional state during the incident. RVOs

were characterized as being more likely to know their victims, to express a higher degree of anger, to cause severe injury or homicide, and to engage in little or no planning before committing the offence. Conversely, IVOs were more likely to plan the incident, to act to meet a specific goal, to be less emotionally expressive, and to have a lower likelihood of harming or knowing the victim. RVOs were younger at the beginning of treatment commencement; however, IVOs served longer sentences. With respect to criminogenic needs, RVOs demonstrated greater personal emotional needs, whereas IVOs had greater needs with respect to criminal associates. The overall assessments of static and dynamic risk did not differ by group. The type of substance use did differ between groups, with RVOs and IVOs being more likely to use alcohol or drugs, respectively, during the course of their crimes. Significant treatment changes were equally noted for both groups, and there were few differences between the groups in terms of psychometric assessments of anger, impulsivity, and aggression.

With respect to treatment outcomes, RVOs were more likely to drop out of correctional treatment; however, they had lower rates of returns to custody relative to IVOs. Age was related to treatment drop-outs for RVOs, whereas as problematic criminal attitudes predicted drop-outs for IVOs.

Finally, ECF was differentially related to offender subtypes: Specifically, RVOs were more deficient than NVOs in terms of switching, and RVOs more deficient than IVOs with respect to inhibition/impulsivity. Cognitive switching, which aids in being able to generate pro-social response options or alternative options when problem solving, was the only deficit area of concern for IVOs.

Across the three studies, key themes emerged. Specifically, in relation to IVOs, RVOs generally had greater treatment needs with respect to treatment drop-out, alcohol use, personal emotional needs, and ECF. IVOs had greater needs with regard to criminal attitudes, drug use, and risk of reoffending.

Classification of Violent Behaviour

As previously discussed, it has been suggested that the classification of violent offenders into discrete subtypes is not feasible. Specifically, Bushman and Anderson (2001) contended that the bimodal approach is an unrealistic depiction of violence, since real-world events are seldom purely instrumental or purely reactive (Bushman & Anderson, 2001). The current study attempted to classify individuals based upon patterns of offending behaviour, including both current convictions and previous convictions. Further, mutually exclusive relationships have been reported in certain classifications (Woodworth & Porter, 2002), while other researchers have indicated that various subgroups are correlated and can be present in the same individual or situation (Barratt et al., 1999; Stanford et al., 2003). Anderson and Bushman (2001) argued that each incident involves numerous contributing factors and that, given the multitude of events, factors, and characteristics that influence the outcomes of a violent incident, a bimodal classification system is unreliable, and the boundaries for each subtype are not distinct.

In support of Bushman and Anderson's (2001) claims, it is clear that individuals and incidents can exhibit characteristics of both instrumental and reactive violence; however, despite these challenges, individuals can be successfully classified into meaningful subgroups based on patterns of behaviour. The current dissertation provides sufficient evidence in support of the heterogeneity of aggressive and violent behaviour as

two or more categories of violent behaviour were examined. Two overarching and multifaceted typologies emerged in both samples: 1) reactive violence is an emotionally driven, impulsive form of aggression that occurs in response to perceived provocation, and 2) instrumental violence is characterized by unprovoked aggressive acts designed to meet predefined goals or objectives (i.e., such that the goal is unrelated to the violent action; e.g., finances, power, drugs, sex).

Challenges with Categorization of Violent Behaviour

Despite the emergence of distinct subgroups, there are a number of issues to consider in future efforts related to classifying violent offender subtypes. The most notable concern is that a given incident may have elements of both reactive and instrumental violence—and, therefore, may be difficult to categorize. This concern, however, seems to be related to the method of classification of the violent behaviour, as well as to the elements of the incident being coded. The following are issues to consider in the classification of subtypes.

Index Offence only versus Offence History. One incident (i.e., index) may not represent the full complement of offending behaviours; therefore, examining only the index offence may misrepresent a typical offending pattern. However, it may also be the case that coding an index offence, being the most proximal, represents an offenders' current preference which may be influenced by age-related factors. Further research is required to better understand age-related factors in relation to violent offender classification based on index versus offence history.

Method of Classification (e.g., self-report, incident coding, person coding).

There are a number of different methods to determine violent offender subtypes, and the

grouping outcome is contingent upon the strategy chosen. There may be differences between classifications of individuals versus incidents. However, presumably, these two are related in the sense that the classification of offenders based on patterns of incidents—as is the case in the current study—most likely reflects an amalgamation of incidents. In the current study, consistent patterns of preference emerged for the majority of offenders. However, it is plausible that an individual has characteristics of both types of aggression, which may be assessed by examining patterns of offenses and reporting the most common types of violent behaviour. This approach presents challenges when an equal history of instrumental and reactive violence is present in a subject. Stanford et al. (2002) developed and validated a self-report measure assessing impulsive and premeditated aggression, with two independent subscales. With this tool, it is possible for an individual to have elevated scores on both scales, thereby reflecting both types of aggression (Impulsive and Premeditated Aggression Scale; Stanford et al., 2002).

Motivation Underlying Violent Offence. In terms of a specific incident, coding for the primary motive (and not the secondary motive) associated with the incident reduced many of these discrepancies. That is, the primary motive of an individual robbing a bank is acquiring money. Thus, even if, during that act of violence, an employee of the bank assaults the offender, and the offender defends him or herself and subsequently kills the employee, the violent act remains instrumental. This is because the primary underlying motive of the incident is instrumental.

Categorical versus Dimensional Classification. In terms of the categorical versus dimensional classification of aggression, Cornell (1996) argued that coding incidents into either subtype is not generally problematic; however, if one considers an individual's

entire history of violence, the classification becomes more difficult, since classifying multiple offences increases the variability across multiple events. Additionally, histories vary by individual—and, as such, categorizing an individual within a mixed-history category is a viable option (Cornell et al., 1996; Vitiello, 1990). Other researchers support the view that the classification of violent offending is better represented on a continuum, based on the severity of the reactive aggression. In addition, Woodworth and Porter (2002) purported that violent behaviour is not purely bimodal; instead, they conceptualized that violent behaviour falls onto a continuum ranging from purely reactive to purely instrumental. Consequently, a mixed-motive dimension falls onto the middle of the continuum. In response to this observation, Woodworth and Porter (2002) proposed a four-factor model of aggression. Although the classification system of the current study was dichotomous, classification of the offender history of violent offenders on a continuum is an area worth further exploration. Such a classification would allow for a potential subgroup of offenders to fall onto the middle of the continuum, thus capturing individuals who have equal numbers of instrumental and reactive offences.

Additionally, classifications based on motivation, such as revenge or retribution, represent another area of interest in the classification of instrumental versus reactive violence. By definition, given the presence of a precipitating interpersonal event, a revenge/retribution act of violence is characterized as reactive. However, Woodworth and Porter (2002) suggested that the act of revenge could also be viewed as goal-oriented (e.g., Bushman & Anderson, 2001; Indermaur, 1996). Revenge being defined as goal-oriented if the period of time between the precipitating event and the aggressive act is sufficiently long for there to be a “cooling off” period or a decrease in hostility and anger.

In the current study, revenge was primarily classified as a reactive incident. Future studies may consider the temporal component of violent acts in an attempt to standardize this type of violence (although such an analysis may be challenging for archival studies).

The presence of any instrumental aggression results in the classification of an individual as instrumentally aggressive. Cornell et al.'s (1996) coding system for categorizing aggressors into subgroups recommends that individuals with any instrumental qualities related to aggression (e.g., primary reactive aggression with some instrumental qualifications) be classified as instrumental aggressors. The rationale for this approach is based upon the supposition that reactive aggression is a more pervasive form of violence in offenders than instrumental aggression—a perspective that suggests that the presence of instrumental aggression “represents a more pathological development and elaboration of the capacity for reactive aggression” (Cornell et al., 1996, p. 2).

In support of this perspective, the present study found RVOs to be younger than IVOs. Moreover, IVOs had higher levels of criminal attitudes and exhibited more engrained criminal lifestyles, supporting the notion that they are more criminogenic in their development. Further, the literature supports the finding that IVOs are likely to have previous incidents of reactive violence, while this is not the case for RVOs (Cornell et al., 1996).

In summary, based on these differentiating criteria, this study proposes that reactive aggression is an impulsive, emotionally charged response to a perceived threat type, whereas instrumental violence is a controlled, unemotional, goal-oriented and often planned act of physical violence (Stanford et al., 2003). Despite the successful classification of offenders into groups in the current study, future studies examining

violent offender subtypes should consider the following factors in determining their methodologies: 1) how to classify specific behaviours, such as revenge, since this issue remains complex and unstandardized in its inclusion, and 2) whether to consider a dichotomous classification or to rate offences on a continuum. Comparing results between groups based on a dichotomous classification versus rating offences on a continuum, within the same sample, may provide insight into the most meaningful and informative classification method.

Characteristics of Violent Offender Subtypes

The results of all three studies reinforced the increased benefit of distinguishing between RVOs and IVOs by uncovering results that would have been masked if violent offenders were considered a homogenous group. For example, differential substance abuse needs (e.g., alcohol versus drugs), criminogenic needs (e.g., personal emotions, marital family, criminal associations), risks of reoffending, and distinct deficits within subcomponents of ECF (e.g., switching, inhibition) emerged between violent offender subgroups. These results facilitate a more specific understanding of the characteristics and needs of violent offender subtypes, which may ultimately refine assessment and improve the treatment of violent behaviour while also augmenting the prediction of an offender's risk to reoffend.

Substance Use within Violent Offender Subgroups

As previously stated, alcohol use and dependency have consistently been demonstrated to be an area of greater need for RVOs than IVOs across both samples. Although research related to substance type and violent offender groups is limited, these findings substantiate previous research identifying alcohol use as a risk factor for reactive

or impulsive violent offenders (Swogger et al., 2010), as well as research suggesting that alcohol use is more likely to be involved in expressive violent crime (e.g., murder, assault) (Ternes & Johnson, 2011). There are a number of areas in which reactive or expressive violence is postulated to be associated with chronic or acute alcohol use. As well, certain personality traits, such as negative emotionality and impulsivity, which have commonly been used to describe and characterize reactive violence, have been reported to be related to the escalation and continuance of alcohol use (Hicks, Durbin, Blonigen, Iacono, & McGue, 2012; Vitaro, Barker, Boivin, Brendgen, & Tremblay, 2006). From a neuropsychological perspective, Giancola (2000, 2004) proposed a model in which ECF deficits interact with alcohol consumption to increase the likelihood of aggression. Specifically, alcohol increases aggression: 1) within individuals with ECF deficits and, 2) in cases in which acute alcohol consumption decreases individuals' ECF functioning (which, consequently, increases the likelihood of aggression). Notably, within the current study, ECF deficits were present in both violent offender subgroups; however, impulsivity, or disinhibition, was a differentiating feature between subgroups. This finding, in combination with the greater degree of alcohol use within RVOs, supports Giancola's model (2000, 2004). Future studies should examine the interplay of these variables in order to isolate the means by which alcohol and ECF deficits interact to increase aggression, thereby testing the two mechanisms proposed in Giancola's model (2000, 2004). The greatest risk is for those individuals who, when sober, demonstrate low ECF, and, when intoxicated, demonstrate increased ECF dysfunction (Hoaken, Giancola, & Pihl, 1998; Pihl, Assaad, & Hoaken, 2003).

In relation to the role of drug use and violent behaviour, there is evidence to substantiate the finding that offenders who are under the influence of drugs are more likely to commit offences in order to support their drug addictions (Ternes & Johnson, 2011). However, presumably, drugs may also have a pharmacological impact, such that the combination of ECF deficits and drug use decreases individuals' problem-solving capacity and inhibition, thereby increasing their likelihood of aggression. Therefore, identifying and addressing drug use or drug addiction as a key risk factor for a subset of offenders is vital for diminishing the risk of further violent behaviour.

The role of substance use in violent behaviour appears complex, particularly given its interaction with underlying ECF deficits. The current study clarifies the distinct substance type patterns within each subtype, as well as the potential role that substance use plays in influencing or increasing the risk of a violent act.

Implications of the Current Findings

Assessment of the Risk to Reoffend

Within the context of the principles of criminal conduct, substance use is deemed to be one of the key criminogenic factors capable of predicting criminal behaviour. As such, it is a commonly assessed in relation to a risk of violent criminal behaviour (Andrews & Bonta, 2006). The differential results regarding substance types among violent offender subtypes merit further exploration into the potential role of substance use in understanding pathways to violent offenses and predictions of risk. Recall that violent offenders with instrumentally violent index offences are significantly more likely to be returned to custody than offenders with reactive index offences. It is plausible that these revocations or returns to custody are drug-related revocations, which consequently

contribute to these violent offenders' greater rates of return. However, it is also possible that identifying the substance types associated with violence may provide incremental validity to efforts to predict the risk of re-offence in a subset of offenders. At the very least, acknowledgment of the substance type, the role of the substance involved in the offence, and the severity of use of the substance may shed light on offenders' crime cycles, which may indirectly decrease the risk of re-offence through informing more differentiated risk management strategies..

Implications for Treatment

It has been well established that the principles of risk, need, and responsivity (RNR) (Andrews, Bonta, & Hoge, 1990; Andrews & Bonta, 2006; Dowden & Andrews, 2000), when applied to correctional treatment programs, result in significantly better outcomes and treatment effects than programs that do not subscribe to the RNR approach (Andrews & Bonta, 2006; Gendreau, Goggin, French, & Smith, 2006; Smith, Gendreau, & Swartz, 2009). Specifically, adherence to RNR principles is demonstrated by the following: 1) the provision of intensive services to those offenders who have the highest risk of re-offence (risk principle); 2) the targeting of treatment needs (criminogenic needs) that have been empirically related to criminal behaviours (e.g., pro-criminal attitudes or substance use) (need principle); and 3) the utilization of a cognitive behaviour-based program that can be adapted to the individual characteristics of offenders' learning styles (responsivity principle) (Andrews et al., 1990; Andrews & Bonta, 2006). A greater understanding of offender subtypes and their underlying motivations potentially informs each of these principles in a more refined manner.

Regardless of the prevalence of the various violent offender subtypes in the current study, clear subtypes emerged according to the nuances of the classifications. Hence, the question of greatest relevance is whether violent offenders should be provided differential correctional treatment—and, if so, how this treatment would differ from standard treatment. This concern clearly reflects the responsivity principle. Further, the process of matching treatments to criminogenic needs may reveal that specific components of correctional treatment are more relevant for certain subtypes of offenders relative to others.

A considerable body of literature exists examining sexual offender assessment and treatment. Within this realm, it is acknowledged that sex offenders represent a heterogeneous population of offenders with varying types and degrees of needs (e.g., differing cognitive distortions, social and coping skills, intimacy issues, anger, etc.). Correctional programming approaches to sexual offenders vary. For example, multiple-component treatment approaches treat child sexual abusers and rapists together within a group setting; however, in other instances, these subgroups are treated separately, with specialized treatment for child sexual abusers and rapists (Eccleston & Owen, 2007). Theoretical evidence supporting the underlying cognition and implicit theory related to sexual offender subtypes indicates that, even within these categories, there are further differences with respect to self-regulation, mental disorders, empathy, and cognition (Beech et al., 2006; Gannon & Ward, 2008). There are advantages and disadvantages to specialized treatment (Eccleston & Owen, 2007; Ward et al., 1997); however, if further research is able to demonstrate distinct needs related to different violent offender subtypes, specialized sex offender programming could be a framework to explore the

development of specialized non-sexual violent offender treatment. Across the various approaches to sexual offender treatment, there are elements of programming that are consistent and multi-determinate; however, the intensity of and focus on the various risk factors, triggers, and offences differ in relation to the different offence subtypes.

Nevertheless, what can be learned from the sexual offence literature concerns an increased knowledge and understanding of offender patterns and outcomes resulting from an examination of offender subtypes.

Traditionally, violent offender treatment programs have focused on anger management or anger control based on the belief that violent offenders are violent due to excessive levels of anger and/or an inability to manage such emotions (Serin, 1994; Serin & Preston, 2001). Anger management treatment results have been mixed, and the status of this treatment model as the gold standard for violent offenders has been challenged by the acknowledgement that, although anger is a common precursor to violence, it is not necessarily a prerequisite; in fact, it is often difficult to determine the extent to which anger is the underlying cause of violence (McGuire, 2008; Polaschek & Reynolds, 2004). Moreover, the literature varies with regard to the outcomes of and rationales for offering anger management programming to all violent offenders, since violent offenders tend to be heterogeneous in their treatment needs (Howells, 2003; Howells & Day, 2002; Novaco & Welsh, 1989; Serin & Preston, 2001).

With respect to the current study, further support for differentiated violent offender intervention stems from the differential results related to substance abuse, risk assessment, program outcomes, and ECF. Over the past three decades, violent offender treatment has shifted from a model focused predominantly on anger control (McGuire,

2008; Polaschek & Reynolds, 2004) to one based on social information processing (Polaschek & Reynolds, 2004; Serin & Preston, 2001). It remains to be seen whether the current interest in violent offender typologies leads to a similar advancement in violent offender programming. Moreover, before conclusive recommendations can be made, this model needs to be assessed on a more general violent offender sample—that is, a sample that represents a more moderate risk sample.

The literature on children and youth has been the most advanced in terms of research related to the treatment of violent subtypes. It has been proposed that, within this domain, reactive aggressors tend to have greater deficits related to problem solving, impulsivity, hostility, and anger than instrumental aggressors do. It has been posited that reactive aggressors may benefit from anger management-style treatment, whereas instrumental aggressors may benefit from “contingency management” (Crick & Dodge, 1996; Day, Bream, & Pal, 1992; Dodge, Lochman, Harnish, Bates, & Pettit, 1997).

Even in adult contexts, differential treatment approaches have been discussed. For example, anger-based management programs have historically been the recommended approach for RVOs, whereas contingency-based social problem-solving programming has been the most popular treatment for instrumental offenders (McGuire, 2008). Although the latter option may still be appropriate, the use of anger management as the primary method of treatment for RVOs is based on an oversimplification of the conceptualization of reactive aggression. The differences among subgroups are not solely related to individuals’ levels of hostility or anger, as demonstrated within the current study—instead, these self-reported items are similar across groups. Further, while there have been studies demonstrating positive outcomes for violent offenders with

respect to anger management treatments (Dowden et al., 1999), the overall results have been inconsistent, since it is often difficult to determine the extent to which anger and emotional dysregulation contribute to an offender's violent behaviour (McGuire, 2008; Polascheck, & Reynolds, 2004).

There are a multitude of additional factors that contribute to the manifestation of group differences. Specifically, substance use, ECF, criminal associations, criminal attitude, and age are all relevant to understanding differences. Thus, a multifactorial approach to treatment is necessary (Polascheck & Collie, 2004; McGuire, 2008). The basis of treatments for both groups, as well as the principles of social information processing, remain relevant; however, the areas of focus would differ across subgroups. For example, while deficits in information processing, aggressive beliefs, and certain schema represent areas of concern for both subgroups (thus supporting the relevance of social problem-solving training for both subgroups within this domain), the subgroups differ in terms of their specific stages of processing (i.e., self-regulation, cue encoding, beliefs about aggression).

Within the context of correctional programming within federal institutions, VPP is a skills-based, high-intensity violence prevention program that addresses such issues as impulsive control, anger management, communication, conflict resolution, and problem solving. The results of the current study suggest that the first three of these program targets are most relevant for RVOs, since, for this subgroup, violence is associated with interpersonal conflict. This means that impulsive responses, emotion management, and communication are important skills to improve.

On the other hand, problem solving is most relevant for IVOs in that efforts to generate alternative, non-violent solutions to problems may effectively diminish the potential for further re-offences. In cases of instrumental violence, addressing aggressive beliefs that distort or increase offenders' likelihood of using violence to meet their goals appears to be the most relevant approach for this subgroup, since positive outcomes (e.g., goal attainment) are associated with the offenders' actions.

On the basis of ECF deficits alone, the best approach may be to offer a revised program to individuals who are screened for ECF deficits. That is, within the RNR framework, ECF is deemed to be a responsivity factor—and, as such, it may be necessary to adapt treatment programs to match the curricula and approaches required for different offenders. Fishbein et al. (2009) examined predictors of dropouts related to high-risk offenders and demonstrated that deficits in inhibition were significantly related to treatment program dropouts. Study 3 results suggest that ECF deficits may have been a contributing factor in the larger proportion of RVOs that dropped out of treatment in Study 2.

Cognitive rehabilitation programs have been developed for clinical populations of individuals with brain injuries (Krupan, Levin, Stuss, & Dawson, 2007), attention-deficit disorders (Pliszaka, 2007), and schizophrenia (Velligan & Bow-Thomas, 1999). These programs offer skills training to diminish ECF deficits, and preliminary attempts to implement these types of programs for various offender subtypes have been promising to date; however, further research is needed concerning the specific needs of violent offenders (Hoaken, 2014; Ross & Hoaken, 2007).

Inclusion of Substance Abuse Treatments within Violent Offender

Programming. Consistent with the discussion of risk assessments related to violent offenders is an examination of substance use among violent offender subtypes. Within the domain of domestic violence treatment, substance use treatment has been built into numerous programs and is addressed in the context of interpersonal relationships (Babcock, Green, & Robie, 2004). Given the high prevalence of substance use among violent offenders, as well as the differential patterns of substance use among violent offender subtypes, this is an area worth exploring in the context of treatment. In the UK, McMurrin and Cusens (2003) developed and implemented a treatment program for offenders exhibiting alcohol-related violence. The program, Control for Violence for Angry, Impulsive Drinkers (COVAID), is a 10-session cognitive behavioural correctional series providing 20 hours of group treatment and 4 hours of individual support. Program participants are incarcerated offenders who have had at least three alcohol-related violent incidents in the two years prior to incarceration. Program topics and targets include the following: explaining alcohol-related aggression, managing anger and stress, modifying drinking, weakening the expectancies that contribute to alcohol-related violence, altering triggers, identifying and coping with high-risk situations, and enhancing problem solving (Bowes, McMurrin, Evans, Oatley, William, & David, 2014). Preliminary studies conducted both earlier in the program's implementation and more recently, have demonstrated positive outcomes related to eradicating alcohol-related violent offending (Bowes et al., 2014; McCulloch & McMurrin, 2008). Bowes et al. (2014) reported, for program participants, there was a 13% lower rate of violent re-convictions and a 20% lower rate in general re-conviction, relative to those who participated in standard

treatment. Although the COVAID program is not intensive enough to meet the needs of the high-risk, high-need sample within the current study, offering a similar program to complement existing correctional violence prevention programs with RVOs may provide incremental value to correctional outcomes.

For IVOs, many instrumental crimes are committed to support a drug addiction (e.g., heroin). In these instances, offering methadone maintenance in conjunction with violent offender treatment may ultimately diminish an offender's risk of re-offending. However, only minimal literature exists that specifically examines the impacts of drug addiction, drug use, and drug type on the onset, continuation, and type of violent behaviour (Goldstein, 1985; Ternes & Johnson, 2011).

Additional Considerations. There are a number of additional considerations that should be explored in future research in order to better understand violent offender subtypes. It may be informative to differentiate between an individual who has committed a violent offence, but has no history of violent behaviour, and an individual who has committed a violent offence and also has a significant history. That is, it may be possible to distinguish among cases according to the aetiologies of violent offences and violent offenders, as defined by predisposition (Polaschek, 2006). Similarly, examinations of offence history patterns and explorations of criminological literature related to the conceptualization of *criminal careers* (i.e., chronic serious offending and the progress of criminal behaviour) have considered this issue in offenders more generally. Specifically, examinations of criminal careers consider the onset, severity, duration, termination, and change in criminal behaviour severity in offenders with multiple incarcerations (Blumstein, Cohen, Roth, & Visher, 1986; Farrington, 1992;

Mallillin, 2006). Recent research in criminal careers has reported the role of low self-control in predicting the development of a criminal career (versus the occurrence of non-career offences) (DeLisi & Vaughn, 2008). Adapting this framework of violent behaviour may aid our understanding of criminals' violent careers and the course or progression of these careers. Examining the progression over time of RVOs and IVOs separately may offer insights into the predisposing factors, violent behaviour precipitants, and variables related to the desistance of violent crime. Given the findings the current study, such variables as neuropsychological functioning, type, substance use severity, and extent of criminal attitude are vital to the discussion of criminals' violent careers.

Conclusion

Despite reservations regarding whether violent behaviours can be categorized into subtypes (Anderson & Bushman, 2002; Bushman & Anderson, 2001), the current study not only provides an overview of the differential characteristics of subtypes (e.g., criminogenic needs, substance type), but also provides support for the significance of violent offender subtypes, especially in relation to treatment outcomes (e.g., treatment drop-out, returns to custody, risk) and neuropsychological deficits (Blair et al., 2005; McGuire, 2008). Therefore, the motivation underlying a violent act is an important aspect to consider in designing and implementing correctional programs (McGuire, 2008).

In sum, the current study presents evidence in support of the utility of violent offender typologies. Although more research is needed to improve the consistency, validity, and reliability of the underlying typology of violent offenders, this research lays the groundwork for a practical and theoretical understanding of violent offender subtypes.

Ultimately, continued research within this field will contribute to more effective correctional treatment by addressing the responsivity principle and by matching treatments to offender subtypes.

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Appendices

Appendix A: Criminal Code Offences Classified as Violent

A violent offence is defined per the Canadian Criminal Code (CCC, 2004) as a Schedule I offence with some exclusions (i.e. sexually motivated offences, impaired driving offences and arson-related offences) and include “Homicide” as per CCC (222.(1)). These include parallel offences with varying names or codes from previous version of the Criminal Code.

There are 5 key categories of violent offences:

Homicide, Assaults, Robbery, Kidnapping/Hostage taking/Abduction, and Firearms-related offences.

Offences Classified as VIOLENT in the current study include:

Homicide-related offences:

Murder (229 & 230);

Manslaughter (236);

Infanticide (233);

Killing Unborn Child in Act of Birth (238.1);

Attempted Murder (239);

Accessory After Fact to Murder (240);

Causing death by criminal negligence (220; 221)

Conspiracy to Commit Murder (465)

Assaults:

Assault (266);

Assault with a weapon or causing bodily harm (267);

Aggravated Assault (268);

Unlawfully Causing Bodily Harm (269);

Torture (269.1(1));

Assaulting a Peace Officer (270);

Also included but only in the context of other violent offences:

Criminal harassment (264);

Uttering threats (264.1).

Robbery - related offences

Robbery (343 & 344) ;

Extortion (346).

Kidnapping, Hostage Taking, and Abduction:

Kidnapping and forcible confinement (279);

Hostage Taking (279.1);

Abduction (280, 281, & 283).

Firearms-related Offences

Using firearm in commission of offence (85(1));
 Using imitation firearm in commission of offence (85(2));
 Pointing a firearm (87);
 Discharging firearm with intent (244) ;
 Causing bodily harm with intent- air gun or pistol (244.1);
 Discharging firearm- recklessness (244.2).

Other Schedule I offences, included but not endorsed in the current study:

High treason (46 & 47);
 Piratical acts (75);
 Hijacking (76);
 Endangering safety of aircraft or airport (77);
 Seizing control of ship or fixed platform (78.1);
 Use of explosives (81);
 Causing injury with intent (81);
 Participation in activity of terrorist group (83.18);
 Facilitating terrorist activity (83.19);
 Commission of offence for terrorist group (83.2);
 Instructing to carry out activity for terrorist group(83.21);
 Administering noxious thing (245);
 Overcoming resistance to commission of offence (246);
 Traps likely to cause bodily harm (247);
 Interfering with transportation facilities (248);
 Dangerous operation causing bodily harm and dangerous operation causing death (249));
 Flight causing bodily harm or death (249.1);
 Causing death by criminal negligence (street racing) (249.2);
 Causing bodily harm by criminal negligence (street racing) (249.3);
 Dangerous operation of motor vehicle while street racing (249.4);
 Removal of child from Canada (273.3);
 Mischief that causes actual danger to life (430(2));
 Attack on premises, residence or transport of internationally protected person (431));
 Attack on premises, accommodation or transport of United Nations or associated personnel (431.1));
 Breaking and entering to steal firearm (98));
 Robbery to steal firearm (98.1);
 Prison breach(144);
 Explosive or other lethal device (431.2);

Schedule I offences Excluded:

Impaired Driving Offences - Excluded:

Impaired driving causing bodily harm and impaired driving causing death (255).

Arson - Related Offences - Excluded:

Arson - disregard for human life (433);

Arson - own property(434);

Arson by negligence (436).

Sexually Motivated Offences- Excluded:

Sexual assault (271);

Sexual assault with a weapon, threats to a third party or causing bodily harm (272);

Aggravated sexual assault (273);

Sexual interference (151);

Invitation to sexual touching (152);

Sexual exploitation (153) ;

Incest (155);

Anal intercourse (159);

Bestiality, compelling, in presence of or by child (160);

Child pornography (163);

Parent or guardian procuring sexual activity by child (170);

Householder permitting sexual activity by or in presence of child (171);

Corrupting children (172);

Luring a child (172.1);

Living off the avails of prostitution by a child (212);

Aggravated offence in relation to living on the avails of prostitution of a person under the age of 18 years (212 (2.1);

Obtaining sexual services of a child (212 (4);

Appendix B: Consent Form for CSC Program Participation

 Correctional Service Canada / Service correctionnel Canada		PROTECTED / PROTÉGÉ <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> ONCE COMPLETED / UNE FOIS REMPLI
CONSENT TO PARTICIPATE IN A CORRECTIONAL PROGRAM CONSENTEMENT À PARTICIPER À UN PROGRAMME CORRECTIONNEL		PERSONAL INFORMATION BANK / FICHIER DE RENSEIGNEMENTS PERSONNELS PUT AWAY ON FILE / CLASSER AU DOSSIER <input checked="" type="checkbox"/> See below - Voir ci-après
Reference: <input checked="" type="checkbox"/> CD 726 / Référence: <input checked="" type="checkbox"/> DC 726		FPS number / Numéro SED <input type="text"/> Family name / Nom de famille <input type="text"/> Given name(s) / Prénom(s) <input type="text"/> Date of birth / Date de naissance <input type="text"/>

I, Je, understand that I / comprends que am being given an opportunity to participate in the / l'on m'offre l'occasion de participer au Programme Program.

PROGRAM DESCRIPTION / **DESCRIPTION DU PROGRAMME**
 I have had the opportunity to review the program description and discuss the benefits of participating in the program. / J'ai eu la possibilité d'examiner la description du programme et de discuter des avantages d'y participer.

<p>EXPECTATIONS I understand that:</p> <ul style="list-style-type: none"> I am expected to attend all program sessions; I should I miss any session for any reason, I must contact the program facilitator in advance to advise him/her; my active participation is necessary to gain from this program; I am expected to contribute to discussions and exercises and to complete all homework assignments; my participation will be reviewed regularly by the program facilitator and if problems occur, they will be brought to my attention; repeated unauthorized absences or disruption of the group may result in suspension from the program; upon completion of the program: <ul style="list-style-type: none"> <input type="checkbox"/> I may be asked to: <input type="checkbox"/> I will: participate in a maintenance program according to my level of need. I understand that this is to assist me to maintain and/or enhance gains I made during the program. <input type="checkbox"/> Not applicable 	<p>ATTENTES Je comprends :</p> <ul style="list-style-type: none"> que je dois participer à toutes les séances du programme; que, si je devais manquer une séance pour une raison quelconque, je dois communiquer avec l'intervenant du programme à l'avance pour l'en informer; que ma participation active est nécessaire pour que je tire profit de ce programme; que l'on s'attend à ce que je participe aux discussions et aux exercices et à ce que je fasse tous les devoirs; que l'intervenant du programme évaluera ma participation régulièrement et que, s'il y a des problèmes, il les portera à mon attention; que je peux être suspendu du programme si je m'absente de plusieurs séances sans autorisation ou si je perturbe le groupe; qu'après avoir terminé le programme, <ul style="list-style-type: none"> <input type="checkbox"/> je peux être appelé à participer : <input type="checkbox"/> je participerai : à un programme de suivi selon mes besoins. Je comprends que c'est pour m'aider à maintenir et à améliorer les progrès que j'ai réalisés pendant le programme. <input type="checkbox"/> sans objet
---	--

<p>ASSESSMENT AND REPORTS I understand that:</p> <ul style="list-style-type: none"> I may be required to take part in interviews with the program facilitator and to complete questionnaires before, during, and following my participation in the program. These questionnaires will look at my attitudes about, and understanding of, a variety of topics. The information gathered through interviews and questionnaires will be used to evaluate my progress and performance in the program; my participation in the program and completion of assignments will be used for the same evaluation purposes and for the assessment of my level of risk and need; copies of assessments will be placed on my file and shared with me and other persons or agencies that require and are authorized to access this information; copies of questionnaires will be used for program evaluation and research. Research and evaluation reports will never include personal identifiers such as the names of the participants; at the beginning of the program, a written report outlining my program goals may be prepared and placed on my file in the Offender Management System (OMS), CSC's computerized database; at the end of the program, a written evaluation of my performance will be completed and placed in OMS; I will be given a printed copy and an opportunity to comment on the evaluation; The evaluation may be used by CSC and/or the National Parole Board (NPB) in making decisions about my case (transfer, release, etc.). 	<p>ÉVALUATION ET RAPPORTS Je comprends :</p> <ul style="list-style-type: none"> que je peux avoir à participer à des entrevues avec l'intervenant du programme et à remplir des questionnaires avant, pendant et après ma participation au programme. Ces questionnaires porteront sur mon attitude à l'égard de divers sujets et sur ma compréhension de ces sujets. L'information ainsi recueillie au moyen d'entrevues et de questionnaires sera utilisée pour évaluer mes progrès et mon rendement dans le programme; que ma participation au programme et mes devoirs seront utilisés aux mêmes fins d'évaluation et serviront à l'évaluation de mes besoins et du risque que je présente; que des copies de mes évaluations seront versées à mon dossier, qu'elles me seront communiquées et seront aussi communiquées à d'autres personnes ou organismes qui ont besoin de cette information et sont autorisés à en prendre connaissance; que des copies des questionnaires seront utilisées à des fins d'évaluation du programme et de recherche. Les rapports d'évaluation et de recherche ne comprendront jamais des renseignements personnels comme le nom des participants. Au début du programme, un rapport écrit précisant mes objectifs dans le cadre du programme peut être rédigé et versé à mon dossier dans le Système de gestion des délinquants (SGD), la base de données informatisée du Service correctionnel du Canada (SCC); que, à la fin du programme, une évaluation écrite de mon rendement sera rédigée et versée dans le SGD; que je recevrai une copie imprimée de l'évaluation et que j'aurai la possibilité de formuler des commentaires sur cette dernière; que le SCC et la Commission nationale des libérations conditionnelles (CNLC) peuvent utiliser cette évaluation pour prendre des décisions concernant mon cas (transfertement, libération, etc.).
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<p>ASSESSMENT AND REPORTS (Cont'd)</p> <ul style="list-style-type: none"> I may be videotaped during some program exercises and that such videotaping is used strictly as an instructional aid; facilitator(s) may be videotaped, and/or a quality assurance coordinator or other person may attend one or more program sessions to ensure the quality of programs and that the videotapes will be erased: <p>⇒ <input type="checkbox"/> may be videotaped</p> <p>⇒ <input type="checkbox"/> may attend</p> <p>⇒ <input type="checkbox"/> both</p>	<p>ÉVALUATION ET RAPPORTS (suite)</p> <ul style="list-style-type: none"> que je pourrais être filmé pendant certains exercices du programme et que ces enregistrements vidéo seront utilisés uniquement comme outil d'enseignement; que le ou les intervenants pourraient être filmés pendant le programme et que le coordonnateur de l'assurance de la qualité ou une autre personne pourrait assister à une ou à plusieurs séances pour veiller à la qualité des programmes et que les bandes vidéo seront effacées : <p>⇒ <input type="checkbox"/> peut être filmé</p> <p>⇒ <input type="checkbox"/> peut assister</p> <p>⇒ <input type="checkbox"/> les deux</p>
---	---

<p>CONFIDENTIALITY</p> <p>I understand that information gathered during the program and interviews may be disclosed without my consent in the following circumstances:</p> <ul style="list-style-type: none"> There is reason to believe that I constitute a serious or immediate threat to my own safety or the safety of others in the institution or the community; The information is released for a use that is consistent with the use for which it was initially obtained; and Disclosure is mandated or permitted by relevant legislation (e.g., the <i>Corrections and Conditional Release Act</i>, the <i>Privacy Act</i>, provincial legislation regarding the reporting of offences against a child, etc.); The assessment of risk may be done based on file review, observation of my behaviour, and consideration of collateral information, without my consent; I must keep other participants' information and disclosures confidential. A breach of confidentiality may result in legal, administrative, and/or disciplinary measures. The limitations of confidentiality have been shared with me. 	<p>CONFIDENTIALITÉ</p> <p>Je comprends que les renseignements recueillis dans le cadre du programme et des entrevues peuvent être communiqués sans mon consentement dans les circonstances suivantes :</p> <ul style="list-style-type: none"> S'il y a lieu de croire que je présente un risque grave ou imminent de me blesser moi-même ou de blesser d'autres personnes dans l'établissement ou dans la collectivité; Si les renseignements sont communiqués à des fins qui concordent avec les fins auxquelles ils ont été recueillis au départ; Si la divulgation des renseignements est prescrite ou permise par la loi (p. ex. la <i>Loi sur le système correctionnel et la mise en liberté sous condition</i>, la <i>Loi sur la protection des renseignements personnels</i>, les lois provinciales concernant le signalement des infractions commises contre un enfant); L'évaluation du risque que je présente peut être réalisée à partir de l'étude de mon dossier, de l'observation de mon comportement et de renseignements provenant de tiers sans mon consentement; Je dois maintenir la confidentialité des renseignements que divulguent les autres participants. Des mesures juridiques, administratives et disciplinaires peuvent être prises à mon endroit si je divulgue de tels renseignements confidentiels. On m'a mis au courant des limites de la confidentialité des renseignements communiqués.
--	---

<p>⇒ FAMILY VIOLENCE PREVENTION PROGRAMS ONLY</p> <ul style="list-style-type: none"> I authorize CSC to obtain my partner contact information; My partner will be informed that I am attending the program and given the opportunity to talk to the facilitators. She will be offered information on safety planning and local counselling services. She will also be told that program participation is not a guarantee that men will not be abusive. At the end of the program she will be updated on my participation and progress. Subject to my consent granted above, information about me will be shared within the limits of legislation; At a later date, as part of a research evaluation, my partner may be asked to participate in an anonymous follow-up interview. 	<p>⇒ PROGRAMMES DE PRÉVENTION DE LA VIOLENCE FAMILIALE SEULEMENT</p> <ul style="list-style-type: none"> J'autorise le SCC à obtenir les coordonnées de ma conjointe; Ma conjointe sera mise au courant de ma participation au programme. Elle aura aussi la possibilité de discuter avec les intervenants. Des renseignements relativement à la planification de la sécurité et aux services de counseling locaux lui seront transmis. On lui dira aussi que la participation au programme ne garantit pas en soit que le conjoint ne sera pas violent. À la fin du programme, elle sera renseignée au sujet de ma participation et de mes progrès. Sous réserve de mon consentement accordé précédemment, des renseignements à mon sujet seront communiqués compte tenu des limites imposées par la loi; À une date ultérieure et dans le cadre d'une évaluation de la recherche, on pourrait demander à ma conjointe de participer à une entrevue de suivi anonyme.
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<p>PARTICIPATION IN THE PROGRAM</p> <p>I understand that:</p> <ul style="list-style-type: none"> I can refuse to participate in the program, or can withdraw from the program at any time; should I refuse to participate or withdraw from the program, a report summarising my reason for refusal, my participation and/or my reasons for withdrawal will be written and placed on my file and in OMS; in institutions, refusals and suspensions from the program will be subject to the policies articulated in Commissioner's Directive 730 - <i>Inmate Program Assignment and Payments</i>; if I withdraw from the program or refuse to participate in the program assessment, I can request to be reconsidered for the program at a later time. <p>All of the above information has been explained to me.</p>	<p>PARTICIPATION AU PROGRAMME</p> <p>Je comprends :</p> <ul style="list-style-type: none"> que je peux refuser de participer au programme ou que je peux abandonner à tout moment; que, si je refuse de participer au programme ou si j'abandonne en cours de route, un rapport résumant le motif de mon refus, ma participation et le motif de mon abandon du programme sera rédigé et versé à mon dossier et au SGD; que, dans les établissements, les refus de participer et les suspensions du programme seront assujettis aux dispositions de la Directive du commissaire n° 730, <i>Affectation aux programmes et paiements aux détenus</i>; que si je refuse de participer au programme ou si j'abandonne en cours de route, je peux demander à y être admis de nouveau plus tard. <p>Tous les renseignements ci-dessus m'ont été expliqués.</p>
---	--

PARTICIPANT

I agree / J'accepte to participate in the following Program: / de participer au programme suivant :

I refuse / Je refuse

SIGNATURES

Signature of Participant – Signature du participant : _____ Date: (YYYY-MM-DD) - (AAAA-MM-JJ)

⇒ _____

Name of Witness – Nom du témoin : _____ Title – Titre : _____

Signature of Witness – Signature du témoin : _____ Date: (YYYY-MM-DD) - (AAAA-MM-JJ)

⇒ _____

Appendix C: Carleton University Research Ethics Board

Carleton University
Psychology Research Ethics Board

Certificate of Ethics Clearance

Principal Investigator: **Dena Derkzen** Department: **Psychology** Study Number: **11-166**

Institution(s) where research will be conducted:
Correctional Service of Canada

Co-Investigators and other researchers:

Researcher	Study Role	Position
Ralph Serin	Faculty Sponsor	Faculty

Study Title: **An Examination of Executive Cognitive Functioning and Program Performance in Reactive and Instrumental Violent Offenders**

Approval Date: **09/03/2013** Validity Term: **1 Until Aug 31st Next** Approval Type: **Final**

Submitted Date	Study Component	Approval Date
09/26/2012	Report	09/26/2012
09/03/2013	Report	09/03/2013

Comments:

Certification

The protocol describing the above-named project has been reviewed by Carleton University Psychology Research Ethics Board and the research procedures were found to be acceptable on ethical grounds for research involving human participants.

S. Kelly Brown

Chair, Ethics Committee for Psychology Research

This Certificate of Clearance is valid for the above term provided there is no change in the research procedures.

Close

Print

Appendix D: CSC Research Review Committee Approval



Correctional Service Canada / Service correctionnel Canada

PROTECTED / PROTÉGÉE **A** **B** **C** ONCE COMPLETED / UNE FOIS REMPLIE

RESEARCH APPLICATION AND UNDERTAKING

Research Branch

FORMULE DE DEMANDE DE RENSEIGNEMENTS À DES FINS DE RECHERCHE ET ENGAGEMENTS CORRÉLATIFS

Direction de la recherche

NOTE - SEE REVERSE FOR TERMS AND CONDITIONS

NOTE - VOIR LES MODALITÉS ET CONDITIONS AU VERSO

Date submitted / Date déposée **January 24, 2012**

RESEARCH PROJECT - PROJET DE RECHERCHE

PROJECT TITLE - TITRE DU PROJET

An Examination of Executive Cognitive Functioning and Program Performance in Reactive and Instrumental Violent Offenders

PROJECT DESCRIPTION - DESCRIPTION DU PROJET

Purpose - But : To examine executive cognitive functioning (ECF) to ascertain its influence in the heterogeneity of violent offenders. It is anticipated that this study will broaden and contribute to this body of literature and may ultimately inform operational practices and treatment methods within federal institutions.

Participants - Participants: 30 incarcerated male offenders recruited from the Joyceville, (or Collins Bay if Joyceville is not interested or able to accommodate) in Kingston, Ontario managed by CSC.

TYPE/CLASS OF INFORMATION REQUESTED - TYPE/CATÉGORIE DES RENSEIGNEMENTS DEMANDÉS

Voluntary - Informed consent to participate - Consentement volontaire et éclairé pour participer

Criteria - Critères:

- a. conformity with the principles of CCRA - conformité aux principes de la LSCMLSC
- b. contribution to the achievement of the Mission and the priorities of CSC - contribution à la réalisation de la Mission et aux priorités du Service correctionnel du Canada;
- c. compliance with the Tri-councils Policy Statement on Ethical Conduct for Research Involving Humans - conformité à l'énoncé de politique des trois Conseils intitulé Éthique de la recherche avec des êtres humains
- d. level of disruption to the implementation of correctional objectives from an operational perspective - mesure dans laquelle le projet nuirait à la mise en œuvre des objectifs correctionnels sur le plan opérationnel
- e. quality of the methodology - qualité de la méthode
- f. qualifications of the researchers - compétences des chercheurs
- g. anticipated benefit to corrections - avantages éventuels pour les services correctionnels
- h. value for money - rapport valeur-coût

PRIMARY RESEARCHER - CHERCHEUR PRINCIPAL

a) Name and title - Nom et titre Dena Derkzen	Operational unit - Unité opér.	Sector - Secteur	Region - Région
b) Address - Adresse Dena.Derkzen@csc-scc.gc.ca			c) Telephone number - N° de téléphone (613) 943-2599

OTHER RESEARCHERS - AUTRES CHERCHEURS

a) Name and affiliation - Nom et affiliation	a) Telephone number - N° de téléphone
b) Name and affiliation - Nom et affiliation	b) Telephone number - N° de téléphone
c) Name and affiliation - Nom et affiliation	c) Telephone number - N° de téléphone

APPROVAL - APPROBATION

Director General Research - Directeur général de la Recherche Brian A. Grant	Signature 	Date Y-A M D-J 2012 01 31
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CSC/SCC 954 (R-99-04)
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RESEARCH APPLICATION AND UNDERTAKING
 Research Branch

FORMULE DE DEMANDE DE RENSEIGNEMENTS À DES FINS DE RECHERCHE ET ENGAGEMENTS CORRÉLATIFS

Direction de la recherche

NOTE - SEE REVERSE FOR TERMS AND CONDITIONS

NOTE - VOIR LES MODALITÉS ET CONDITIONS AU VERSO

Date submitted / Date déposée **August 2010**

RESEARCH PROJECT - PROJET DE RECHERCHE

PROJECT TITLE - TITRE DU PROJET

Developing Measures to Track Treatment Progress toward Treatment Completion and Desistance within Offender Programs

PROJECT DESCRIPTION - DESCRIPTION DU PROJET

Purpose - But :

To understand changes in offenders' beliefs, competencies, attitudes and behaviour as they progress through institutional rehabilitation programs.

Participants - Participants : Three groups of participants will be invited to be part of this study: (1a) offenders in the Pacific region (treatment attendees; up to approximately 300 offenders), (1b) offenders in Ontario, Prairies and Atlantic regions (a comparison group of offenders; up to approximately 200 offenders), and (2) CSC staff, specifically treatment facilitators (CPFs) in the Pacific region (approximately 100 participants).

TYPE/CLASS OF INFORMATION REQUESTED - TYPE/CATÉGORIE DES RENSEIGNEMENTS DEMANDÉS

Voluntary - Informed consent to participate - Consentement volontaire et éclairé pour participer

Criteria - Critères:

- a. conformity with the principles of CCRA - conformité aux principes de la LSCMLSC
- b. contribution to the achievement of the Mission and the priorities of CSC - contribution à la réalisation de la Mission et aux priorités du Service correctionnel du Canada;
- c. compliance with the Tri-councils Policy Statement on Ethical Conduct for Research Involving Humans - conformité à l'énoncé de politique des trois Conseils intitulé Éthique de la recherche avec des êtres humains
- d. level of disruption to the implementation of correctional objectives from an operational perspective - mesure dans laquelle le projet nuirait à la mise en œuvre des objectifs correctionnels sur le plan opérationnel
- e. quality of the methodology - qualité de la méthode
- f. qualifications of the researchers - compétences des chercheurs
- g. anticipated benefit to corrections - avantages éventuels pour les services correctionnels
- h. value for money - rapport valeur-coût

PRIMARY RESEARCHER - CHERCHEUR PRINCIPAL

a) Name and title - Nom et titre Ralph Serin, Ph.D. Carleton University	Operational unit - Unité	Sector - Secteur	Region - Région
b) Address - Adresse			c) Telephone number - N° de téléphone

OTHER RESEARCHERS - AUTRES CHERCHEURS

a) Name and affiliation - Nom et affiliation	a) Telephone number - N° de téléphone
b) Name and affiliation - Nom et affiliation	b) Telephone number - N° de téléphone
c) Name and affiliation - Nom et affiliation	c) Telephone number - N° de téléphone

APPROVAL - APPROBATION

Director General Research - Directeur général de la Recherche Brian A. Grant	Signature 	Date JUN 02 2011
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TERMS AND CONDITIONS**Interpretation**

The provision of data for research purposes is approved by the Director General of Research. All participants shall adhere to the terms and conditions of the Research Application and Undertaking Form. The Service has the right to examine any results or reports in order to verify that no personal information has been compromised. No further personal information will be provided to the participant(s) if this agreement is violated.

Non-disclosure of personal information

The researcher or organization

- I) agrees that information contained in or resulting from the data provided shall be rendered anonymous (i.e. coded and stripped of personal identifiers) as soon as possible
- II) shall not contact the study's participant(s) unless specifically authorized to do so and, if authorized, shall guarantee that any additional information obtained from these individuals will receive the same level of confidentiality as maintained for the original data
- III) agrees that no subsequent disclosure of the information in a form that could reasonably be expected to identify the individual(s) to whom it relates will be made to any other person or third party not participating in the research project

Data location, consultation and disposal

For any data not secured within the physical confines of the Correctional Service of Canada, the participant(s) shall provide

- I) a written statement specifying where the data or copies of records will be consulted or used
- II) a list of any data linkages that have been approved and an undertaking not to perform other matches without written authorization
- III) a written statement regarding the conditions governing disposal of identifiable personal data and, if desirable and applicable, the archival arrangements for working data and the relevant programs, codes and guides

Participant(s) acknowledgements

The participant(s)

- I) recognizes that permission to conduct research may be withdrawn at any time for violations of standing orders, rules and regulations related to security or for unapproved deviations from the original proposal, or it may be temporarily suspended for operational reasons
- II) will abide by the standing orders and rules of the institution or parole office, including those designed to ensure the researcher's own safety
- III) acknowledges that, other than the report submitted for publication, no further release of data shall be made without the permission of the Service and/or the Department
- IV) will make appropriated acknowledgement in all subsequent reports of the Correctional Service of Canada's sponsorship of the research, as well as an appropriate disclaimer that the opinions and conclusions do not necessarily represent those of the Service and/or Department
- V) acknowledges that ownership of the data rests with the Correctional Service of Canada

Approval

It is agreed that all parties signing this agreement and any attachments thereto are satisfied with and will adhere to its terms and conditions.

MODALITÉS ET CONDITIONS**Interprétation**

La collecte de données destinées à la recherche est approuvée par le directeur général de la Recherche. Les participants doivent se conformer aux modalités et conditions contenues dans le formulaire *Demande de renseignements à des fins de recherche et engagements corrélatifs*. Le Service se réserve le droit de vérifier les résultats et rapports dans le but de s'assurer qu'aucun renseignement personnel n'a été divulgué. Aucun autre renseignement personnel ne sera communiqué au(x) participant(s) si les modalités de la présente entente ne sont pas respectées.

Non-divulguation de renseignements personnels

Le chercheur ou l'organisme

- I) s'engage à donner un caractère anonyme aux renseignements de la recherche (codés et dépourvus d'identifiants) le plus tôt possible
- II) s'engage à ne pas entrer en contact avec le(s) participant(s) à moins d'en être autorisé et, dans ce cas, d'accorder aux renseignements recueillis le même degré de confidentialité qu'il a été accordé aux renseignements initiaux
- III) s'engage à ne pas divulger par la suite à un tiers ou à quiconque ne participe pas à la recherche, tout renseignement qui permettrait, même indirectement, d'identifier la (ou les) personne(s) visée(s)

Stockage, consultation et élimination des données

Dans le cas des données qui ne sont pas gardées en lieu sûr dans les locaux du Service correctionnel du Canada, le participant remettra

- I) un document qui précise où seront consultées ou utilisées les données et copies de document
- II) une liste renfermant les coupages de données approuvés accompagnée d'un engagement formel de ne pas procéder à d'autres coupages sans autorisation écrite
- III) un document qui précise les conditions régissant l'élimination des renseignements personnels permettant d'identifier la (ou les) personne(s) visée(s) ainsi que, dans la mesure du possible, les procédés d'archive utilisés pour les données ainsi que les programmes, codes et guides connexes

Déclaration du participant

Le participant

- I) reconnaît que le droit qui lui est accordé de participer aux travaux de recherche peut lui être retiré en tout temps en cas de non-respect des consignes, règles et règlements concernant la sécurité ou de démarches non conformes à l'esprit du projet tel qu'il fut présenté. Le droit de participation peut également être temporairement suspendu pour des raisons opérationnelles
- II) s'engage à respecter les consignes émises par l'établissement ou par le bureau de libération conditionnelle, y compris celles concernant sa propre sécurité
- III) s'engage à ne pas diffuser ou publier de données autres que celles déjà contenues dans le rapport officiel sur le projet, à moins d'y être autorisé par le SCC et/ou le Ministère
- IV) s'engage à faire mention du parrainage accordé par le Service correctionnel du Canada lors de toute publication ultérieure touchant le projet et à y joindre une clause précisant que les opinions ou conclusions exprimées ne représentent pas nécessairement le point de vue du Service et/ou du Ministère
- V) reconnaît que toutes les données du projet de recherche sont la propriété exclusive du Service correctionnel du Canada

Approbation

Les signataires du présent formulaire et des pièces qui peuvent y être jointes se déclarent en accord avec les modalités et les conditions que renferment ces documents et s'engagent à les respecter.

Appendix E: CSC Criminal Profile Report (CPR)

Case Status

- Name, age, citizenship, sentence length and offence(s).
- Confirm through Sentence Management court orders, outstanding appeals and outstanding charges including source and details (if it is confirmed that there are no outstanding charges, make a statement to that effect).
- If offender discloses information about outstanding charge(s), results can be incorporated into the Criminal Profile Report.

Official Version of Index Offence(s)

Concise official version of index offence(s) based on official documentation.

For multiple offences that were committed in a similar manner, do not describe the details of each individual offence but summarize pattern.

Note the following:

Reference source document(s) and include:

- date and place of offence(s);
- how the offence was perpetrated (who, what, where, when, how and why);
- offender's role in the offence;
- nature and gravity of the offence and the degree of responsibility of the offender, including the degree of violence and the use of any weapons;
- name, role and status of accomplices, co-accused and/or co-convicted;
- date of arrest and level of cooperation by the offender with authorities following arrest;
- whether or not the offender's version is consistent with the official version;
- if offender's version in Preliminary Assessment changes, provide a brief comment about major discrepancies;
- whether the offence(s) and/or conviction(s) received extensive publicity;
- information concerning the offender's performance if released on bail; and
- sentencing judge's comments and/or recommendations.

Assessment of Harm and Victim Impact

- Victim Impact Statement(s) and description of physical and/or psychological harm and summary of victim impact.
- Determination of serious harm, as set out in the [CCRA](#) and [CD 705-8 – Assessing Serious Harm](#), in the current offence(s).

Analysis of Criminal Behaviour

Criminal History

Reference source document(s) and include a brief analysis of criminal behaviour, and if applicable, include:

- a concise summary of the offender's juvenile, young offender, and adult criminal history (include prior stayed, withdrawn and/or dismissed charges);
- brief details of serious schedule I and II offences;
- number of offences causing physical or psychological harm;
- use of a weapon;
- explicit threats of violence;
- behaviour of a sexual nature associated with any offence;
- the number of serious drug-related offences;
- impact on victim(s);
- patterns of convictions;
- escalation in offence severity;
- information on crime free periods;
- organized crime connections and/or gang affiliations; and
- terrorism-related convictions.

Institutional History

Provide a brief summary of past institutional history, reference source, and if applicable, include:

- synopsis of young offender and adult offender institutional adjustment;
- most recent institutional (federal, provincial or territorial) adjustment; and
- behaviour and attitude while at the remand unit pending federal admission.

Escape/Attempted Escape History

Provide a brief summary of past attempted escape, conspiracy to escape, and/or escape behaviour/history, reference source, and if applicable, include:

- date of incident (unlawfully at large, escape custody of confinement, police, escort) location, how, with whom, reason and disposition.

Community Supervision History

Provide a brief summary of past community supervision history and pattern, reference source, and if applicable include:

- positive periods of community supervision;

- previous bail supervision, youth and adult probation, community supervision orders, federal supervision; and
- breach of trust history (fail to comply, fail to appear, breach of recognizance).

Psychological/Psychiatric/Mental Health History

Summarize mental health screening results. If applicable, provide summary analysis of psychological assessments/reports, specialized sex offender assessments and psychiatric assessments from the courts or other sources.

Family Violence History

If applicable, provide a summary analysis of family violence concerns and/or the results of the Family Violence Risk Assessment.

Detention Criteria

Based on the available information, make a preliminary statement whether the offender meets the criteria for a referral for detention.

Analysis of the Offence Cycle

Provide an analysis of the offence cycle based on the overall pattern of criminal behaviour, not only the current offence. All factors that lead to criminal behaviour(s) must be examined, including the offender's understanding of the behaviour and a description of the events or situations that lead to the commission of any offence.

Consider the following:

- crisis situations (personal, financial problems, emotional loss, family, social);
- substance abuse (consumption with disinhibiting effect on thinking or emotions, exacerbated aggressiveness, crime used to support consumption);
- peer pressure (threats, provocation, incitement, seeking approval, association, debts);
- potential victims (victims are accessible, vulnerable);
- potential means (organization, information, weapons and accomplices);
- emotional states (frustration, aggressiveness, loss, negative feelings, mental health issues);
- cognitive processes (perceptions, interpretations, distortion, images, and errors in thought processes);
- adaptation processes (projection, denial, rationalization, and introjection); and
- actions and motives (behaviour, impulsivity, etc.)

For Aboriginal offenders, incorporate a description of Aboriginal social history which identifies and analyzes how the following factors have impacted on criminal behaviour:

- effects of residential school system (offender as survivor or intergenerational effects from family's historical experiences);
- sixties scoop
- family or community history of suicide;
- family or community history of substance abuse;
- family or community history of victimization;
- family or community fragmentation;
- level of connectivity with family/community;
- level or lack of formal education;
- experience in child welfare system;
- experience with poverty; and
- loss of struggle with cultural/ spiritual identify

Appendix F: Aggression Rating Form (ARF)

INSTRUMENTAL / REACTIVE AGGRESSION WORKSHEET (Vitacco, Neumann, Caldwell, Leistico, & Van Rybroek, 2006)

INSTRUCTIONS: Rate the prevalence of the following characteristics in the known aggressive incidents of the offender.

- 1- **NONE:** No indications of this characteristic in any of the known aggressive acts.
- 2- **SELDOM:** Some incidents include the characteristic, but it is not present in the vast majority of cases.
- 3- **MIXED:** The characteristic is neither generally present or absent.
- 4- **MOST:** The characteristic is almost always present, only rare exceptions.
- 5- **ALWAYS:** The characteristic is present in every known case of aggression.

CHARACTERISTIC:	NEVER	SELDOM	MIXED	MOST	ALWAYS
1) Planning or preparation before the aggression	1	2	3	4	5
2) Goal – directed; the act helped obtain a goal; includes aggression during a robbery, sexual assault, etc.	1	2	3	4	5
3) Perception that the act was unprovoked by the victim	1	2	3	4	5
4) Offender shows intense anger during the aggression	5	4	3	2	1
5) Ongoing relationship with the victim (i.e. family, sexual partner, teacher, etc.)	5	4	3	2	1

Note: If not aggressive indicate “NONE” at the top of the form and leave the remainder blank. Do not rate sex offenses.

Victim Relationship:

- 1. Immediate family
- 2. Extended family well known
- 3. Close friend or girlfriend
- 4. Acquaintance / Known more than two days
- 5. Stranger / Known two days or met once or twice

SCORE: _____

_____ Coded for Index only
 _____ Coded for Index and Violent History
 _____ Coded for Violent History only

Aggression Rating Form (ARF)
(Vitacco, Neumann, Caldwell, Leistico, & Van Rybroek, 2006)

INSTRUMENTAL / REACTIVE AGGRESSION WORKSHEET

Continued

DEFINITIONS:

Reactive Aggression: Reactive aggression is believed to be motivated by intense emotion. The paradigm is that of an animal reacting to attack. It is unplanned because it is a reaction to circumstances. It is often provoked (particularly in the eyes of the perpetrator) by the actions of the victim. At times, the victim may have even initiated the aggressive behaviour. Only minimal preparation is associated with reactive aggression. In the course of the rage, the person may pick up a nearby weapon, or may break off the violence to get a weapon and immediately return while still enraged. In general, reactive aggression occurs in the course of an ongoing relationship. It is often preceded by displays of anger or threatening gestures. Examples: An individual comes home to find his partner in bed with another person. In a fit of anger he goes into the kitchen, gets a knife and returns to stab both people. A drug dealer is confronted by a disgruntled customer who threatens, then begins punching him. He fights back, knocking the individual to the ground, then kicks and beats the individual to unconsciousness.

Instrumental Aggression: Instrumental aggression is considered to be motivated by a specific goal, such as money. The paradigm is that of an animal hunting its prey. The aggressive act is a means to an end. The person may be excited, but is not generally enraged. It may be planned extensively, or may include only brief preparation for the event. Often the victim is a stranger or an acquaintance of the perpetrator. The victim is chosen because of how they are related to the desired object. It is often done suddenly and without provocation. Examples: A perpetrator obtains a gun to rob a house he where believes there is money. When the resident says they don't have any money, he shoots and kills both, then ransacks the house looking for money. A boy takes a knife to school expecting a fight with someone who has been harassing him. When the person approaches him aggressively, he pulls the knife and stabs his antagonist. An offender takes offense at another offender making noise all night in the adjacent room in a correctional facility. Later the next day, when staff are not looking, he kicks the boy in the stomach several times while talking to him about being quieter. He later states that the boy "needed proper disciplinary action".

VICTIM RELATIONSHIP: Rate the nature of the relationship between the offender and the victim in the most serious victim injury. If the relationship is superficial but extended (i.e. a shopkeeper the offender knows by sight for months but has not formally met and has no personal relationship) rate as a stranger. If several separate incidents have equal victim injuries, rate the incident that would lead to the most serious charge (i.e. felony vs. misdemeanor).

Notes for Aggression Rating Form (ARF)
(Vitacco, Neumann, Caldwell, Leistico, & Van Rybroek, 2006)

- Classify all violent offences (as defined within coding manual) that the offender has been convicted. This includes index, previous adult and youth convictions.
- Institutional charges or misconducts are not classified unless they received a formal conviction.

Appendix G: Violent Incident Coding (VIC) (Cornell et al., 1996)**VIOLENT INCIDENT CODING SHEET (Cornell et al., 1996)****Group membership based on Index coding****1. Instrumental v Reactive/Hostile (code actual event, not just subject's claim)**

- 4 - Clearly instrumental aggression (e.g., crime-related incident, drug deal)
- 3 - Primarily instrumental, some reactive qualities
- 2 - Primarily reactive hostile aggression, some instrumental qualities
- 1 - Clearly reactive hostile aggression (e.g., interpersonal conflict)

99 Not Applicable (non violent index offence)

88 Unable to code/Insufficient information; Enter question # (_____)

Additional Characteristics:**2. Planning (include plans for robbery, burglary, etc.)**

- 4 - extensive planning (detailed plan or preparation, rehearsal)
- 3 - moderate planning (contemplation of action for more than 24 hours)
- 2 - some planning (action within 24 hours, some plan or preparation)
- 1 - very little or no planning (acts during argument or fight, no preparation)

3. Goal-Directedness (consider goals like financial gain, not just revenge)

- 4 - Clear, unequivocal goal-directedness (include shooting during crimes)
- 3 - Primary goal-directedness, with presence of other motives
- 2 - Secondary goal-directedness, in presence of other primary motives
- 1 - No apparent goal-directedness (motive to injure victim, retaliate, defend)

4. Provocation (includes provocation prior to incident, use subject's perception)

- 6 - Exceptionally strong provocation (repeated assault, severe abuse)
- 5 - Very Strong provocation (assault)
- 4 - Strong (break-up of a romantic relationship, threat of major life change)
- 3 - Moderate provocation (serious argument or dispute, threat of assault)
- 2 - Mild provocation (insult, minor argument, confrontation with police)
- 1 - No apparent provocation

5. Arousal (mental state, primarily code anger, but also consider other affects like fear)

- 4 - Enraged, furious, described as "out of control" or "irrational" or panicked (brief state)
- 3 - Angry, mad, extremely frightened (can be protracted state)
- 2 - Excited, very nervous, anxious, scared
- 1 - Calm or tense at most

6. Severity of violence (consider actual harm to victim, not subject's intention)

- 7 - Extreme homicide (multiple victims or multiple fatalities, mutilation)
- 6 - Homicide
- 5 - Severe injury (e.g., lasting impairment or life-threatening injury, some rapes)
- 4 - Serious injury, requiring substantial hospital treatment (e.g, broken limb, rape, gunshot)
- 3 - Minor injury (e.g., bruises, minor medical treatment, attempted rape)
- 2 - Assault without injury
- 1 - No assault (e.g., threatened with weapon)

7. Relationship with victim (if 2 or more victims, code highest)

- 5 - Very close relationship (immediate family member, romantic partner)
- 4 - Close relationship (friend, relative, dating partner, etc.)
- 3 - Specific relationship (teacher, babysitter, etc.) or Between friend and acquaintance
- 2 - Acquaintance
- 1 - Stranger

8. Intoxication

- 4 - Severe intoxication (large quantities of alcohol or drugs, very impaired)
- 3 - Intoxicated
- 2 - Mild intoxication (e.g., 1 or 2 drinks)
- 1 - Not intoxicated

9. Psychosis (reality testing, not mood)

- 4 - Substantial psychotic symptoms (e.g., bizarre or pervasive delusions)
- 3 - Moderate psychotic symptoms (intermittent voices or delusions)
- 2 - Non-psychotic disturbance (e.g., depersonalized)
- 1 - Not psychotic

Notes for VIOLENT INCIDENT CODING SHEET (Cornell et al., 1996)

- For the **VIOLENT INCIDENT CODING SHEET**, only classify the **INDEX** offence, therefore if the index is non-violent offence this form is not completed and **99 NOT APPLICABLE** is coded.
- If insufficient information is available to code any items, identify this by writing **88** in the left margin by the item to identify "unable to code or insufficient information"
- For specific information related to how to code each of these items, refer to the Cornell **CODING GUIDE FOR VIOLENT INCIDENTS: INSTRUMENTAL VERSUS HOSTILE/REACTIVE AGGRESSION** by **Dewey G. Cornell**

Appendix H: Examples of Reactive and Instrumental Violent Offenders**Predominately Reactive Violent Offenders (RVO)****RVO Case #1**

Violent Index Offence: The offender was at a bush party and consumed approximately 10–12 beers. Before the fight broke out, there were 20–30 people at the bush party. A female at the party used her cell phone to call other males, stating that she had been hit by an individual at the party. A group of 7 or 8, including the victim, arrived and said that they were looking for someone. Words were exchanged but got out of hand, and a fight broke out. The offender advises that he does not remember his thoughts at the time or specific details of what happened after the fight started. He appears remorseful and takes responsibility for hitting the victim over the head.

Violent Offence History: Coming home from a party after consuming alcohol, the offender walked past a home where a group of students were sitting on the front porch. Assuming there was a party in progress, he approached the students. The students claimed that there was no party at the house. The subject heard music and forced his way inside. Once inside, he was confronted by two occupants of the home. Fearing they would become angry, he grabbed a knife and made threatening gestures. He then fled the house.

RVO Case #2

Violent Index Offence: While at a local bar, the offender and his on-again, off-again girlfriend were drinking. During the night, the offender noticed his girlfriend flirting with another male. He did not understand what she was doing and grabbed her face in an attempt to turn her away from her new interest. The subject denies slapping or hurting his girlfriend in any way, but she became upset. Another male in the bar witnessed the incident and came over to the subject and confronted him. The offender reports that this male pushed him backward, and in an instinctive reaction, the offender picked up a beer bottle and hit the victim over the head.

Violent Offence History: The offender has a robbery conviction. He and accomplices were drinking in a park with the victim and robbed the victim of \$2,000. During this incident, the victim was struck repeatedly and then left unconscious in the park. In addition, the offender has 3 assaults convictions for the assault of a doorman of a club as the offender was being removed for arguing with the manager, the assault of a victim for accidentally brushing his foot on the offender's pant leg (broke a beer bottle over the victim's head) and an assault at a house party during which the victim, who was known to offender, provoked him by making sexual advances. Consequently, a fight ensued.

RVO Case #3

Violent Index Offence: The offender had an ongoing argument with his brother over liquor, which escalated and resulted in the offender leaving a party to go home to grab his rifle. He then returned to the party, confronted his brother and shot him. The offender was very intoxicated at the time of the shooting and does not remember any of the incident.

Violent Offence History: The offender has no previous violent history but had fallen into a pattern of abusing alcohol and drugs when in his home community.

Predominately Instrumental Violent Offenders (IVO)**IVO Case # 1**

Violent Index Offence: The offender was convicted of a bank robbery, in which he passed a note to a teller stating “This is a robbery. I want \$3,000. Give me \$3,000.” At this point, he showed the handle of a weapon. The offender claims that he commits robberies whenever he needs money. Much of his current and past criminal involvement reflects his serious addition to drugs and alcohol.

Violent Offence History: The offender’s recent convictions are for robbery (6+); however, he also has 2 prior assaults convictions which involved “being drunk and stupid” and getting into bar fights. In one instance, he choked someone to unconsciousness. With multiple convictions ranging from theft to robbery, his crimes were committed for the purpose of supporting himself and his drug addiction. According to the offender, his substance abuse history began at an early age. Starting with alcohol, his drug involvement escalated from marijuana use to his recent addiction to heroin.

IVO Case #2

Violent Index Offence: The offender was involved in an armed robbery that went bad. He was high and robbed a woman in a parking garage. He had intended to steal her purse, but things got out of control because he was high, and he ended up stabbing the victim.

Violent Offence History: The offender was involved in 4+ similar offences, in which he approached women in parking garages and robbed them at knifepoint.

IVO Case #3

Violent Index Offence: The offender and his accomplice kidnapped the victim, the son of a wealthy businessman, at knifepoint and bound and robbed him of personal items. Photographs were delivered to his parents’ residence, and a call placed demanding a large sum of money for the safe return of the victim.

Violent Offence History: No previous violent offence were reported; however, numerous offences for breaking, entering and theft (50+) and multiple convictions for auto theft, possession of stolen property and forgery of documents were reported.

IVO Case #4

Violent Index Offence: The offender needed money, so he had a friend provide him with cocaine to sell. The offender sold the cocaine to the victim with the understanding that the victim would pay for it in a few days. When the victim did not pay the \$1,000, the offender visited him and drove him to an ATM machine, where he unsuccessfully attempted to withdraw the money. The physical assault occurred over a 6-hour period until the victim could secure money from a family member.

Violent Offence History: The offender has previous convictions for robbery, possession, and trafficking of narcotics and has a known association with a biker gang.

Appendix I: Internal Consistency (α) for Psychometric Measures

Internal Consistency for Self-report measures

Measure and Subscales	Pre-program	Post-program
	α	α
BPAQ	.92	.92
Physical Aggression	.84	.82
Verbal Aggression	.73	.71
Anger	.79	.78
Hostility	.81	.81
Eysenck's I ₇	.83	.83
NAS	.95	.95
Cognitive	.82	.82
Arousal	.88	.88
Behavior	.90	.88
PI	.95	.96
Reasons for Aggression	.97	.98
Communication	.79	.86
Revenge	.81	.85
Control	.79	.86
Intimacy	.80	.85
Relationship	.80	.84
Emotional liability	.86	.87
Impairment	.75	.73
Distress	.81	.79
Social	.82	.90
Ego	.80	.85
Goal oriented	.84	.82
Aggression Efficacy Scale		
Street efficacy	.81	.70
Street righteousness	.42	.53
Street social support	.78	.77
Street scale	.88	.86
Prison efficacy	.84	.82
Prison righteousness	.60	.63
Prison social support	.77	.75
Prison scale	.89	.89
URICA	.82	.66
Pre-contemplation	.83	.73
Contemplation	.78	.65
Action	.76	.68
Maintenance	.81	.71
BIDR	.79	.80
Impression management	.80	.82
Self-deception enhancement	.54	.55

Note. BPAQ = Buss–Perry Aggression Questionnaire; NAS = Novaco Anger Scale; PI = provocation inventory; URICA = University of Rhode Island Change Assessment Inventory; BIDR = Balanced Inventory of Desirable Responding.

Appendix J: Inter-Correlation between Psychometric Measures

Table J1

Correlations between Psychometric Measures Pre- and Post-Program

Measure	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
1. BPAQ _{pre}	--																
2. BPAQ _{post}	.44***	--															
3. I _{7pre}	.54***	.30***	--														
4. I _{7post}	.28***	.64***	.46***	--													
5. NAS-PI _{pre}	.25**	.08	.11	-.04	--												
6. NAS-PI _{post}	.03	.11	.09	.06	.33***	--											
7. AES: St _{pre}	.06	-.07	.07	.01	.21	.20	--										
8. AES: St _{post}	.10	.15	.00	.04	.08	.21	.57***	--									
9. AES: Pr _{pre}	.03	-.18	-.05	.08	.17	.24*	.72***	.40***	--								
10. AES: Pr _{post}	-.00	.06	-.03	.12	.05	.15	.55***	.68***	.64***	--							
11. RFA _{pre}	.22*	.04	.15	-.04	.23*	.07	.20	.07	.18	.11	--						
12. RFA _{post}	.08	.06	.13	.08	.06	-.02	.19	.16	.12	.22	.39***	--					
13. URICA _{pre}	-.22*	.00	-.06	.12	-.06	.09	-.27**	-.01	-.32**	-.15	-.23	-.04	--				
14. URICA _{post}	-.22*	-.00	-.05	.11	-.07	.12	-.26**	-.01	-.31**	-.16	-.23	-.07	.99***	--			
15. VRS _{pre}	.12	-.01	.09	.01	.16	.18	-.13	-.14	-.08	-.07	.16	.05	.13	.12	--		
16. VRS _{post}	.14	.04	.06	.08	.16	.11	-.05	-.07	-.03	-.02	.31**	.08	-.02	-.03	.88***	--	
17. PCL-R	.00	-.03	.01	.13	.07	-.06	-.01	-.03	.12	.01	-.15	.00	-.00	-.06	-.24	-.15	--

Note. Sample sizes vary by measure. BPAQ and I₇: *n* = 170–182; BPAQ and NAS-PI: *n* = 143–156; BPAQ and AES: *n* = 82–96; BPAQ and RFA: *n* = 94–114; I₇ and NAS-PI: *n* = 136–148; I₇ and AES: *n* = 79–90; I₇ and RFA: *n* = 91–107; NAS-PI and AES: *n* = 76–89; NAS-PI and RFA: *n* = 86–98; AES and RFA: *n* = 65–75; _{pre} = Pre-program; _{post} = Post-program; PCL-R and BPAQ: *n* = 69-74; PCL-R and I₇: *n* = 64-69; PCL-R and NAS-PI: *n* = 59-66; PCL-R and AES: *n* = 40-42; PCL-R and URICA: *n* = 41-44; PCL-R and RFA: *n* = 43-44; PCL-R and VRS: *n* = 48-52; BPAQ = Buss–Perry Aggression Questionnaire; I₇ = Eysenck’s Impulsivity Questionnaire; NAS-PI = Novaco Anger Scale and Provocation Inventory; AES: St = Aggression Efficacy Scale: Street; AES: Pr = Aggression Efficacy Scale: Prison; RFA = Reasons for Aggression.
p* < .05, *p* < .01, ****p* < .001.

Appendix K: Criminogenic Need Domain Items

Table K1

Selected Dynamic Factor Items for Reactive and Instrumental Violent Offenders

Select Indicators from Domains	Reactive Violence Offenders <i>n</i> = 148	Instrumental Violence Offenders <i>n</i> = 247	Overall Sample <i>n</i> = 396	χ^2	<i>p</i>	Φ or V
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
Personal Emotional Needs						
Has difficulties solving interpersonal problems	95.9 (117)	85.9 (152)	90.0 (269)	8.04*	.005	.164
Is unable to generate choices	77.0 (94)	80.9 (144)	79.3 (238)	0.654	.419	--
Demonstrates impulsivity	93.4 (114)	94.4 (168)	94.0 (282)	0.113	.736	--
Appears incapable of understanding the feelings of others	51.7 (62)	59.2 (103)	56.1 (165)	1.64	.201	--
Exhibits narrow and rigid thinking	68.0 (83)	75.0 (132)	72.1 (215)	1.74	.187	--
Is aggressive	93.4 (114)	77.8 (137)	84.2 (251)	13.20**	.000	.210
Displays assertion problems	57.4 (70)	46.9 (83)	51.2 (153)	3.17	.075	--
Manages time poorly	55.4 (67)	70.7 (123)	64.4 (190)	7.31*	.007	.157
Has a low frustration tolerance	84.3 (102)	61.1 (107)	70.6 (209)	18.48**	.000	.139
Is thrill-seeking	46.7 (57)	64.0 (112)	56.9 (169)	8.75*	.003	.172
Appears manipulative	62.0 (75)	69.4 (120)	66.3 (195)	1.73	.188	--
Substance Abuse						
Began drinking at an early age	74.6 (91)	67.0 (118)	70.1 (209)	1.96	.162	--
Began using drugs at an early age	69.7 (85)	85.4 (152)	79.0 (234)	10.78*	.001	.190
Has combined the use of different drugs	52.9 (63)	76.0 (133)	66.7 (196)	16.95**	.000	.240
Allows drug use interferes with employment	35.3 (42)	61.1 (107)	50.7 (149)	18.94**	.000	.254

Note. Φ or V = Phi or Cramer's V effect size
p < .05, ***p* < .01, ****p* < .001.

Personal/emotional items. Examining specific items within the personal/emotional domain revealed that a significantly greater proportion of RVOs endorsed the following items: a1) has low frustration tolerance (RVOs: 84.3%, $n = 102$ vs. IVOs: 61.1%, $n = 107$); b2) aggressive (RVOs: 93.4%, $n = 114$ vs. IVOs: 77.8%, $n = 137$); and c3) has difficulties solving interpersonal problems (RVOs: 93.4%, $n = 114$ vs. IVOs: 77.8%, $n = 137$) relative to IVOs. Conversely, a significantly greater proportion of IVOs were thrill-seeking (IVOs: 61.0%, $n = 112$ vs. RVOs: 46.7%, $n = 57$) and managed time poorly (IVOs: 70.7%, $n = 123$ vs. RVOs: 55.4%, $n = 67$). All other items, as depicted in Table K1, reported non-significant differences.

Substance use items. Examining specific items within the substance use domain revealed that a significantly greater proportion of IVOs endorsed the following items: a1) began using drugs at an early age (IVOs: 85.4%, $n = 152$ vs. RVOs: 69.1%, $n = 85$); b2) have combined the use of different drugs (IVOs: 76.0, $n = 133$ vs. RVOs: 52.9%, $n = 63$); and c3) drug use interferes with their employment (IVOs: 61.1%, $n = 107$ vs. RVOs: 35.3%, $n = 41$) relative to RVOs. Refer to Table K1 for specific results.

Employment and Education. Examining specific items within the education domain revealed that a significantly greater proportion of RVOs had completed less than a grade 10 education (RVOs: 52.9%, $n = 64$ vs. IVOs: 38.3%, $n = 70$).

Marital Family. Examining specific items within the marital family domain revealed that a significantly greater proportion of RVOs had been a perpetrator of spousal abuse (RVOs: 47.1%, $n = 56$ vs. IVOs: 22.5%, $n = 39$).

No significant differences were reported within select items in the Criminal attitudes nor the Criminal Associates domain. Refer to Table K2 for specific results.

Table K2

Select Dynamic Factor Items for Reactive and Instrumental Violent Offenders

Select Indicators from Domains	Reactive Violence Offenders <i>n</i> = 148	Instrumental Violence Offenders <i>n</i> = 247	Overall Sample <i>n</i> = 397	χ^2	<i>p</i>	Φ or <i>V</i>
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
Associates						
Associates with substance abusers	89.3 (109)	93.8 (167)	92.0 (276)	1.97	.160	--
Has mostly criminal friends	66.4 (81)	71.7 (124)	69.5 (205)	0.942	.332	--
Has been affiliated with a gang	19.3 (23)	18.8 (32)	19.0 (55)	0.012	.914	--
Attitude						
Acts negatively towards corrections	58.3 (53)	51.1 (91)	48.2 (91)	1.55	.214	--
Is disrespectful of personal belongings	68.0 (83)	77.3 (136)	73.6 (219)	3.16	.076	--
Is supportive of instrumental violence	81.7 (98)	82.7 (143)	82.3 (241)	0.014	.827	--
Is non-conforming	80.3 (98)	87.6 (156)	84.7 (254)	2.98	.084	--
Employment and Education						
Completed less education than grade 10	52.9 (64)	39.3 (70)	44.8 (134)	5.36*	.021	.134
Has an unstable job history	89.3 (108)	88.1 (156)	88.6 (264)	0.089	.765	--
Marital Family						
Has been a victim of spousal abuse	17.5 (21)	13.5 (24)	15.1 (45)	0.902	.342	--
Has been a perpetrator of spousal abuse	47.1 (56)	22.5 (39)	32.5 (95)	19.31**	.000	.257

Note. Φ or *V* = Phi or Cramer's *V* effect size
p < .05, ***p* < .01, ****p* < .001.

**Appendix L: Item Analysis on Statistical Information on
Recidivism–Revised (SIR-R1)**

Exploratory analyses were conducted in order to examine if group differences were present for specific SIR scale items. Each of these items statistically predicts rates of general recidivism in federally incarcerated offenders.

Current Offence Score

A significantly larger proportion of RVOs (23.4%, $n = 25$) was convicted of a homicide-related offence than IVOs (6.7%, $n = 13$); conversely, a significantly larger proportion of IVOs (14.4%, $n = 28$) had been convicted of robbery-related offences than RVOs (5.6%, $n = 6$), ($\chi^2 (5, 302) = 25.60, p < .001$).

Age at Admission Score

No significant differences in the *age at admission score*, as assessed in the SIR scale, were present between groups, ($\chi^2 (2, 302) = 2.62, p = .271$).

Previous Incarceration Score

No significant differences in previous incarceration scores were present between groups, ($\chi^2 (3, 302) = .849, p = .838$).

Previous Revocation or Forfeiture Score

A significantly larger proportion of IVOs (53.3%, $n = 104$) had a previous revocation or forfeiture than RVOs (36.4%, $n = 39$), ($\chi^2 (1, 302) = 7.90, p = .005$).

Number of Previous Escapes Score

No significant differences in the *number of previous escapes score*, as assessed in the SIR scale, were present between violent offender subtypes., ($\chi^2 (1, 302) = 1.90, p = .169$).

Security Classification Score

No significant differences in the *security classification score*, as assessed in the SIR scale, were present between violent offender subtypes, ($\chi^2 (1, 302) = 1.02, p = .312$).

Age at First Conviction

No significant differences in *age at first conviction*, as assessed in the SIR scale, were present between groups, ($\chi^2 (3, 302) = 1.62, p = .656$).

Previous Assault Convictions Score

A significantly larger proportion of RVOs (74.8%, $n = 80$) had two or more assaults convictions than IVOs (42.6%, $n = 83$), ($\chi^2 (2, 302) = 30.47, p < .001$).

Marital Status at Admission Score

No significant differences in *marital status at admission* were present between violent offender subtypes, ($\chi^2 (1, 302) = 1.01, p = .315$).

Interval at Risk Since Last Offence Score

No significant differences in *interval at risk since last offence score* were present between violent offender subtypes, ($\chi^2 (2, 302) = 2.05, p = .359$).

Number of Dependents Score

No significant differences in the *number of dependents score* were present between violent offender subtypes, ($\chi^2 (1, 302) = .147, p = .701$).

Aggregate Sentence Score

No significant differences in the *aggregate sentence score*, as assessed by the SIR scale, were present between groups, ($\chi^2 (2, 302) = 2.50, p = .287$).

Previous Sex Offence Score

No significant differences in *previous sex offence score*, as assessed in the SIR scale, were present between groups, ($\chi^2 (1, 302) = 2.77, p = .096$).

Previous Convictions for Breaking and Entering Score

A significantly larger proportion of IVOs (39.5%, $n = 77$) had five or more breaking and entering or related convictions than RVOs (22.4%, $n = 24$), ($\chi^2 (3, 302) = 11.18, p = .011$).

Employment at Time of Arrest Score

No significant differences in *employment at time of arrest score*, as assessed by the SIR scale, were present between groups, ($\chi^2 (1, 302) = .607, p = .436$).

Appendix M: Study 1: Additional Psychometric Results Controlling for Socially Desirable Responding

BPAQ while Controlling for Socially Desirable Responding

Correlations. Pearson correlation coefficients indicated significant negative pre-program relationships between the $BIDR_{TOT_PRE}$ and $BPAQ_{TOT_PRE}$, physical aggression, and hostility subscales. The impression management ($BIDR_{IM_PRE}$) subscale of the BIDR was significantly correlated with $BPAQ_{TOT_PRE}$, physical aggression, and anger subscales pre-program. $BIDR_{TOT_POST}$ was significantly correlated with all subscales of the BPAQ except the hostility subscale. Further, the self-deception enhancement subscale of the $BIDR_{SDE_POST}$ was the only subscale to significantly correlate with all subscales of the BPAQ post-program. All significant correlations were negative, suggesting high scores on the BIDR, reflecting socially desirable responding, were associated with lower scores on the BPAQ, reflecting lower levels of aggression. See Table M1.

Table M1

Correlation of Balance Inventory of Desirable Responding with Buss–Perry Aggression Questionnaire (BPAQ) and Eysenck Impulsivity Scale (I₇) Pre- and Post-Treatment for Overall Sample with Psychometric Data

Measure	Pre-Program <i>n</i> = 48			Post-Program <i>n</i> = 48		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total
BPAQ_TOT	-.226**	-.108	-.215**	-.115	-.228*	-.193*
BPAQ: PA	-.249**	-.089	-.228**	-.131	-.224**	-.189*
BPAQ: VA	-.140	-.068	-.126	-.120	-.190*	-.169*
BPAQ: ANG	-.178*	-.049	-.147	-.094	-.219**	-.176*
BPAQ: HOS	-.147	-.151	-.185*	-.047	-.214*	-.164
I ₇ Impulsivity ^a	-.191*	-.098	-.180*	-.091	-.022	-.050

Note. BPAQ = Buss–Perry Aggression Questionnaire; PA = physical aggression; VA = verbal aggression; ANG = anger; HOS = hostility; IM = impression management, SDE = self-deception enhancement; BIDR = Balanced Inventory of Desirable Responding.

^a*n* = 56 RVOs, *n* = 111 IVOs.

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

Correlations disaggregated by violent offender subgroups revealed significant negative correlations between the BPAQ and BIDR for IVOs only. Again, all significant correlations were negative, reflecting that IVOs with higher scores on the BIDR reported lower levels of aggression. Correlations were non-significant between the BIDR and BPAQ for RVOs. See Table M2.

Table M2

Correlations of Balance Inventory of Desirable Responding (BIDR) with Buss–Perry Aggression Questionnaire (BPAQ) and Eysenck Impulsivity Scale (I₇) Pre- and Post-Treatment for Reactive and Instrumental Violent Offenders

	RVOs						IVOs					
	Pre-Program <i>n</i> = 48			Post-Program <i>n</i> = 42			Pre-Program <i>n</i> = 97			Post-Program <i>n</i> = 93		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total
BPAQ	-.157	-.058	-.133	.021	-.120	-.070	-.239*	-.119	-.238*	-.177	-.272**	-.249*
PA	-.217	-.032	-.158	.030	-.011	.018	-.250**	-.113	-.254**	-.199*	-.306**	-.274**
VA	-.184	.036	-.101	-.025	-.110	-.047	-.115	-.115	-.131	-.166	-.233*	-.232*
HOS	-.074	-.022	-.057	-.073	-.128	-.154	-.196*	-.042	-.165	-.111	-.249*	-.192
ANG	-.031	-.154	-.104	.104	-.200	-.094	-.177	-.134	-.204*	-.104	-.206*	-.181
I ₇ ^a	-.218	-.189	-.224	-.091	-.004	-.019	-.134	-.032	-.117	-.031	.004	.012

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders.

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

^a*n* = 56 RVOs, *n* = 111 IVOs.

ANOVA results. Given the significant negative associations between the BPAQ and the BIDR, mixed between–within ANOVAs were re-run with the BIDR_{TOT_POST} as a covariate. Significant main effects of treatment were maintained from pre- to post-program for the BPAQ_{TOT} ($F(1, 121) = 14.46, p < .001, \eta_p^2 = .107$).

For subscales of the BPAQ, results reflected the same pattern of results as ANOVAs, not controlling for socially desirable responding; however, relationships were generally weaker, as effect sizes ranged from $\eta_p^2 = .040$ to $.107$.

A significant main effect of treatment change for verbal aggression ($1, 126) = 5.25, p = .024, \eta_p^2 = .040$) was maintained after controlling for the BIDR_{TOT_POST}.

Interaction effects for the BPAQ remained non-significant after controlling for the BIDR_{TOT} (BPAQ_{TOT}, $F(1, 121) = .025, p = .876, \eta_p^2 = .000$). See Table M3.

Table M3

Pre- and Post-Program Treatment Change (Main Effect) on the Buss–Perry Aggression Questionnaire (BPAQ) and Eysenck Impulsivity Scale (I₇) as a Function of Violent Offender Subgroup (Interaction) (Controlling for Socially Desirable Responding (i.e., BIDR as Covariate))

BPAQ Measure	<i>df</i> Error	Main Effect: Treatment Change	η_p^2	Interaction: Change x VO Group	η_p^2
Physical	124	12.47**	.091	.120	.001
Verbal	126	5.25*	.040	.028	.000
Anger	125	8.96*	.067	.121	.001
Hostility	125	8.96*	.067	.121	.001
BPAQ _{TOT}	121	14.46***	.107	.025	.000
I ₇ Impulsivity ^a	113	12.43**	.099	.009	.000

Note. VO Group= violent offender subgroup; BPAQ = Buss–Perry Aggression Questionnaire; I₇= Eysenck Impulsivity Scale; BIDR = Balanced Inventory of Desirable Responding; *df*= degree of freedom error; η_p^2 = partial eta squared.
* $p < .05$, ** $p < .01$, *** $p < .001$.

Eysenck Impulsivity (I₇) while Controlling for the Balanced Inventory of Desirable Responding

Correlations between BIDR and I₇. Pearson correlation coefficients revealed significant negative relationships pre-program between the BIDR_{TOT_POST} and the I₇. The BIDR_{IM_POST} also significantly correlated with the I_{7_POST}. Post-program relationships between the BIDR_{TOT_POST} (as well as BIDR_{IM_POST} and BIDR_{SDE_POST}) and the I₇ were not significantly correlated. Similarly, results reported separately for violent offender subgroups demonstrated non-significant correlations between the BIDR_{TOT_POST} and I₇. See Table M1 and M2.

Violent offender subgroup differences with BIDR as covariate. Between-subject results indicated non-significant differences between RVOs and IVOs regarding self-reported impulsivity, after controlling for socially desirable responding ($F(1, 113) = .571, p = .452, \eta_p^2 = .001$).

Treatment change with BIDR as covariate. Mixed between–within ANOVAs with the I₇ were re-run with the BIDR_{TOT_POST} as a covariate. Significant main effects of treatment were maintained from pre- to post- program for the I₇, with a significant decrease in impulsivity post-program ($F(1, 113) = 12.43, p < .001, \eta_p^2 = .099$).

Violent offender subgroups x treatment change with BIDR as covariate. Interaction effects for the I₇ remained non-significant after controlling for the BIDR (I₇ total score, ($F(1, 113) = .009, p = .925, \eta_p^2 = .000$)). See Table M3.

NAS and PI while controlling for the BIDR. Pearson correlation coefficients yielded primarily non-significant relationships pre- and post-program between the BIDR (total score and subscales) and components of the NAS-PI. The only exception is a significant negative correlation between the pre-program scores of the SDE of the BIDR and the cognitive subscale of the NAS-PI pre-program ($r = -.179, p = .030$). The negative correlations suggest that high scores on the BIDR, reflecting socially desirable responding, were associated with lower scores on the cognitive subscale of the NAS (i.e., lower levels of the cognitive aspects of anger such as rumination, hostility, and suspicion). See M4 for details.

Table M4

Correlation of Balance Inventory of Desirable Responding (BIDR) with Novaco Anger Scale and Provocation Inventory (NAS-PI) Pre- and Post-Treatment for Overall Sample with Psychometric Data

Measure	Pre-Program <i>n</i> = 135			Post-Program <i>n</i> = 89		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total
Cognitive	-.037	-.179*	-.132	-.021	.052	-.019
Arousal	-.008	-.125	-.079	-.004	.114	-.009
Behavioural	.004	-.118	-.074	-.026	.132	-.036
NAS total	-.008	-.159	-.100	.017	.100	.035
PI total	-.006	-.135	-.086	-.002	.073	.013
NAS & PI	.005	-.144	-.079	.027	.086	.033

Note. NAS = Novaco Anger Scale; PI = Provocation Inventory; BIDR = Balanced Inventory of Desirable Responding.

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

Correlations by violent offender subgroup reveal significant negative correlations between SDE and all subscales of the NAS-PI pre-program for IVOs only. Post-program for IVOs, the only significant correlation was between SDE and the arousal subscale of NAS.

Again, all significant correlations pre-program for IVOs were negative, reflecting that IVOs with higher scores on the BIDR reported lower levels of anger and reactions to provocation. The significant correlation post-program was positive, indicating that higher SDE scores reflected higher arousal scores on the NAS. Correlations were non-significant between the BIDR and BPAQ for RVOs. See Table M5.

Violent offender subgroup differences with BIDR as covariate. Results on the NAS and PI with BIDR as a covariate demonstrated similar patterns of treatment change to ANOVA results, not controlling for BIDR, NAS ($F(1, 107) = 3.08, p = .082, \eta_p^2 = .028$) and PI ($F(1, 105) = .295, p = .588, \eta_p^2 = .003$).

Treatment change with BIDR as covariate. Significant main effects of treatment changes were maintained from pre- to post- program across all subscales and total scores, NAS ($F(1, 107) = 9.34, p = .003, \eta_p^2 = .080$) and PI ($F(1, 105) = 9.81, p = .002, \eta_p^2 = .085$).

Violent offender subgroups x treatment change with BIDR as covariate. Interaction effects for the NAS remained non-significant while controlling for the BIDR ($F(1, 107) = .011, p = .915, \eta_p^2 = .001$) and PI ($F(1, 105) = .026, p = .873, \eta_p^2 = .000$). Results are reported in Table M6.

Table M5

Correlation of Balance Inventory of Desirable Responding with Buss–Perry Aggression Questionnaire (BPAQ) and Eysenck Impulsivity Scale (I7) Pre- and Post-Treatment for Reactive and Instrumental Violent Offenders

	RVOs						IVOs					
	Pre-Program <i>n</i> = 41			Post-Program <i>n</i> = 30			Pre-Program <i>n</i> = 88			Post-Program <i>n</i> = 80		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total
Cog.	-.13	.01	.09	.06	-.02	-.01	-.01	-.26**	-.17	-.03	.11	-.00
Arous.	-.03	.09	.02	-.04	.04	-.03	.02	-.21*	-.13	.11	.21*	.05
Beh.	.04	.13	.06	.04	.13	.15	-.02	-.24*	-.16	-.04	.11	.02
NAS	-.06	.09	.01	.10	-.01	-.02	-.00	-.27**	-.16	.01	-.18	.05
PI	.09	.13	.12	.13	.18	.17	-.03	-.24*	-.17	-.04	.08	-.02
NAS & PI	.09	.15	.14	.14	.15	.22	-.02	-.27*	-.17	-.00	.13	.02

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NAS = Novaco Anger Scale; PI = Provocation Inventory; Cog.=Cognitive subscale; Arous.= Arousal subscale; Beh.=Behavioural subscale; BIDR = Balanced Inventory of Desirable Responding.

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

Table M6

Within Pre- or Post-Program Results on the Novaco Anger Scale (NAS) and Provocation Inventory (PI) Across Violent Offender Subgroups (While Controlling for BIDR)

Measure	<i>df</i> Error	Main Effect: Treatment Change	η_p^2	Interaction: Change x VO Group	η_p^2
NAS					
Cognitive	113	8.69*	.071	.130	.001
Arousal	112	7.34*	.062	.003	.000
Behavioural	110	8.49*	.072	.014	.000
NAS Total	107	9.34*	.080	.011	.001
PI Total	105	9.81*	.085	.026	.000
Total NAS & PI	99	11.05**	.100	.027	.000

Note. VO Group= violent offender subgroup; RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NAS = Novaco Anger Scale; PI = Provocation Inventory; BIDR = Balanced Inventory of Desirable Responding; *df*= degree of freedom error; η_p^2 = partial eta squared.
p* < .05, *p* < .01, ****p* < .001.

Reasons for Aggression (RFA) while Controlling for the Balanced Inventory of Desirable Responding (BIDR)

Correlations between BIDR and RFA. Significant correlation coefficients were only present post-program between the BIDR and RFA measure. Specifically, BIDR_TOT was significantly correlated with the goal-oriented subscale (*r* = .233, *p* = .035). In terms of subscales, BIDR_IM_POST was significantly correlated with the revenge, control, social, ego, and goal-oriented subscales post-program. See Table M7.

All correlations were positive, indicating that high scores on the BIDR, reflecting socially desirable responding, were associated with higher scores on the subscales of the RFA. Correlations by violent offender subgroup reveal significant positive correlations between BIDR_IM_POST and control subscale for RVOs (*r* = .369, *p* = .041); goal-oriented subscales for IVOs (*r* = .249, *p* = .044). See Table M8.

Table M7

Correlation of Balance Inventory of Desirable Responding (BIDR) with Reasons for Aggression (RFA) Pre- and Post-Treatment for Overall Sample with Psychometric Data

RFA Subscale	Pre-Program <i>n</i> = 112			Post-Program <i>n</i> = 89		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total
Communication	-.10	.04	-.01	.12	-.02	.03
Revenge	.01	.02	.05	.25*	-.07	.20
Control	-.11	-.07	-.09	.22*	.09	.20
Intimacy	-.09	.08	-.01	.00	-.10	-.08
Relationship	-.05	.12	.03	.09	-.04	.02
Emotional	-.03	.04	.00	.13	-.05	.06
Impairment	-.07	.13	.03	.05	-.08	-.01
Distress	-.11	-.02	-.09	.09	-.05	.01
Social	-.02	-.14	.09	.21*	.00	.14
Ego	-.04	.01	-.00	.23*	.02	.17
Goal-oriented	-.07	.01	-.02	.29*	.12	.23*
Total score	-.09	.01	-.09	.19	-.01	.11

Note. IM = Impression Management; SDE = Self Deception Enhancement; BIDR = Balance Inventory of Desirable Responding.

**p* < .05.

Table M8

Correlation of Balance Inventory of Desirable Responding (BIDR) with Reasons for Aggression (RFA) Pre and Post-treatment for Reactive and Instrumental Violent Offenders

	RVOs						IVOs					
	Pre-Program <i>n</i> = 48			Post-Program <i>n</i> = 42			Pre-Program <i>n</i> = 97			Post-Program <i>n</i> = 93		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total
Com	.11	-.02	.04	.22	.06	.16	-.18	.09	-.03	.05	-.07	-.06
Rev	.12	-.14	-.05	.24	.11	.24	-.03	.13	.13	.24	.06	.17
Ctl	-.05	-.22	-.18	.37*	.14	.32	-.12	.06	-.00	.11	.06	.10
Intim	.14	-.07	.03	-.11	-.02	-.06	-.16	.19	.01	.01	-.14	-.11
Rel	.22	.15	.21	.01	.02	.03	-.14	.16	-.03	.13	-.05	.03
Emot	.17	-.15	-.03	.18	-.09	.09	-.09	.19	.06	.08	-.02	.03
Impa	.12	.07	.11	-.01	-.14	-.07	-.13	.20	.02	.04	-.05	-.02
Dist	.07	-.33	-.19	.14	-.11	.03	-.16	.18	.01	.06	-.02	-.01
Soc	.20	.07	.12	.14	-.01	.13	-.03	.22	.11	.20	-.01	.12
Ego	.14	-.16	-.05	.22	.00	.18	-.13	.13	.03	.21	.03	.13
Goal	.05	-.19	-.11	.33	.14	.27	-.09	.14	.07	.25*	.09	.18
Total	.12	-.27	-.14	-.06	-.30	-.28	-.11	.17	.05	-.16	.00	-.09

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; IM = Impression Management; SDE = Self Deception Enhancement; BIDR = Balance Inventory of Desirable Responding.

**p* < .05.

Mixed between–within subject ANOVAs were conducted with the BIDR as a covariate in order to control for the effect of socially desirable responding.

Violent offender subgroup differences with BIDR as covariate. Between-subject analyses indicated non-significant differences between violent offender subgroups on RFA _TOT ($F(1, 72) = .520, p = .473, \eta_p^2 = .007$).

Treatment change with BIDR as covariate. Different subscales of the RFA emerged as significant for treatment change (main effects) while controlling for social desirability. Specifically, mean scores on the emotional subscale significantly decreased post-program ($F(1, 81) = 4.98, p = .028, \eta_p^2 = .058$), and the ego subscale approached significance ($F(1, 81) = 3.77, p = .056, \eta_p^2 = .044$). Whereas results not controlling for BIDR demonstrated significant treatment change within the revenge and intimacy subscales only. Main effect results for the RFA total score remained non-significant ($F(1, 72) = 1.97, p = .165, \eta_p^2 = .027$). See Table M9.

Violent offender subgroups x treatment change with BIDR as covariate. Interaction effects for the RFA remained non-significant while controlling for the BIDR (RFA _TOT, $F(1, 72) = .800, p = .165, \eta_p^2 = .011$).

Table M9

Within Pre- or Post-Program Results on the Reasons for Aggression (RFA) Across Violent Offender Subgroups (While Controlling for BIDR)

RFA Measure	<i>df</i> Error	Main Effect: Treatment Change	η_p^2	Interaction: Change x VO Group	η_p^2
Communication	81	1.28	.015	.182	.002
Revenge	81	3.23	.038	.744	.009
Control	81	2.20	.026	.144	.002
Intimacy	81	.495	.006	.503	.006
Relationship	81	2.11	.025	1.28	.017
Emotional	81	4.98*	.058	1.22	.015
Impairment	81	.515	.006	1.78	.022
Distress	81	1.49	.018	1.88	.023
Social	81	3.42	.040	1.31	.016
Ego	81	3.77 ^b	.044	1.94	.023
Goal-oriented	81	2.30	.028	.361	.004
RFA Total Score	72	1.97	.027	.800	.011

Note. VO Group= violent offender subgroup; RVOs = reactive violent offenders; IVOs = instrumental violent offenders; RFA = Reasons for Aggression; BIDR = Balanced Inventory of Desirable Responding; *df*= degree of freedom error; η_p^2 = partial eta squared.

**p* < .05, ^b*p* = .056

Aggression Efficacy (AES) While Controlling for the Balanced Inventory of Desirable Responding (BIDR)

Correlations between BIDR and AES. Correlation results between BIDR and subscales for the AES demonstrated significant negative correlation between all subscales pre-program, except street social support and prison social support. BIDR_TOT_PRE, BIDR_SDE_PRE, and BIDR_IM_PRE were significantly correlated with street righteousness and prison efficacy. BIDR_TOT_PRE and BIDR_SDE_PRE were significantly correlated with street efficacy, prison righteousness, street total, and prison total. Relationships between the measures post-program were not significantly correlated. See Table M10.

Correlations examined by each violent offender subgroup separately demonstrate different patterns of relationships by subgroup. RVOs' BIDR_SDE_PRE scores pre-program were significantly correlated with all subgroups, except prison righteousness. Further BIDR_TOT_PRE was significantly correlated with prison efficacy. For IVOs, significant negative correlations were present between BIDR_TOT_PRE and street righteousness, prison righteousness, street total, and prison total. IM was significantly correlated with street righteousness, prison righteousness, and street total pre-program. BIDR_SDE_PRE was significantly related to street righteousness for IVOs pre-program and to prison social support post-program.

All significant correlations were negative, indicating that higher scores in socially desirable responding were related to lower scores on components of the AES (i.e., street righteousness). See Table M11.

Table M10

Correlation of Balance Inventory of Desirable Responding (BIDR) with the Aggression Efficacy Scale (AES) Pre- and Post-Treatment for Overall Sample with Psychometric Data

Measure	Pre-Program <i>n</i> = 82			Post-Program <i>n</i> = 68		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total
St. Efficacy	-.19	-.30**	-.27*	-.13	.20	.02
St. Right	-.24*	-.31**	-.30**	-.11	.01	-.04
St. Soc Support	-.10	-.17	-.12	-.12	.11	-.05
Pr. Efficacy	-.22*	-.29**	-.28**	-.12	.08	-.06
Pr. Right	-.19	-.24*	-.24*	-.19	-.06	-.17
Pr. Soc Support	-.09	-.11	-.10	-.08	.20	.03
Street Total	-.20	-.30**	-.26*	-.17	.17	-.02
Prison Total	-.19	-.24*	-.23*	-.15	.12	-.07

Note. St. = Street; Pr. = Prison; IM = Impression Management; SDE = Self Deception Enhancement; BIDR = Balance Inventory of Desirable Responding.

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

Table M11

Correlations of Balance Inventory of Desirable Responding (BIDR) with Aggression Efficacy Scale (AES) Pre- and Post-Treatment for Reactive and Instrumental Violent Offenders

	RVOs						IVOs					
	Pre-Program <i>n</i> = 16			Post-Program <i>n</i> = 16			Pre-Program <i>n</i> = 64			Post-Program <i>n</i> = 54		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total
St. Eff	-.16	-.58**	-.40	-.13	.21	-.02	-.20	-.21	-.24	-.19	.16	-.03
St. Rig	-.14	-.55*	-.28	-.23	.14	-.03	-.25*	-.25*	-.30*	-.07	-.05	-.04
St. Soc	.11	-.45*	-.11	-.04	.17	.04	-.18	-.07	-.15	-.14	.12	-.06
Pr. Eff	-.34	-.62**	-.50*	-.32	.04	-.27	-.18	-.19	-.23	-.15	.05	-.09
Pr. Rig	.08	-.42	-.13	-.28	-.06	-.22	-.27*	-.22	-.31*	-.22	-.09	-.20
Pr. Soc	-.06	-.49*	-.26	-.24	-.09	-.30	-.11	-.01	-.07	-.0	-.28*	.09
St. Tot	-.00	-.52*	-.21	-.21	.21	-.07	-.26*	-.23	-.28*	-.20	.14	-.06
Pr. Tot	-.10	-.50*	-.28	-.44	-.05	-.42	-.24	-.18	-.26*	-.15	.12	-.07

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; St. = Street; Pr. = Prison; Eff = efficacy; Rig = righteousness; Soc = social support; IM = Impression Management; SDE = Self Deception Enhancement; BIDR = Balance Inventory of Desirable Responding.

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

The series of mixed between–within subject ANOVAs were conducted with the BIDR as a covariate in order to control for the effect of socially desirable responding.

Violent offender subgroup differences with BIDR as covariate. Between-subject results, controlling for socially desirable responding, showed non-significant differences between RVOs and IVOs regarding results on the street scale ($F(1, 68) = .240, p = .626, \eta_p^2 = .004$) and prison scale ($F(1, 69) = .158, p = .692, \eta_p^2 = .002$). Also, non-significant differences were reflected in each of the subscales for both prison and street scales. See Table M12.

Treatment change with BIDR as covariate. Regarding the main effects for treatment change, fewer significant relationships emerged relative to results, not controlling for BIDR. Specifically, only the street scale ($F(1, 55) = 5.27, p = .026, \eta_p^2 = .087$) and the subscale of street righteousness ($F(1, 70) = 6.01, p = .017, \eta_p^2 = .079$) demonstrated a significant main effect.

Violent offender subgroups x treatment change with BIDR as covariate. Results regarding the interaction effects for all AES subscales remained non-significant after including the BIDR_TOT_POST as a covariate to control for socially desirable responding (street: $F(1, 55) = .167, p = .684, \eta_p^2 = .003$; prison: $F(1, 53) = .861, p = .358, \eta_p^2 = .016$). See Table M12.

Table M12

Within Pre -or Post-Program Results on the Aggression Efficacy Scale (AES) Across Violent Offender Subgroups (While Controlling for BIDR)

AES Measure	<i>df</i> Error	Main Effect: Treatment Change	η_p^2	Interaction: Change x VO Group	η_p^2
Street Subscale					
Efficacy	68	2.08	.030	2.76	.039
Righteousness	70	6.01*	.079	.012	.000
Social support	67	1.73	.025	.368	.005
Street total	55	5.27*	.087	.167	.003
Prison Subscale					
Efficacy	69	.969	.014	2.05	.029
Righteousness	70	.937	.013	1.21	.017
Social support	68	.371	.005	.003	.000
Prison total	53	.780	.015	.861	.016

Note. VO = violent offender; AES = Aggression Efficacy Scale.
**p* < .05.

Table M13

Correlation of Balance Inventory of Desirable Responding (BIDR) with University of Rhode Island Change Assessment Scale (URICA) Pre- and Post-Treatment for Overall Sample with Psychometric Data

Measure	Pre-Program <i>n</i> = 87			Post-Program <i>n</i> = 89		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total
Pre-contemplation	.093	.195	.182	.182	-.129	-.061
Contemplation	-.042	-.166	-.099	-.099	.168	.212
Action	.059	-.060	.022	.022	.021	.060
Maintenance	.103	-.027	.079	.079	-.033	.172
URICA Total	.095	.000	.097	.097	.072	.190

Note. IM = Impression Management; SDE = Self Deception Enhancement; BIDR = Balance Inventory of Desirable Responding.

Table M14

Correlation of Balance Inventory of Desirable Responding (BIDR) with University of Rhode Island Change Assessment Scale (URICA) Pre- and Post-Treatment for Reactive and Instrumental Violent Offenders

	RVOs						IVOs					
	Pre-Program <i>n</i> = 21			Post-Program <i>n</i> = 18			Pre-Program <i>n</i> = 61			Post-Program <i>n</i> = 46		
	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total	IM	SDE	BIDR Total
PC	.08	.167	.22	.09	-.07	.09	.10	.21	.17	.02	-.14	-.07
C	-.21	-.21	-.22	-.11	-.09	-.26	.06	-.13	-.00	.33*	-.26*	.38**
A	-.07	-.09	-.04	.08	-.01	-.03	.13	-.01	.11	.07	.01	.04
M	.14	.14	.27	.42	.01	.34	.10	-.10	.02	.13	-.07	.10
TOT	.00	.40	.12	.27	-.05	.12	.16	-.01	.13	.15	.11	.19

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; PC = pre-contemplation; C = contemplation; A = action; M = maintenance; TOT = URICA total.

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

Appendix N: Informed Consent and Debriefing Form

**An Assessment of Treatment Readiness and Executive
Cognitive Functioning and their roles in the Heterogeneity
of Violent Offenders**

You are invited to participate in a study about the way you process information, solve problems and how that relates to your offending behaviour. Please read this form carefully and feel free to ask questions you might have. The purpose of this consent form is to describe the study to you and obtain your permission to take part in it.

Student Researcher: Dena Derkzen

Email: dderkzen@connect.carleton.ca

Department of Psychology, Carleton University

Faculty Supervisor: Dr. Ralph Serin

Email: ralph_serin@carleton.ca

Purpose and Procedure: The purpose of this study is to understand how the way someone processes information or solves problems is related to their criminal behaviour. We would like to give you some questionnaires and a computer based tests that will require about 2 hours of your time.

Potential Risks: You should not experience any negative consequences by participating in this study.

Potential Benefits: By taking part in this study, you may help increase our knowledge about the causes or related factors of violence and aggression. More specifically, your participation may increase our understanding of the relationship between how one thinks and processes information and violent behaviour. This may ultimately help to improve the development and quality of community and institutional treatment programs.

Right to Withdraw: Your participation in this project is entirely voluntary and you are free to withdraw or choose not to complete these questionnaires at any time. Deciding to withdraw or choosing not to participate in the study will have no negative consequences and will have no affect on your treatment by the staff at your correctional institution. If you withdraw from the study, any information that you have contributed will be destroyed.

Confidentiality: Your answers to the questions are private; you are asked to NOT put your name on any other identifying information on the questionnaire. You will be assigned a research number. Therefore, nobody, including the researcher, will know how you answered any questions. Although every effort will be made to ensure confidentiality and anonymity, because the questionnaire may be complete in a classroom setting this cannot be assured. During recruitment you may be identified as a participant if you agree to volunteer in this study.

The information gathered from this study may be presented in journal articles and conference presentations, however; all of the responses will be reported in a summarized form, which means that you or your responses CAN NOT be identified. A summary of the results will be provided to your unit and/or institutional upon completion of this project.

Storage of Data: If you chose to participate, your responses will be held confidential and only the researchers will have access to the completed questionnaire and computer files, which will be securely stored by the research supervisor at Carleton University. Any data collected from this study including the questionnaire, computer tasks and this form will be kept for 6 years before being destroyed.

Questions: If you have any questions concerning the study, please feel free to ask at any point; you are also free to contact the researchers at the number provided if you have any questions at a later time.

This project was approved by Carleton University, Psychology Research Ethics Board (REB) on November 25th, 2011. If you have questions or concerns regarding the ethical nature of this research or how you were treated during this study, you may contact Dr. Monique Sénéchal, 613-520-2600, ext. 1155, monique_senechal@carleton.ca, Chair, Carleton University Research Ethics Committee for Psychological Research). If you have any other concerns about this study, you may also contact Dr. Anne Bowker (Chair, Department of Psychology, 613-520-2600, ext. 8218). You may contact the researcher at the address below if you would like the results of the study.

Please take a moment to decide if you want to participate.

Consent to Participate:

Giving your consent to participate in this study means that you have agreed to complete the interview and questionnaire for the purposes described above. In addition, your consent also permits us to examine information collected by the Correctional Service of Canada in the Offender Management System regarding assessments completed at intake, as well as program information.

I have read and understood the description provided above. I have been provided with an opportunity to ask questions and my questions have been answered satisfactorily. I fully understand the purpose and objectives of the study as well as my rights in terms of voluntary participation, withdrawal, and confidentiality. By providing my signature and FPS below, indicates that I have read the above, and that I agree to take part in this research. I consent to participate in the study described above, understanding that I may withdraw this consent at any time. A copy of this consent form has been given to me for my records.

Date **Participant Name (PRINT)** **FPS Number** **Participant Signature**

Date **Researcher Name (PRINT)** **Researcher Signature**

Debriefing form

What are we trying to learn with this research?

We know that people process information or solve problems in different ways. We also know that the way someone processes information is related to their behaviour. We are interested in know about how processing certain types of information is related to violent or aggressive behaviour.

Why is this important to social scientist or to the general public?

It is important that researchers have a better understanding of cognitive process related to violent and aggressive behaviour. Having a better understanding of processing information related to violent behaviour can help inform correctional treatment and preventions programs.

What do we expect to find?

We expect that the way one processes information may be related to their aggressive behaviour. People who have a history of aggressive behaviour may process information differently than those who do not have a history. Additionally, someone who has history of impulsive aggressive behaviour may process information different than other types of aggression.

What if I have questions later?

If you have any questions regarding the study in terms of the research you can contact Dr. Ralph Serin, at 613-520-2600, ext. 1557, or by email Ralph_serin@carleton.ca. Should you have any ethical concerns about this study, please contact Dr. Monique Sénéchal, 613-520-2600, ext. 1155, monique_senechal@carleton.ca, Chair, Carleton University Research Ethics Committee for Psychological Research). If you have any other concerns about this study, you may also contact Dr. Anne Bowker (Chair, Department of Psychology, 613-520-2600, ext. 8218).

Is there anything that I can do if I found this study to be emotionally draining?

If thinking about the questions that were asked in this study has made you feel upset or sad, you may wish to talk with someone. Please use the regular channels available to you at your institution in order to access mental health care from a counsellor, psychologist or primary work if you are feeling sad or upset as a result of participating in the study.

THANK YOU FOR YOUR PARTICIPATION!

Appendix O: Study 3: Additional Demographic and Sentence Characteristics for Violent and Nonviolent Offenders

Demographic Characteristics between Violent and Nonviolent Offenders

A significantly greater proportion of violent offenders were Aboriginal than nonviolent offenders (26.6%, $n = 37$), and a significantly greater proportion of nonviolent offenders were classified within the “other” minority (30.8%, $n = 8$) group. See Table O1.

Although a slightly larger percentage of nonviolent offenders were married, no significant differences were present with respect to marital status between violent and nonviolent offenders.

Age. The average age of offenders at testing was 34.3 ($SD = 10.1$) years of age. Violent offenders (34.6 years, $SD = 10.1$) were slightly older on average than nonviolent offenders (32.6 years, $SD = 12.6$); however, this difference was not significant.

Static risk. In terms of the overall static risk at intake, violent offenders as a group were assessed as higher risk (61.2%, $n = 85$) relative to NVOs (26.9%, $n = 7$). A significantly greater proportion of nonviolent offenders was assessed as low risk (30.8%, $n = 8$) than violent offenders (2.2%, $n = 3$), Table O2.

Overall Dynamic risk/criminogenic need. At intake, the majority of violent offenders were assessed as high in dynamic risk (77.0%, $n = 107$). A significantly smaller proportion of NVOs were determined to be at high risk (42.3%, $n = 11$), as the distribution was more evenly spread across the three dynamic risk categories for NVOs.

Reintegration potential. A significantly greater number of violent offenders were assessed as having low reintegration potential (48.9%, $n = 64$) at intake relative to NVOs (8%, $n = 2$), whereas the majority of NVOs was determined to demonstrate moderate levels (56.0%, $n = 14$) of reintegration potential.

Table O1

Demographic Characteristics of Violent Offender Subtypes and Nonviolent Offenders

	Violent Index or History <i>n</i> = 139	Nonviolent Index and History <i>n</i> = 26	Overall <i>n</i> = 165	χ^2 or <i>F</i>	<i>p</i>	V or η_p^2
	% (<i>n</i>) or <i>M</i> (<i>SD</i>)	% (<i>n</i>) or <i>M</i> (<i>SD</i>)	% (<i>n</i>) or <i>M</i> (<i>SD</i>)			
Ethnicity						
Caucasian	45.3 (63)	40.7 (11)	44.6 (74)	13.09*	.004	.282
Aboriginal	26.6 (37)	3.8 (1)	23.0 (38)			
Black	18.7 (26)	23.1 (6)	19.4 (32)			
Other ^a	9.4 (13)	30.8 (8)	12.7 (21)			
Marital Status						
Single, widowed	46.0 (64)	42.3 (11)	45.5 (75)	1.26	.534	--
Married/common-law	44.6 (62)	53.8 (14)	46.1 (76)			
Divorced/separated	9.4 (13)	3.8 (1)	8.5 (14)			
Age at Testing	34.6 (10.1)	32.6 (12.6)	34.3 (10.1)	.840	.361	--
Aggregate Sentence Length (Years) ^a	5.73 (4.87)	5.24 (3.37)	5.61 (4.58)	4.97	.631	--

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs = nonviolent offenders; V = Cramer's V; η_p^2 = partial eta-squared.

^a = visible minorities, including South Asian, Southeast Asian, Korean, Hispanic, Latin American, and those unable to specify.

^a*n* = 146; offenders serving a life or indeterminate sentence were excluded from the sentence length calculation.

**p* < .05.

Table O2.

Static Risk, Dynamic Risk, Reintegration Potential, and Motivation Level at Intake for Violent Offenders and Non-violent Offenders

OIA Variable	Violent Index or History <i>n</i> = 139	Non-violent Index and History <i>n</i> = 26	Overall <i>n</i> = 165	χ^2	<i>p</i>	V
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
Static Risk						
Low	2.2 (3)	30.8 (8)	6.7 (11)	31.68***	.000	.438
Medium	36.7 (51)	42.3 (11)	37.6 (62)			
High	61.2 (85)	26.9 (7)	55.8 (92)			
Dynamic Risk						
Low	2.9 (4)	19.2 (5)	5.5 (9)	17.61***	.000	.327
Medium	20.1 (28)	38.5 (10)	23.0 (38)			
High	77.0 (107)	42.3 (11)	71.5 (118)			
Reintegration Potential^a						
Low	48.9 (64)	8.0 (2)	42.3 (66)	15.67***	.000	.317
Medium	36.6 (48)	56.0 (14)	39.7 (62)			
High	14.5 (19)	36.0 (9)	17.9 (28)			
Motivation Level^b						
Low	8.4 (11)	--	7.0 (11)	--	--	--
Medium	88.5 (116)	84.0 (22)	87.8 (137)			
High	3.1 (4)	16.0 (4)	5.1 (8)			

Note. V = Cramer's V.

^a *n* = 156.

^b *n* = 156, 2 (33.3%) cells have expected counts less than 5, therefore Chi square tests were not reported

Motivation level. The vast majority of offenders demonstrated medium levels of motivation for treatment regardless of offence subtype at intake (87.8%, *n* = 137).

However, a greater proportion of NVOs (16%, *n* = 4) displayed high motivation levels at intake relative to violent offenders (3.1%, *n* = 4). Given the limited expected cell counts, chi-square tests of significance were not conducted.

Dynamic factors/criminogenic needs domains. Each of the seven domains was assessed to identify the overall levels of endorsement and to determine if violent offenders differed from NVOs. See Table O3 and Table O4.

Personal/emotional domain. Within this domain, the majority of the sample fell into one of two categories: “some need for improvement” (40.6%, $n = 67$) and “considerable need for improvement” (44.5%, $n = 73$). A greater proportion of violent offenders were assessed as having “considerable need” within this domain (50.7%, $n = 70$) relative to NVOs (11.5%, $n = 3$).

Substance abuse domain. Substance abuse was an issue for a relatively large proportion of the overall sample, with “considerable need” in 39.0% ($n = 64$) and “some need” in 25.6% ($n = 42$) in this domain. A greater proportion of violent offenders had “considerable need for improvement” within this domain (42.8%, $n = 59$) relative to NVOs (19.2%, $n = 5$).

Criminal attitude domain. The endorsement of criminal attitudes was an area of “considerable need” for 43.9% ($n = 72$) of the overall sample. No significant differences emerged between violent offenders and NVOs with respect to group differences in criminal attitudes (Table O3).

Criminal associates domain. The presence of criminal associates was an area assessed as “some need” for 51.2% ($n = 84$) or “considerable need” for 31.7% ($n = 52$) of the entire sample. A significantly greater proportion of violent offenders demonstrated “considerable need” in this domain (35.5%, $n = 49$) relative to NVOs (11.5%, $n = 3$).

Community functioning domain. Overall, 67.7% ($n = 111$) of the sample demonstrated characteristics associated with positive outcomes (no immediate needs for improvement) in the community. Thirty-two percent (32.3%, $n = 53$) of participants were determined to have “some need for improvement” or “considerable need for improvement.” Violent offenders demonstrated a significantly greater need within this domain (36.2%, $n = 50$) and were assessed as having “some need for improvement” or “considerable need for improvement” relative to 11.5% ($n = 3$) of NVOs. (Table O4).

Employment and Education domain. Limited education or employment was an identified as areas of concern for over half of the sample (“some need”, 57.3% , $n = 94$). A significantly greater proportion of non-violent offenders demonstrated “no immediate need ” or “factor is an asset” (57.7%, $n = 15$) relative to violent offenders (29.7%, $n = 41$).

Marital/ Family domain. Issues related to the marital and family domain were not a major concern for 67.1% ($n = 110$) of the sample. Further, a significantly greater proportion of non-violent offenders were assessed as “no immediate need ” or “factor is an asset” (92.3%, $n = 24$) relative to violent offenders (62.3%, $n = 86$).

Table O3.

Criminogenic Need Domains for Violence Offender Subtypes and Nonviolent Offenders

Dynamic Factor Domains	Violent Index of History <i>n</i> = 138	Nonviolent Index and History <i>n</i> = 26	Overall Sample <i>n</i> = 165	χ^2	<i>p</i>	Φ or <i>V</i>
Personal Emotional Domain						
Factor is an asset/No immediate need for improvement	9.4 (13)	42.3 (11)	14.6 (24)	23.93***	.000	.382
Some need for improvement	38.9 (55)	46.2 (12)	40.9 (67)			
Considerable need for improvement	50.7 (70)	11.5 (3)	44.5 (73)			
Substance Abuse Domain						
No immediate need for improvement	31.2 (43)	57.7 (15)	35.4 (58)	7.54*	.023	.214
Some need for improvement	26.1 (36)	23.1 (6)	25.6 (42)			
Considerable need for improvement	42.8 (59)	19.2 (5)	39.0 (64)			
Criminal Attitudes Domain						
Factor is an asset/No immediate need for improvement	18.1 (25)	19.2 (5)	18.3 (30)	1.19	.551	--
Some need for improvement	36.2 (50)	46.2 (12)	37.2 (62)			
Considerable need for improvement	45.7 (63)	34.6 (9)	43.9 (72)			

Note. Φ or *V* = Phi or Cramer's *V* effect size
p < .05, ***p* < .01, ****p* < .001.

Table O4.

Criminogenic Need Domains for Violence Offender Subtypes and Nonviolent Offenders (cont'd)

	Violent Index of History <i>n</i> = 138	Nonviolent Index and History <i>n</i> = 26	Overall Sample <i>n</i> = 165			
Select Indicators from Domains	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)	χ^2	<i>p</i>	Φ or V
Criminal Associates Domain						
Factor is an asset/No immediate need for improvement	16.7 (23)	19.2 (5)	17.1 (28)	6.00*	.050	.191
Some need for improvement	47.8 (66)	69.2 (18)	51.2 (84)			
Considerable need for improvement	35.5 (49)	11.5 (3)	31.7 (52)			
Community Function Domain						
Factor is an asset/No immediate need for improvement	63.8 (88)	88.5 (23)	67.7 (111)	6.10*	.014	.193
Considerable or Some need for improvement	36.2 (50)	11.5 (3)	32.3 (53)			
Employment and Education Domain						
Factor is an asset/No immediate need for improvement	29.7 (41)	57.7 (15)	34.1 (56)	8.87*	.012	.233
Some need for improvement	60.1 (83)	42.3 (11)	57.3 (94)			
Considerable need for improvement	10.1 (14)	0 (0)	8.5 (14)			
Marital Family Domain						
Factor is an asset/No immediate need for improvement	62.3 (86)	92.3 (24)	67.1 (110)	8.95*	.011	.234
Some need for improvement	23.9 (33)	3.8 (1)	20.7 (34)			
Considerable need for improvement	13.8 (19)	3.8 (1)	12.2 (20)			

Note. Φ or V = Phi or Cramer's V effect size

**p* < .05

Table O5.

Statistical Information on Recidivism – Revised 1 (SIR-RI) for Reactive and Instrumental Violent Offenders

SIR-RI Group	Violent Index or History <i>n</i> = 107	Non-violent Index and History <i>n</i> = 24	Overall <i>n</i> = 131	χ^2	<i>p</i>	Φ or V
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
Very poor	28.0 (30)	4.2 (1)	23.7 (31)	6.84	.077	.228
Poor	14.0 (15)	12.5 (3)	13.7 (18)			
Fair	21.5 (23)	33.3 (8)	23.7 (31)			
Very good /Good	36.4 (39)	50.0 (12)	38.6 (51)			

Table O6.

Computerized Assessment of Substance Abuse (CASA) for Violent and Non-violent Offenders

Substance Use Measure	Violent History <i>n</i> = 135	Non- violent History <i>n</i> = 22	Overall <i>n</i> = 157	χ^2	<i>p</i>	Φ or V
	% (<i>n</i>)	% (<i>n</i>)	% (<i>n</i>)			
PRD Scale^a						
None/low	64.4 (87)	86.4 (19)	67.5 (106)	--	--	--
Some	14.8 (20)	9.1 (2)	14.0 (22)			
Quite a lot/a lot	20.7 (28)	4.5 (1)	18.5 (29)			
ADS^b						
None/low	87.4 (118)	100 (22)	89.2 (140)	3.24	.072	--
Intermediate / substantial / severe	12.6 (17)	--	10.8 (17)			
DAST						
None/low	62.2 (84)	86.4 (19)	65.6 (103)	3.60	.058	.151
Intermediate / substantial / severe	37.8 (51)	13.6 (3)	35.0 (55)			

Note. RVOs = reactive violent offenders; IVOs = instrumental violent offenders; NVOs =nonviolent offenders; Φ or V = Phi or Cramer’s V effect size.

^aChi square tests were not conducted given limited cell sizes

^b1 cell (25%) have expected count less than 5