

SOMATIC MARKERS IN PSYCHOPATH SURVIVORS

Somatic marker functioning during recovery from a romantic relationship with a psychopathic abuser: An examination of mental health, resilience, and post-traumatic growth
in social decision making

by

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Abstract

Damasio's (1994) Somatic Marker Hypothesis (SMH) proposes a system in the brain that creates somatic markers, a mechanism which assists in integrating emotional information to aid in everyday functioning, including social decision making. Survivors of domestic abuse commonly experience mental health impairments that are associated with abnormalities in the somatic marker circuitry. These abnormalities are made apparent in deficits in facial affect processing and social impairments that contribute to the maintenance of these disorders. Whiffen and MacIntosh (2005) propose that the strategies survivors use to cope with distress can perpetuate and extend impairments to mental health by diminishing their ability to maintain supportive relationships. However, some survivors demonstrate growth or resilience despite their experiences, and utilize social support relatively well. The purpose of my research is to provide a conceptual investigation of the neuropsychological underpinnings of Whiffen and MacIntosh's pathway by utilizing Damasio's SMH. I examine survivors who identified as having a prior romantic relationship with a psychopathic abuser. Survivors of psychopathic abusers have received limited attention from researchers, but suggestions have been made regarding profound declines to emotional and interpersonal functioning (Pagliaro, 2009). Two studies were conducted to examine the association between abusers' ascribed level of psychopathic traits, and survivors' abuse experiences and recovery outcomes (e.g., mental health impairments, resilience). Participants ($N = 105$ and $N = 392$) were recruited from domestic abuse survivor support websites and completed a series of close and open-ended questionnaires, the Iowa Gambling Task (IGT), and a facial affect recognition task. A series of correlation and regression analyses revealed that abusers' ascribed levels of

psychopathic traits were predicted by survivors' experiences of abuse that was frequent, physically harmful, and versatile (i.e., physical, financial, sexual, and property abuse), and survivors diminished positive emotional experiences and elevated post-traumatic stress symptoms (Study 1a and 2). While frequent and physically harmful abuse were predictive of abusers' ascribed Factor 1 and Factor 2 psychopathy scores, survivors' experiences of anxiety was also predictive of their ratings of abusers' ascribed Factor 1 psychopathy scores (Study 1a). Thematic and linguistic analysis ($n = 7$) suggests that psychopathic traits can enhance abusers' ability to use various linguistic tactics to gaslight their victims; a form of emotional abuse that severely impact victims' mental health and interpersonal relationships (Study 1b). No evidence was found for the role of somatic markers in Whiffen and MacIntosh's feedback pathway: mixed ANOVAs revealed no differences on task performance in relation to survivors' recovery outcomes (Study 2). Regression analyses revealed that survivors' mental health impairments were predicted by perceiving the abusive relationship to have a greater negative impact on mental health, more recent contact with the abuser, and a greater reception of social support (Study 2). In terms of survivors' positive outcomes, resilience was predicted by a higher reception of social support and lower levels of mental health impairments (Study 2). Post-traumatic growth was predicted by being in the abusive relationship for a longer duration, less recent contact with the abuser, higher levels of resilience and received social support, and lower levels of perceived emotional support and mental health impairments (Study 2). Discussion centers on the theoretical and practical implications of Whiffen and MacIntosh's feedback pathway in the context of recovery from psychopathic abusers during romantic relationships.

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Dedication

I dedicate this dissertation to my dad, Randy Humeny.

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List of Abbreviations

ANOVA	Analysis of Variance
ASI-R	Anxiety Sensitivity Scale-Revised
BAI	Beck Anxiety Inventory
BDI	Beck Depression Inventory
BMI	Body Mass Index
DSM	Diagnostic and Statistical Manual
EEG	Electroencephalogram
ERP	Event-Related Potentials
ERS	Ego Resilience Scale
fMRI	Functional Magnetic Resonance Imaging
IES-R	Impact of Events Scale-Revised
IGT	Iowa Gambling Task
LSRP	Levenson's Self-Report Psychopathy Scale
MSRP-L	Modified Self-Report Psychopathy Scale Long
MSRP-S	Self-Report Psychopathy Scale Short
OFC	Orbitofrontal Prefrontal Cortex
PCL-R	Psychopathy Checklist- Revised
PCL-SV	Psychopathy Checklist- Screening Version
PPI	Psychopathic Personality Inventory
PSS	Perceived Social Support
PTGI	Post-Traumatic Growth Inventory
PTSD	Post-Traumatic Stress Disorder
RMH	Response Modulation Hypothesis
RSS	Received Social Support
SCL-90	Symptom Checklist-90
SCR	Skin Conductance Response
SMH	Somatic Marker Hypothesis
SRP-SF	Self-Report Psychopathy Scale Short-Form
VIM	Violence Inhibition Mechanism
VMPC	Ventromedial Prefrontal Cortex
VSS	Victimization Screening Survey

Somatic marker functioning during recovery from a romantic relationship with a psychopathic abuser: An examination of mental health, resilience, and post-traumatic growth in social decision making

Victimization occurs when an individual is unwillingly taken advantage of by another person's intentional or negligent actions. This leads to a situation that the victimized individual: 1) cannot control, 2) does not expect, and 3) perceives as extremely negative (Carlson & Dalenberg, 2000; McCann, Sakheim, & Abrahamson, 1998). Victimization can range from, but is not limited to: physical abuse, verbal/emotional abuse (e.g., bullying, manipulation, and degradation), conning, coercion (e.g., intimidation, control of finances, social isolation, and limited mobility), lying and deceit, sexual assault, and theft (e.g., property or financial). These "traumatic events overwhelm the ordinary systems of care that give people a sense of control, connection, and meaning" (Herman, 1997, p. 33). Such events disrupt victims' positive image of themselves, their view of a meaningful and just world, and feelings of personal invulnerability (Anderson, 2010).

Evidence indicates that various forms of victimization lead to impairments in emotional functioning, which are often presented via symptoms of post-traumatic stress disorder (PTSD)¹, depression², mood lability, and increased anxiety (Anderson, 2010;

¹ The Diagnostic and Statistical Manual-five (DSM-5; 2013) describes symptoms of post-traumatic stress disorders as: a) exposure to a traumatic event that causes a threat to physical integrity of self or others where they respond with intense fear, helplessness, or horror, b) persistent re-experiencing of the event (e.g., intrusive thoughts or dreams, flashbacks, sense of reliving the experience), c) physiological issues (e.g., hyper vigilance, difficulties falling or staying asleep, problems concentrating, anger problems, exaggerated startle response), and d) persistent avoidance and emotional numbing (e.g., avoiding stimuli, people, or places associated with the trauma; memory problems especially in recalling parts of the trauma, decreased capacity in emotional experience, and expectation that one's future is constrained, feelings of detachment from others; American Psychiatric Association, 2013, p. 271).

² The DSM-5(2013) describes depression as: a sad mood nearly every day, diminished interest and pleasure in activities previously thought to be enjoyable, insomnia or hypersomnia, restlessness or feeling slowed

Coker, Weston, Creson, Justice, & Blakeney, 2005; Whiffen & MacIntosh, 2005). Such impairments are linked to anomalies in emotion processing, including a greater emotional reactivity to negative stressors (Litz, Orsillo, & Weathers, 2000), misattribution of neutral facial expressions as negative, decreased experience of positive emotions (Naranjo et al., 2011), and an inability to recruit appropriate emotional signals to aid in decision making (Must et al., 2006). Consequently, these impairments are thought to lead to interpersonal difficulties and altered perceptions of relationships (Anderson, 2010; Carlson & Dalenberg, 2000; Hanson et al., 2010; Whiffen & MacIntosh, 2005).

In the case of victimization due to child abuse, Whiffen and MacIntosh (2005) propose a feedback pathway in which survivors³ attempt to cope with emotional distress in a manner that perpetuates and extends impairments in emotional functioning (see Figure 1). Survivors often either isolate themselves from other people, or maintain an emotional distance from others. As a result, survivors are hindered at forming close, trusting relationships that may offer them a source of support and aid in their recovery. Survivors develop further distress as they become dissatisfied, and may even begin to experience stress from social interactions (or lack thereof; Hanson et al., 2010). Due to exacerbated emotional distress, revictimization, suicide ideation, self- medicating (e.g., through substance use), and ongoing mental health impairments become common outcomes for survivors (Anderson, 2010; Campbell, 2002; Whiffen & MacIntosh, 2005).

down, feelings of worthlessness, inappropriate guilt, indecisiveness, poor concentration, and suicide ideation (American Psychiatric Association, 2013, p. 160).

³ The term survivor will be used to indicate individuals who are in recovery from trauma, whereas the term victim will be used to delineate those who are currently being victimized (e.g., statements such as abusers caused a great deal of physical harm to their victims). This distinction is important as referring to those in recovery from abuse as a survivor recognizes their agency, individual capacity, and social acknowledgement of a difficult situation, whereas the label victim for those in recovery can promote the individual as inferior, weak, and permanently in a state of helplessness because of the trauma (Leisenring, 2006; Maercker & Müller, 2004).

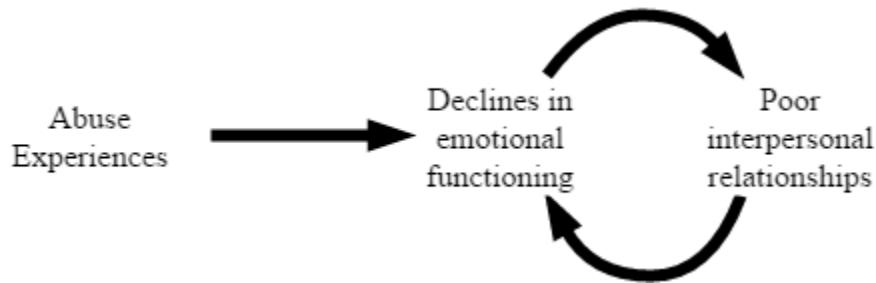


Figure 1. Depiction of Whiffen and MacIntosh's (2005) feedback pathway between emotional and interpersonal functioning in abuse survivors

Whiffen and MacIntosh (2005) state that the pathways between interpersonal relations and impairments in emotional functioning require closer investigation. To address this issue, I investigated the neuropsychological underpinnings of Whiffen and MacIntosh's feedback hypothesis.

I utilized Damasio's (1994) somatic marker hypothesis (SMH) as a theoretical framework for understanding the effect of interpersonal victimization. Damasio (1994) proposes that there is a somatic marker system in the brain that is generally associated with the frontal lobe and amygdala. The SMH proposes that damage to the somatic marker system hinders the ability to effectively utilize emotional information (e.g., accurately decode emotional stimuli) to aid in everyday functioning. Theoretically, damage to the somatic marker system underlies impairments in social decision making (Damasio, 1994). The SMH may provide a means to understand Whiffen and MacIntosh's proposed pathway between recovery, and emotional and interpersonal functioning among survivors of interpersonal abuse.

Domestic abuse can include various types of abuse (e.g., physical, emotional) that is often perpetrated over an extended period of time by a romantic partner in whom the

survivor is emotionally invested. Survivors often experience adverse psychological reactions that can often reach clinical levels of mental health problems. These reactions commonly include depression, anxiety, and PTSD, which are associated with abnormalities in the brain areas included in the somatic marker system. These abnormalities are made apparent through deficits in interpersonal functioning, which contribute to the maintenance of these disorders.

On the other hand, some survivors of domestic abuse experience growth and resilience, the ability to cope with adversity, while maintaining relatively stable levels of psychological and physical functioning (Arce et al., 2009; Mancini & Bonanno, 2006). Individuals who demonstrate higher rates of resilience and growth following trauma have a bias toward positive emotional processing and experiences, which is thought to aid in the development of resources to function effectively in everyday life, including the ability to maintain supportive relationships (Cohn & Fredrickson, 2008; Levine et al., 2009; Linley & Joseph, 2004; Tugade & Fredrickson, 2004).

I used empirical methods to examine whether there is a link between the somatic marker process and recovery outcomes (e.g., mental health impairments, growth) in survivors of domestic abuse. Specifically, I used a sample of survivors who had been victimized during a romantic relationship by a psychopathic partner. There are a number of reasons for examining the specific victimization by abusers high in psychopathic traits, as opposed to examining the more general effect of abusive romantic relationships.

Research has highlighted the high rates of psychopathology in domestic abusers (e.g., Ali & Chamorro-Premuzic, 2009; Edwards et al., 2003; Huss & Langhinrichsen-Rohling, 2006), yet there is limited research that addresses the effects that abusers'

psychopathology has on survivors' abuse experiences and their recovery. Specifically, survivors of psychopathic abusers have largely been ignored in research. This is despite the acknowledgement by researchers that abusers can be categorized into subgroups, including those based on levels of psychopathy, which can be assessed in both clinical (i.e., a clinical diagnosis of the personality disorder) and subclinical levels (i.e., a continuum of psychopathic traits; Fowler & Westen, 2011; Holtzworth-Munroe & Stuart, 1994). Research estimates that 15- 30% of domestic abusers meet the criteria for psychopathy (Huss & Langhinrichsen-Rohling, 2000), and that psychopathy is thought to be one of the most powerful predictors of continued violence (Huss & Langhinrichsen-Rohling, 2006).

Cleckley (1972) cites a list of traits associated with psychopathy that formed the basis of the Psychopathy Checklist- Revised (PCL-R). The PCL-R was developed by Hare and colleagues to provide a clinical assessment tool for psychopathy (Hare, 1991, 2003; Vitacco, Neumann, & Jackson, 2005). Psychopathy can be split into four facets (i.e., are antisocial, interpersonal, affective, and lifestyle) according to a categorization of traits underlying the disorder (Hill, Neumann, & Rogers, 2004; Mokros et al., 2011; Williams, Paulhus, & Hare, 2007).

In making a clinical diagnosis of psychopathy, criminal behaviours (categorized under the antisocial facet) can be viewed as a critical component as the majority of studies that assess clinical levels of psychopathy examines samples of incarcerated offenders, or those with a history of contact with the criminal justice system. These criminal behaviours include early behavioural problems, juvenile delinquency, poor behavioural control, criminal versatility, and revocation of conditional release (Hare,

2003). Characteristics in the antisocial facet contribute to psychopathic individuals' susceptibility for contact with the criminal justice system, as evident in psychopaths comprising 20- 25% of the prison population (Hare, 1996). However, 1% of the general population is estimated to meet the clinical criteria for psychopathy, and for the most part, these individuals remain relatively undetected in the community (Hare, 1996). These psychopaths, including those with elevated levels of psychopathic traits (i.e., subclinical psychopaths) are termed successful psychopaths as their skills, manipulation, and perhaps choice of immoral (rather than criminal behaviours) allows them to, for the most part, avoid contact with the criminal justice system.

In terms of the interpersonal facet, psychopathic individuals demonstrate some narcissistic characteristics in that they have a grandiose sense of self-worth, are superficially charming, and are exploitative of others.⁴ Psychopathic individuals can depict themselves as rational, intelligent, and charismatic, with little sign of any underlying mental abnormalities. Psychopaths are manipulative and pathologically lie (e.g., they often use aliases, engage in infidelities, etc.). Affectively, psychopathic individuals lack remorse, empathy, and guilt. They are callous, fail to take responsibility for their actions, and experience shallow emotions. The lifestyle facet of the psychopathy construct encompasses characteristics, such as the inability to make realistic long-term goals, having a need for stimulation (e.g., through risk taking behaviours, such as drug use, sexual promiscuity, or crime), engaging in a parasitic lifestyle, and being impulsive.

⁴ Psychopathy and narcissism share an overlap in characteristics, and some research has suggested that psychopathy may be a severe form of narcissism that is associated with revenge and aggression (Cale & Lillenfeld, 2006; Falkenbach, Howe, & Falki, 2013). However, the two disorders are distinct. Narcissism encompasses characteristics relating to a fragile sense of self-esteem that requires excessive admiration, a preoccupation with ideals or success, a sense of entitlement, and feelings of uniqueness and jealousy [of other people, or that others are jealous of him/her (American Psychiatric Association, 2013, p. 669)].

It follows that this constellation of traits would permit psychopathic individuals to be especially detrimental to their romantic partner. This is due not only to psychopathic individuals' increased likelihood of criminal versatility, need for stimulation, recidivism, and violence, but also due to their enhanced emotional disconnection and their capacity to manipulate and exploit others (Anderson, 2012; Brown, 2008; Kirkman, 2005; Leedom & Anderson, 2011; Pagliaro, 2009). As a result of their interpersonal and affective traits, abusers high in psychopathic traits may be particularly skilled at carrying out non-physical forms of abuse, which may assist them in carrying out their behaviours relatively undetected, and with little physical evidence that their survivors could use to report to police.

There has been a recent shift in domestic abuse literature that focuses on the effects of emotional and economic forms of abuse (Green, 2014; LeBlanc, Barling, & Turnder, 2014; Townson, 2009). Economic forms of abuse, which include abusers' parasitically living off of their victims, controlling their finances, and preventing productivity at work, can erode victims' sense of safety and can prevent them from leaving the relationship (Green, 2014; LeBlanc et al., 2014; Townson, 2009). Emotional abuse often occurs in conjunction with other forms of abuse, such as financial abuse, and commonly precedes physical abuse (Mechanic, Weaver, & Resick, 2008a; Queen, 2007; Schumacher & Leonard, 2005). Abuse that is emotional is also reported to be more long-term, terrorizing, and result in greater health impairments than physical abuse (Lawrence et al., 2009; Mechanic, Weaver, & Resick, 2008b; Carney & Barner, 2012; Taft et al., 2006).

My current research has potential to establish the unique experiences and common outcomes for survivors of a psychopathic abuser. This, in turn has potential to inform further theoretical understanding of psychopath survivors. This knowledge should be useful in legal settings, such as during interpretations of Victim Impact Statements and to victim support workers and Crown attorneys, who could use insight from this research to develop better modes of working with these types of survivors and help increase their ability to participate efficiently in the court process (i.e., testifying against their abuser). Discovering avenues to mitigate the difficulties resulting from victimization is essential, not only for individuals' well-being, but also to improve the efficiency and effectiveness of health services to this group.

In the remaining section of the introduction, I will outline the SMH in detail, including a description of its main source of empirical support, the Iowa Gambling Task (IGT). I will also discuss criticisms of the SMH. Next, I will review the connection between somatic marker functioning and social decision making by examining the common reactions to domestic abuse, including declines in emotional functioning (e.g., mental health impairments). I will then describe the neural correlates of facial affect processing by drawing from studies that primarily focus on PTSD, and will briefly overview studies on anxiety and depression. Finally, I will review the characteristics of psychopathy (e.g., interpersonal style, emotion deficits) and their relation to domestic abuse. The preliminary research on survivors of psychopaths will be reviewed to show the detrimental effects (e.g., depressive symptoms) that psychopathic traits in an abusive partner can have on well-being. I will conclude the introduction by reviewing the literature on growth and resilience in the context of emotional and interpersonal

functioning, and the implications of this research to understanding the recovery outcomes of survivors of psychopathic abusers during a romantic relationship.

Somatic Marker Hypothesis

Damasio's SMH (1994) is a neurologically-based theory of emotion-facilitated decision making. Somatic markers are bodily feedback [e.g., skin conductance responses (SCR⁵)] that biases response options to facilitate decision making during situations of uncertainty, such as social situations. These somatic markers arise from the peripheral nervous system. Given the relationship between the peripheral nervous system response, and the weighing of response options, somatic markers are thought to be regulated in the ventromedial prefrontal cortex (VMPC), which encompasses the medial frontal and orbitofrontal cortex (OFPC). The VMPC aids in the formation of emotional associations between mental representations (of objects or situations in the environment) and bodily feedback (physiological responses) that are used to moderate emotional reactions to stimuli.

The phenomenon that initiated Damasio's (1994) research on the role that emotions have in aiding decision-making was from the dissociable processes of patients with lesions to the VMPC. These patients have intact cognitive processes including intelligence, motor and verbal skills, memory, and reasoning. Yet, they are unable to function in their daily lives, seemingly because they cannot make everyday decisions in ambiguous situations where long-term outcomes are unknown. These patients display poor interpersonal skills, are inadequate in solving moral dilemmas, cannot maintain employment, suffer financial loss, are impulsive, and engage in inappropriate and risk

⁵ Measure of physiological or psychological arousal as seen from changes in moisture in sweat glands due to activation of the sympathetic nervous system.

taking behaviours (Damasio, 1994). VMPC lesion patients also do not display an appropriate level of emotional reactions to social stimuli (Damasio, Tranel, & Damasio, 1991). Damasio (1994) argued that VMPC lesion patients are unable to access the somatic marker system. This is because the lesion blocks access to the somatic marker system and prevents the creation of somatic markers, which subsequently impairs their decision making.

According to Damasio (1994), somatic markers can be created via the Body Loop, or the As if Loop. Somatic markers generated through the Body Loop reflect changes in the body, which are conveyed in the somatosensory cortices of the brain. Somatic markers are formed in the VMPC and stored as emotional memories in the amygdala. This process is used to constrain all possible response options to an external event by labelling them as pleasant or unpleasant. It also allows for the rapid rejection of unappealing options, so that only response options labelled as pleasant are fully evaluated as a possible course of action. Thus, in the Body Loop there is continual interaction occurring between the brain and body to create somatic markers.

Somatic markers are not exclusively elicited from changes in bodily states. They can also form in the As if Loop via a memory of a previously formed somatic marker stored in the amygdala. When an external event is similar to a past emotional event, the previously created somatic marker is reactivated (which includes the bodily changes) from memory, where this information is passed to the somatosensory structures. In the As if Loop there is no feedback cycle between the body and brain. Instead, the brain elicits a mental representation of the action that is expected to take place in the body to allow the

individual to respond faster to external stimuli. Unlike the Body Loop, the brain does not have to wait for bodily signals from the peripheral route to execute a behaviour.

Under situations of uncertainty, Damasio (1994) argues that somatic makers help reduce the complexity of the mental representation of the problem by marking response options with an emotional signal (either a pleasant or unpleasant feeling). Because individuals do not have knowledge of the whole situation, particularly the long-term outcome, somatic markers can fill in information gaps and provide guidance that reasoning and cognitive resources alone cannot.

According to Damasio (1994), VMPC lesion patients and healthy populations can react to emotional stimuli by creating somatic markers with the Body Loop. However, VMPC lesion patients cannot access somatic markers through the As if Loop (which would provide a mental representation of previously experienced emotional events). This translates to the appearance of being unable to integrate bodily states with contextual information (which is argued by Damasio to be needed to learn from past experiences) because the automatic somatic marking system cannot be accessed. In the following section I discuss the IGT, which is the primary tool used to gauge somatic marker system functioning and the main source of support for the SMH (Bechara, Damasio, Damasio, & Anderson, 1994).

Iowa Gambling Task

The IGT was designed as both a means to detect deficits in real life decision-making in the laboratory, and to aid in explaining the neural and cognitive mechanisms behind such deficits. The task was designed to mimic real life decision making due to the ambiguity of the task outcome. The task requires participants to gain as many points as

they can by making selections from four decks, labeled A, B, C, and D. Participants must plan for the future (i.e., the final number of points at the end of the task) by taking into account the consequences of each immediate decision (i.e., a deck selection). Participants are unaware that there are two disadvantageous decks (A and B), which yield large rewards but also large punishments (in the form of points gained or lost), and two advantageous decks (C and D) with smaller rewards and punishments, but which provide small but consistent gains over time.

To do well in the task, participants are required to engage in a longer-term deck selection strategy by learning which decks are the most advantageous. Damasio (1994) argued that this requires the use of somatic markers, instead of intelligence or reasoning skills. Somatic markers are formed during the IGT when participants are repeatedly exposed to rewards and punishments, in the form of selecting cards that state whether points are gained or lost. At this time, participants simultaneously develop pleasant or unpleasant feelings toward each deck. Damasio claims that physiologically somatic markers are evident in SCR following a deck selection. Changes in SCR indicate a change in feelings toward each deck, even if participants do not consciously feel an emotional reaction when playing the IGT (Bechara, Damasio, & Damasio, 2000). Thus, as the trials continue throughout the IGT participants develop emotional associations towards each deck.

Both healthy controls and lesion patients show SCR after sampling the four decks in the beginning of the task (interpreted as the formation of a somatic marker through the Body Loop). Around the midway point of the task (trials 40 - 60 out of 100), healthy controls implicitly learn that the advantageous strategy is to select from decks C and D.

Strikingly, at this point healthy controls (before they are consciously aware of this strategy) also show anticipatory SCR prior to disadvantageous deck selections (Bechara, Tranel, Damasio, & Damasio, 1997). Healthy controls can anticipate the possibility of unpleasant feelings associated with large punishment cards in disadvantageous decks, and as a result learn to avoid these decks. Lesion patients do not show anticipatory activity and continually select from disadvantageous decks (Bechara et al., 1997).

Damasio claims anticipatory SCR indicates that a previously formed somatic marker is being activated through the As if Loop to guide decision making. Lesion patients are unable to use somatic marker information (through the As if Loop) to learn from prior deck experiences, and as a result, perform poorly on the IGT, in comparison to controls (Bechara et al., 1994; Damasio, 1994). Research has also found IGT performance to be contingent on the functioning of other brain areas in the somatic marker system, namely the amygdala and prefrontal cortex, including the OFPC (Bechara, Tranel, & Hindes, 1999; Reimann & Bechara, 2010).

Criticisms of the Somatic Marker Hypothesis

In recent years, the SMH and the IGT have received a number of criticisms that call into question the theoretical pairing of emotional response to disadvantageous deck selections (e.g., Buelow & Suhr, 2009; Colombetti, 2008; Dunn, Dalgleish, & Lawrence, 2006; Linquist & Bartol, 2012; Stapleton, 2010).

Criticisms include the finding that IGT performance does not hinge solely on intact emotional processing. In healthy populations, factors contributing to varying performance include cognitive processes related to learning (i.e., memory and intelligence), mood, and personality (i.e., impulsiveness; for a review see Buelow &

Suhr, 2009). In addition, instead of manipulating emotion in the task itself, researchers use various clinical populations with deficits in emotional functioning (e.g., reduced intensity of emotional experience, poor emotion recognition), who also have their own set of biases that could influence performance. This suggests a possible broader information processing deficit, as opposed to one specific to emotional functioning.

Critics have also argued that anticipatory SCR is the result of conscious knowledge, rather than emotion-related signals guiding decision making (Maia & McClelland, 2004). Maia and McClelland (2004) found that (non-lesioned) healthy participants were able to verbally report knowledge about the earning schedule of the task that guided their advantageous decision making. Maia and McClelland interpreted their findings as undermining support for the SMH. They suggest the IGT is a measure of explicit learning where conscious knowledge of a situation can evoke changes in SCR.

In response to Maia and McClelland (2004), Bechara and colleagues (2005) state that the findings do not take into account the early appearance of anticipatory SCR to disadvantageous decks, or that VMPC lesion patients do not show this activity. This is despite Maia and McClelland's claim that patients would theoretically have some knowledge of the responses necessary for an optimal IGT outcome.

Bechara and colleagues (2005) state it is common for healthy individuals to make poor decisions even when faced with prior knowledge of the situation and the cognitive ability to make rational choices (Loewenstein et al., 2001). These dissociable processes are exacerbated in VMPC lesion patients (Damasio, 1994). In one case Saver and Damasio (1991) found that despite being able to report conscious and adequate knowledge of situations in a lab setting, a patient with VMPC damage was unable to

function in his every-day social life. According to the SMH, the patient lacked emotion-related signals (i.e., somatic markers) and the corresponding physiological processes that assist in cognitive processes during every day decision making (Bechara, Tranel, & Damasio, 2005; Saver & Damasio, 1999). Guillaume and colleagues (2009) also did not find support for Maia and McClelland's (2004) claim. They found conscious knowledge of changes in contingencies during the IGT not to be associated with anticipatory SCRs in a sample of healthy participants.

In response to these criticisms, it is important to note that many studies interpret performance on the IGT and the SMH as implicitly promoting an emotion/cognition dichotomy. This stems from the notion that somatic markers operate from a separate neural architecture that is functionally dissociable from cognition. The anatomical module responsible for the somatic marker system could be localized in the VMPC. However, this does not mean that all processes involved with this module are confined to this brain region. The functioning of this system may be dependent on the input and output of other brain areas. That is, the module may interact with other modules sensitive to emotion, such as working memory, gaze direction, or executive attention. For example, the fusiform gyrus has been referred to as a module specified for facial perception. However, it is active during the recognition of objects other than faces, while still having sub-processes specialized for face perception (Bergeron & Matthen, 2006).

There may be many sub-processes (i.e., working memory, cost-benefit analysis, value content, reversal learning) recruited from the outputs of several cooperating modules when a participant undergoes the IGT. Thus, the sub-processes involved with

the somatic marker system associated with emotion and cognition can be recruited from several cooperative processes (Bergeron & Matthen, 2006).

Damasio's (1994) intention for the SMH was to provide a framework for understanding the interplay between emotion and cognition in everyday functioning. While Damasio based his theory on the dissociable processes of VMPC lesion patients, the IGT itself was not designed as a diagnostic tool of psychopathology or brain injury. Research consistently parallels Damasio's work to highlight the role VMPC and amygdala in emotion and everyday functioning, which includes the neural correlates of adapting behaviours to changes in contingencies (Fellows & Farrah, 2003; Rolls, 2004).

Refinements to Damasio's (1994) theory are possible. These could include providing detail concerning: 1) how somatic marker information can be manipulated to improve or diminish the effectiveness of decision making (Humeny, Muldner & West, 2016), 2) the role of somatic markers on specific phases of decision making (Linquist & Bartol, 2012), and 3) whether VMPC lesion patients' performance is the result of shortsightedness or impulsiveness (Colombetti, 2008). Notwithstanding, this does not undermine the utility of the SMH as a theoretical framework for examining the role of emotional functioning in decision making.

IGT performance similar to lesion patients is evident in individuals who exhibit difficulties processing emotional stimuli and/or regulating emotional experiences: substance abuse (Barry & Petry, 2008), negative mood (Suhr & Tsanadis, 2007), depression (Must et al., 2006), anxiety (Miu, Heilman, & Houser, 2008), and emotional dysregulation, such as anorexia nervosa⁶ (Carter, Bewell, Blackmore, & Woodside, 2006;

⁶ The DSM-5 describes anorexia nervosa as including: a refusal to maintain normal Body Mass Index (BMI), intense fear of gaining weight, body image disturbances, mood lability, suicide ideation, and

Cavedini et al., 2004), borderline personality disorder⁷ (Haaland & Landro, 2007), and suicidal tendencies (Jollant et al., 2010). While different outcomes (e.g., substance abuse, depression) are associated with impairments to the somatic marker system, the IGT can nonetheless capture the fact that an impairment to the somatic marker system exists (it just does not necessarily specify the form of the impairment). Thus, interpretation of IGT performance should always occur in conjunction with the samples' characteristics and additional measures of emotional functioning. Measures of emotional functioning could include assessment of mental health impairments (e.g., depression, anxiety), personality traits (e.g., impulsiveness), mood, ability to regulate emotional experiences, and intensity of emotional experiences.

Emotion processing tasks, such as facial affect recognition, may provide a useful route to investigating somatic marker functioning. Facial affect recognition tasks assess the ability to process emotional content from uncertain social situations. Facial affect recognition is theoretically tied to social decision making, including the ability to function appropriately during social exchanges that contributes individuals' ability to obtain and maintain relationships (Frigerio et al., 2002; Poljac, Montagne, & de Haan, 2011; Schmidt & Zachariae, 2009).

Despite the vast array of populations examined with the IGT, survivor populations, including those who exhibit PTSD symptomology have yet to be examined. Thus, given the needs of the current project and background literature on the effects of

possible co-morbidities with anxiety, obsessive compulsive disorder, and depression (American Psychiatric Association, 2013, p. 338).

⁷ The DSM-5 describes borderline personality disorder as including: frantic efforts to avoid real or imagined abandonment, unstable and intense relationships with alterations between idealization and devaluing, impulsivity (e.g., sex, substance abuse, and binge eating), suicide ideation, mood lability, emotional intensity, feelings of emptiness, inappropriate and intense anger (difficulty controlling), paranoia, and dissociation (American Psychiatric Association, 2013, p. 663).

emotional functioning on information processing that will be reviewed in this introduction, the framework provided by the SMH and the use of IGT as a tool to assess the role of emotion in decision making is deemed appropriate.

To summarize, Damasio's (1994) SMH provides a conceptual framework that may be used to understand Whiffen and MacIntosh's proposed feedback pathway between emotional functioning and interpersonal functioning (e.g., social decision making). The SMH is a neurologically based theory of emotion-facilitated decision making during situations of uncertainty, such as interpersonal relationships. Damasio proposed with the SMH that a system exists in the frontal lobe and amygdala areas of the brain (Damasio, 1994). Impairments to the somatic marker system prevents individuals from utilizing emotional signals from the system (i.e., somatic markers) to assist them in learning and decision making in their everyday life. The SMH is empirically supported by the IGT. While the SMH and IGT have received criticisms, it is important to conceptualize the SMH and interpret IGT performance in the context of a specific population.

I will now review the literature that supports the view that the brain areas involved in the creation of somatic markers are impaired during experiences of mental health impairments. The majority of the focus will be on PTSD, which is highly prevalent among domestic abuse survivors. I will also provide an overview of anxiety and depression, which are commonly experienced in survivor populations. To do this, I will review the literature on these impairments in the context of facial affect recognition tasks. These tasks may provide another means to assessing somatic marker functioning and has a strong theoretical link to social decision making and interpersonal functioning.

Are Somatic Markers Impaired in Survivor Populations?

Somatic markers influence cognitive processes, such as memory, learning, and attention (Lezak, 2000). While the IGT is a valuable tool for assessing somatic markers, facial recognition tasks appear to be another promising tool for understanding the somatic marker process underlying emotional and interpersonal functioning.

Facial affect processing paradigms have assessed the link between interpersonal skills, emotion processing, and provide an example of how people judge the affective content of uncertain situations (Arce et al., 2009). Facial affect is known to be a more reliable indicator of an individual's internal emotions toward an interaction partner than consciously controlled verbal content (Bistricky, Ingram, & Atchley, 2011). This is important because social communication is predominantly nonverbal and consists of signals such as facial expression, tone of voice, gaze direction, and body posture (Schmidt & Zachariae, 2009). The face provides the most salient and complex form of information about the mental state of another person, and primes a dynamic, involuntary, and immediate social reaction, which provides a marker of preparatory states for action (Bistricky et al., 2011; Frigerio, Burt, Montagne, Murray, & Perett, 2002; Schmidt & Zachariae, 2009).

Accurately interpreting facial expressions and reacting accordingly guides everyday behaviour, allows individuals to regulate their behaviour during social exchanges, and assists in the establishment of supportive relationships (Frigerio et al., 2002; Poljac et al., 2011; Schmidt & Zachariae, 2009; Yoon, Joormann, & Gotlib, 2009). This includes satisfying interaction partners, fostering close relationships, building alliances, the ability to recognize friends and rivals, as well as guiding relational goals,

such as reassuring trust and defining relational status (Elfenbein & Ambady, 2002; Leathers, 1997; Marsh, Kozack, & Ambady, 2007). Accuracy in facial affect processing is also related to social competence and adjustment, along with peer popularity (Leppänen & Hietanen, 2001).

In his violence inhibition mechanism (VIM) model, Blair (1995) proposes that social species, like humans, evolved a mechanism to inhibit aggressive behaviours in response to distress cues (e.g., facial expressions of fear and sadness). In response to these cues, the VIM increases autonomic arousal, leading to an aversive feeling, which inhibits further behaviour that could continue to distress others (Blair, Mitchell, & Blair, 2005).

The VIM also aids in the development of moral emotions (e.g., empathy) and engagement in prosocial behaviours (e.g., altruistic behaviours that are for the benefit of another; Marsh & Ambady, 2007). Besel (2002) found support for this notion in a sample of undergraduate students; empathy was found to provide an advantage in identifying facial expressions displayed for a short duration. Further evidence was found by Marsh and colleagues (2007), who carried out three experiments assessing facial affect processing and prosocial tendencies with various altruism paradigms. In all three experiments, the ability to recognize fearful facial expressions was a better predictor of prosocial tendencies than gender, mood, or self-reported empathy.

Substantial neurological evidence suggests that facial affect is processed by specialized networks in the brain, namely the OFPC, amygdala, and fusiform gyrus of the right temporal cortex (for a review see Rolls, 2008). In line with the SMH, dysfunction in these area results in impaired social and emotional behaviour (Bistricky et al., 2011). For

example, the OFPC is important in assessing the degree of reward and punishment contingencies during social exchanges (Rolls, 2008). Damage to the OFPC impairs the recognition and use of facial affect to gauge the approachability of social situations (Hornak et al., 2003; Zald & Kim, 2001).

Similar to IGT research, a gap exists in facial affect accuracy research to examine domestic abuse survivor populations. The majority of facial affect research has investigated the developmental impact that child abuse has on emotional and interpersonal functioning. Research suggests that adult survivors of child abuse have deficits in affect recognition (Masten et al., 2008; Koizumi & Takagishi, 2014; Shenk, Putnam, & Noll, 2013; Young & Widom, 2014), regardless of the degree of mental health impairments (i.e., anxiety, depression, PTSD; Masten et al., 2008; Young & Widom, 2014). Child abuse histories are also found to predict a specific deficit in positive affect recognition (e.g., Koizumi & Takagishi, 2014; Young & Widom, 2014). Researchers theorize that abuse experiences contribute to a negative worldview: survivors may have received and experienced fewer positive emotions, which inhibited their ability to learn to accurately categorize positive facial expressions (Koizumi & Takagishi, 2014; Young & Widom, 2014).

It is unclear whether these facial affect recognition findings are showing the effects of abuse on a child's development, or if they findings would parallel if the abuse was perpetrated by a romantic partner in adulthood, especially one that is high on psychopathic traits. The following section will provide an overview of common experiences of domestic abuse survivors, in terms of declines in their emotional functioning (i.e., mental illness) and their interpersonal interactions. Following this

section, I will briefly layout the cognitive features of these disorders commonly found in survivor populations: PTSD, anxiety, and depression, before reviewing the literature on these disorders in the area of facial affect processing and interpersonal characteristics

Common Reactions Associated with Domestic Abuse

The prevalence of PTSD, depression, and anxiety is well documented in domestic abuse survivors (Devries et al., 2013; Foa, Cascardi, Zoellner, & Fenny, 2000; Statistics Canada, 2014; Trevillion, Oram, Feder, & Howard, 2012). In sexual assault research, the emotional and financial investment involved during assaults committed by an intimate partner was found to be a contributing factor for PTSD and depression when compared to stranger encounters (Culbertson & Dehle, 2001; Gutner, Rizvi, Monson, & Resick, 2006).

Survivors of domestic abuse often experience declines in physical well-being. Kernic and colleagues (2000) found women who were abused during a romantic relationship had more frequent hospitalization, such as for chronic illnesses or digestive problems, than women who were not abused. Survivors of domestic abuse are also found to be at higher risk for developing cardiovascular disease and chronic pain (Vives-cases et al., 2011; Wuest et al., 2008). The link between domestic abuse and physical health impairments is often not a direct result of physical forms of abuse, but the effect of chronic stress and declines in mental health from the effects of both physical and non-physical forms of abuse (Canady & Babcock, 2009; Coker et al., 2002).

The emotional distress of victimization has been found to contribute to lower perceptions of social support (Green & Diaz, 2007; Green & Pomeroy, 2007). Meta-analytic findings indicate that compared to controls, survivors of sexual assault are less

likely to report emotional support and less weekly contact with friends or family (Golding, Wilsnack, & Cooper, 2002). The reluctance to ask supporters for help is found, in survivors of domestic abuse, to relate to the possibility of negative reactions from others, which can lead to feelings of revictimization (Williams & Mickelson, 2004). Perceptions of negative social interactions have been found to account for increased severity of PTSD symptoms (Hanson et al., 2010). Individuals with PTSD have also been shown to display amplified feelings of social exclusion when compared to controls (Nietlisbach & Maercker, 2009a).

In general, survivors' recovery can be hindered by the survivors' perception of available social support and the willingness of others to provide support to the survivor (Canadian Resource Centre for Victims of Crime, 2005; Mancini & Bonanno, 2006). Survivors of abusive relationships often have inadequate support networks, either as a side effect of: 1) forced isolation (due to their abuser's dominance), 2) survivors' fear of disclosing their experiences to others (Gutner et al., 2006; Hanson et al., 2010), and/or 3) survivors' global trust problems. Overall, these factors contribute to loneliness, isolation, and affect survivors' ability to maintain relationships with friends and family, and obtain future relationships (Nicoladis et al., 2008). On the other hand, individuals in the survivors' support network may decide: 1) not to interfere with the abusive relationship if they believe the survivor will return to the abuser, or 2) pressure the survivor to remain in the abusive relationships if their support network refuses to acknowledge the severity of abuse (e.g., perceive abuse to be normal, or are dismissive of the victims' experiences; Hanson et al., 2010; Holliman, 2006; Meyer, 2016).

Post-Traumatic Stress Disorder

PTSD is associated with impairments in emotional experience and expression, which includes alternating between states of heightened arousal and emotional numbing (American Psychiatric Association, 2013; Dalgleish, 2004). Post-traumatic symptoms have been conceptualized as an attempt by the individual to regain control over their surroundings by automatically going into a red alert (associated with hyperarousal symptoms, such as becoming agitated, anxious, hypervigilant), or into a freeze response (which coincides with avoidance symptoms, such as emotional numbness or dissociation; Carlson & Dalenberg, 2000). This fluctuation between red alert and a freeze response can lead to distortions of non-threatening situations as a threat (e.g., increased feelings of suspiciousness) and contribute to potential conflicts in relationships (Nietlisbach & Maercker, 2009b).

The intense experience of negative emotions associated with hyperarousal symptoms is observed in sexual assault survivors to perpetuate their symptoms of PTSD (Tull, Jakupack, McFadden, & Roemer, 2007). Often, coping with these symptoms takes the form of eating disorders, self-injury, and substance abuse, which limits survivors' ability to obtain social support and opportunities to improve physical and mental well-being (Anderson, 2010; Campbell, 2002; Carlson & Dalenberg, 2000; Holliman, 2006). Likewise, the freeze response can result in restricted or repressed affect, detachment from others, and social withdrawal. These reactions can hinder the alleviation of PTSD symptoms and increases stress levels, which impedes immune system functioning and overall physical health (Canadian Resource Centre for Victims of Crime, 2005; Carlson & Dalenberg, 2000; Gutner et al., 2006; Hanson et al., 2010).

Neural correlates of cognitive and emotional difficulties. Individuals with PTSD can lack clarity and awareness of their emotional experiences, and tend to have a poor ability to regulate their emotional experiences (Plana et al., 2014). These declines in emotional functioning disrupt goal-directed behaviours and increase levels of impulsiveness (Ehring & Quack, 2010). The declines may also account for the general cognitive impairments (e.g., goal-planning, attention) in individuals with PTSD, which is thought to stem from dysfunction of the prefrontal cortex (Koenen et al., 2010; Qureshi et al., 2011; Schweizer & Dalgleish, 2011; Shipherd & Salters-Pedneault, 2008).

Similar cognitive impairments (e.g., working memory, attention) are found between veterans with PTSD and patients with brain injuries (Koso & Hansen, 2006; Manly et al., 2003). These similarities are likely because brain functioning becomes altered in individuals with PTSD, particularly in the amygdala, VMPC, and hippocampus (Frewen & Lanius 2006; Hayes et al., 2009; Ozer, Best, Lipsey, & Weiss, 2008;). For example, PTSD contributes to difficulties with fear extinction learning that is theorized to be due to diminished activation of the VMPC (Rauch et al., 2006; Zuj et al., 2016). This impairment contributes to an inability to: 1) disengage from stimuli that is perceived as threatening, and 2) adapt to changes in contingencies that involved threat cues (Bardeen & Orcutt, 2011; Rauch et al., 2006). Overall, these findings suggest there may be alterations to the neural circuitry involved with the somatic marker process that prevents individuals with PTSD from integrating and utilizing emotional information to aid in such processes as memory, learning, and goal planning.

The brain areas that are affected from PTSD are also important for the perception and regulation of emotion in social situations, especially for the detection of threat cues

(Grady & Keightley, 2002; Schmidt & Zachariae, 2009; Stone, Baron-Cohen, Calder, Keane, Young, 2003). Dysfunction in these areas can contribute to a diminished ability to interpret social information and navigate one's social exchanges effectively.

Neuroimaging studies have also shown heightened amygdala reactivity to fearful trauma-related stimuli (e.g., fearful facial expressions) in individuals with PTSD. This heightened activity is thought to result from decreased medial prefrontal activity, which reduces regulation of the amygdala (Etkin & Wager, 2007; Morey et al., 2015; Mueller-Pfeiffer et al., 2010). The over reactivity of the amygdala may lead to an increased accessibility and expression of threat-reactions (e.g., heightened physiological reactions, increased feelings of anxiety). These reactions could reflect an attentional bias toward potential threats and a predisposition to interpret non-threatening stimuli as threatening, which can disrupt ongoing cognitive functions (e.g., decision making, goal planning; Hayes, VanElzakker, & Shin, 2012).

Aside from the hypersensitivity to threat cues, the dysfunction of brain areas during PTSD that are associated with the somatic marker system may also impair processing of safe environments (e.g., socially affirming information). A recent systematic review of reward functioning concluded that PTSD is associated with reduced approach behaviours and a reduced experience of positive emotions (Nawijn et al., 2015). Specifically, studies report PTSD contributes to a reduced experience of positive emotions in response to viewing positive stimuli (i.e., less positive ratings of happy facial expression and reports of less positive feelings compared to controls; Steuwe et al., 2014). Felmingham and colleagues (2014) found the freeze response aspect of PTSD (i.e., emotional numbing) underlies patients with PTSDs' reduced amygdala activation

when viewing happy facial expressions, as well as their ratings of happy facial expressions as less intense, compared to the neural correlates and intensity ratings of controls.

Cognitive and emotional processes in domestic abuse survivors. The limited research on cognitive functioning in domestic abuse survivors suggests that PTSD status can account for deficits in a variety of processes, including adaptability to changes in contingencies, working memory, processing speed, response inhibition, reasoning, and sustained attention (DePierro, D'Andrea, & Pole, 2013; Stein et al., 2002; Twamley et al., 2009). In particular, slower processing speed is theorized to relate to reduced attentional resources from PTSD-related fatigue (e.g., sleep problems, exhaustion), and/or cognitive resources being directed towards being hyper vigilant to threat cues, which distracts the individual from goal-directed behaviours (DePrince & Freyd, 2004; Twamley et al., 2009). Interestingly, Stein and colleagues (2002) found the effects of domestic abuse to impair cognitive function irrespective of PTSD status, when compared to controls. It may be that trauma has an enduring effect on the neural circuitry of survivors, even for those individuals who do not reach clinical levels of PTSD (Stark et al., 2015).

There is emerging research on survivors of interpersonal trauma that suggest impaired facial affect processing. Findings of domestic abuse survivors with clinical levels of PTSD provide evidence for a general impairment in the processing of social information across emotional valence (Moser et al., 2015). Fonzo and colleagues (2010) found this impairment relates to heightened amygdala activity in survivors of domestic abuse with PTSD when viewing threatening facial expressions (i.e., angry or fearful), when compared to viewing happy facial expressions. In comparison to healthy controls,

the authors found increased medial prefrontal cortex activity when survivors viewed male faces (compared to female), which also correlated with survivors' hyperarousal symptoms. The authors concluded that an over reactive response of the brain's emotion system underlies survivors' hypervigilance during social exchanges, particularly with males, which may relate to their past trauma.

Brown and colleagues (2016) examined survivors of interpersonal trauma (e.g., childhood abuse, domestic abuse) who had clinical levels of PTSD. The sample was assessed for emotional experiences, PTSD symptomology, and underwent a functional magnetic resonance imaging (fMRI) when performing a task where fearful facial expressions were used as distractors. Survivors were asked either to attend to a distractor, or to ignore it. For participants who were asked to ignore the fearful faces, survivors' engagement in emotional numbing and negative emotional experiences were associated with reduced activity in the amygdala. When participants were asked to attend to fearful facial expressions, their reduction in positive emotional experiences was associated with hyper reactivity in the hippocampus and amygdala. The authors theorized that persistent experiences of negative emotions (and diminished levels of positive emotions) represent survivor's inability to process and regulate emotions when experiencing reminders of their past trauma.

The few studies that examine emotional processing and interpersonal functioning in domestic abuse survivors are limited to those survivors with clinical levels of PTSD, and do not assess other disorders common in these populations, such as anxiety or depression. These studies also do not assess general accuracy ratings of facial affect recognition, in relation to survivors' mental health (i.e., subclinical levels of mental

illness), nor do these studies take into account abusers' psychopathology, or the severity of survivors' abuse experiences.

Facial affect recognition. In terms of general accuracy ratings, evidence supports the association between PTSD and an inability to mentalize (identify others' mental states, intentions, beliefs; Mazza et al., 2012) and empathize (feeling what another person feels; Mazza et al., 2015), as well as alexithymia (difficulties with identifying and labelling emotions; Taylor & Bagby, 2004; Schmidt & Zachariae, 2009).

Poljac, Montagne, and de Haan (2011) found that compared to controls, PTSD patients required a more intense display of emotional expressions to correctly identify facial affect. The PTSD group had reduced accuracy and sensitivity for recognizing fear and sadness, although emotional states could have influenced these results. Poljac and colleagues noted that depression, which is often comorbid with PTSD, also produces similar impairments in the recognition of emotion, namely, a negative bias for interpreting facial expressions (Kemp, Gordon, Rush, & Williams, 2008). This negative bias may contribute to problems in relating and adapting to others (Grady & Keightley, 2002). For example, Kemp and colleagues (2007) found that participants with both PTSD and depression showed reduced amygdala and medial prefrontal cortex activity in response to fearful facial expressions, relative to participants with PTSD who did not meet the diagnosis for depression. However, Hopper and colleagues (2008) and MacNamara and colleagues (2013) found deficits in positive emotional processing to occur in those with PTSD, irrespective of comorbid depression.

Schmidt and Zachariae (2009) found deficits in eye expression recognition in individuals with PTSD. Perception of the eye region (without the remainder of the face)

is thought to convey complex and subtle information about other's mental states.

Perceiving emotional information contained in eyes relies on both higher-level cognitive structures combined with structures in the amygdala (Schmidt & Zachariae, 2009).

The authors interpreted this finding to mean that the interpersonal difficulties associated with PTSD are related to problems with recognizing the mental states of others. Yet,

Schmidt and Zachariae note several limitations of their study. Their findings may reflect:

- 1) a more general deficit in attention and information processing of processing complex visual stimuli (as opposed to processing the emotional aspect; see also Gill, Calev, Greenberg, Kugelmass, & Lerer, 1990), 2) a distinct visual scan path, common in social anxiety, in which individuals avoid eye contact during social interactions, or 3) extraneous variables that include feelings of anxiousness or sadness.

The majority of research on facial affect recognition in PTSD has focused on survivors of natural disasters and war. The mechanisms underlying PTSD in survivors of interpersonal trauma, such as domestic abuse, may contribute to different outcomes, especially in the area of interpersonal functioning. An exploratory study by Fertuck and colleagues (2016) examined survivors of interpersonal trauma (e.g., child abuse, physical assault) with PTSD in their ratings of trustworthiness and fearfulness of facial expressions that morphed on dimensions of fearfulness and trustworthiness. This sample of survivors had a bias toward labelling more neutral facial expressions as more trustworthy, when compared to ratings by trauma-exposed controls who did not meet the clinical criteria for PTSD. However, no differences were found between the groups for ratings of fearful facial expressions. The authors theorize that the processing of threat cues during interpersonal exchanges (e.g., fearful faces) occurs independently from the

processing of trustworthiness. The findings suggest that the trustworthiness bias is a maladaptive feature of PTSD that contributes to a passive orientation to potential threats in interpersonal relationships, which may account for the high rates of revictimization, which is a notable issue in survivors of domestic abuse (Fertuck et al., 2016; Thomas et al., 2014).

Perception of trustworthiness is regulated by the amygdala (Said, Baron, & Todorov, 2009), and the amygdala is theorized to function with an attentional bias toward atypical stimuli, including facial expressions (Todorov, 2012). Because neutral facial expressions have an element of uncertainty, and domestic abuse survivors experienced betrayal by someone who they shared an intimate relationship with, they may be hyper vigilant to potential cues of trustworthiness with new faces/relationships. It is likely that the amygdala dysfunction in PTSD leads to disorganized processing of valence in emotional stimuli, and an inability to integrate emotional information from experiences. This may predispose survivors to have a reduced ability to effectively learn from their experiences, and navigate their social interactions in a manner that ensures they obtain and maintain supportive relationships that would optimize their well-being. It is clear that the pathways between facial processing and interpersonal relationships in PTSD are complex. Further empirical evidence is needed to understand the mechanisms underlying revictimization and interpersonal relationships in a domestic abuse sample, in particular, in those who have survived a romantic relationship with a psychopathic abuser who displays unprecedented rates of callousness, manipulation, and a lack of empathy.

Depression and Anxiety

Depression and anxiety are different mental health conditions that are associated with similar impairments in cognitive, emotional, and interpersonal functioning. Poorer performance on the IGT has been found in samples with depression (Cella et al., 2010; Must et al., 2006) and anxiety (Miu et al., 2008), in comparison to controls. Depression and anxiety have both been associated with a negative bias in miscategorising facial affect (Heuer et al., 2010; Poljac et al., 2011; Yoon et al., 2009) and greater difficulties in disengaging from negative stimuli (Cisler & Koster, 2010; Duque & Vazquez, 2015; Gotlib & Joorman, 2010; Mogg et al., 2007). For example, Duque and Vazquez (2015) found depressed individuals spent more attentional resources fixated on sad faces, than other facial expressions. The magnitude of attentional bias was found to increase with the level of depressive symptoms (Duque & Vazquez, 2015).

Brain areas associated with the somatic marker system function differently in samples with depression and anxiety, in comparison to controls. Specifically, impairments have been found for the amygdala in relation to the processing of threat-cues and integrating new information for learning. Anxiety has been associated with heightened amygdala activity when viewing fearful faces (Fakra et al., 2009; Indovina et al., 2011). The hypersensitivity to threat cues common in anxious individuals is theorized to stem from a disruption in the pathways between the VMPC and amygdala, which can diminish decision making under conditions of uncertainty (Hartley & Phelps, 2012).

Evidence suggests that depression is associated with greater amygdala reactivity when viewing sad faces and lower amygdala reactivity when viewing happy faces (Dannlowski et al., 2007; Surguladze et al., 2004; Suslow et al., 2010). Research

consistently finds that depressed participants required a significantly higher intensity of emotional expression to correctly identify happy faces (Joormann & Gotlib, 2006; Munkler et al., 2015; Surguladze et al., 2004; Yoon et al., 2009).

Depressed individuals may not be impaired in the overall recognition of emotion, but tend to have difficulties in identifying subtle expressions of positive affect (Yoon et al., 2009). Research has also found diminished reactions to happy facial expression (Sloan et al., 2002). These findings fall in line with a hallmark of depression, anhedonia (difficulties processing positive affect; Yoon et al., 2009; American Psychiatric Association, 2013). Depression has also been associated with decreased approach-behaviour and impairments in memory, problem solving, attentional set shifting, and reward learning (Must et al., 2013; Smoski et al., 2008). For example, a large body of research finds depression to be associated with blunted reward responsiveness and reduced approach behaviour that impairs reward learning (Pechtel et al., 2013; Pizzagalli et al., 2009; Vrieze et al., 2012).

Biased processing of social cues, such as facial expressions, has been widely theorized to both underlie the interpersonal and emotional difficulties displayed in depressed and anxious populations and contribute to maintaining the disorder (Duque & Vazquez, 2015; Joormann & D'Avanzato, 2010). Interpersonal difficulties in these populations are correlated with facial affect decoding abilities (Bell et al., 2011; Leppänen & Hietanen, 2001), as well as poor conflict resolution skills, social avoidance, insufficient eye contact, and difficulties in the development of rewarding supportive relationships (Bistricky et al., 2011; Duronto, Nishida, & Nakayama, 2005).

Models have been proposed for the mechanisms underlying depression and anxiety that promotes a negative interpretation of social information. In terms of anxiety, impaired interpersonal functioning has been centred on a hypersensitivity to interpret ambiguous social stimuli as a threat (Heuer et al., 2010), including increased generalization to similar but non-threatening stimuli (Lissek et al., 2010) and expectation of threats in the future (Eysenck & Derakshan, 1997). Often these processes lead to avoidance of possible threats, including social avoidance (de Visser et al., 2010; Duronto et al., 2005) and reduced opportunities to process socially affirming information (Anderson et al., 2013).

A review by Bistricky and colleagues (2011) outline three models of interpersonal functioning in depression. One model argues that judging subtle positive facial expressions to be less intense contributes to judging social situations to be less positive (Yoon et al., 2009). A second model argues that decreased attention to others' facial affect, leading to the view of a potentially unpredictable and socially hazardous environment, results in less willingness for social engagement (Bistricky et al., 2011). A third model posits a greater cognitive sensitivity and attention toward socially negative information and away from socially affirming information (Badcock & Allen, 2003). As a result of the depression mechanism, these individuals may: 1) reduce their approach behaviour as they lack the resources to obtain social reinforcement (Joiner & Coyne, 1999; Yoon et al., 2009), or 2) seek reassurance from others, which can eventually lead to the erosion of close, supportive relationships, and worsen alienation (Bistricky et al., 2011; Fritzsche et al., 2010; Joiner & Coyne, 1999). Overall, biased processing in

depression may trigger negative self-evaluations, low self-esteem, and assumptions of others' harsh judgment (Frewen & Dozois, 2005).

In summary, facial affect recognition tasks appear to provide an objective measure of somatic marker functioning. The brain areas associated with one's ability to gauge the approachability of social situations and the degree of reward and punishment contingencies during social exchanges are implicated in the somatic marker system. Further, mental health impairments of PTSD, anxiety, and depression have been found to display impairments with: 1) the brain areas associated with the somatic marker system and 2) decoding facial affect. Notably, there appears to be a consistent trend for a negative interpretation bias and reduced processing of socially affirming situation.

The research lends support for Whiffen and MacIntosh's (2005) feedback pathway. Specifically, that dysfunction in the brain areas associated with the SMH contribute to impaired processing of social information that disrupts access to supportive relationships and contribute to maintaining these disorders. Domestic abuse survivors commonly experience depression, anxiety, and PTSD. Survivors have been also found to have reduced perception and reception of social support, which is thought to be due to social stigma, as well as impairment to survivors' emotional functioning. The limited understanding, and diminished attention and public knowledge of psychopathic abusers during romantic relationship may contribute to survivors' social network to lack the knowledge to recognize victims' needs and provide adequate levels of support.

Psychopathy

The majority of psychopathy research has focused on incarcerated offenders who meet the clinical criteria for psychopathy, yet there are psychopathic individuals who live

relatively undetected in the community. Due to the large emphasis on criminal features associated with psychopathy, there is debate in the psychopathy research community for how best to assess and conceptualize the manifestation of psychopathy in those individuals who survive relatively successfully in the community. Researchers argue that the interpersonal and affective traits are a core feature of psychopathy, whereas the antisocial and lifestyle traits are less integral to the construct (Book, Costello, & Camilleri, 2013; Polythress & Hall, 2011; Skeem & Cooke, 2007).

Individuals who had an intimate relationship with a psychopathic individual, even if the individual does not reach the clinical level for psychopathy, can still experience detrimental effects to their well-being (Brown, 2008; Leedom & Anderson, 2011). Those who have been victimized by a psychopathic individual during a romantic relationship can inform our understanding of relationship dynamics and personality patterns by providing a snap shot of how psychopathic traits manifest in a specific context (Kirkman, 2005; Leedom & Anderson, 2011).

While, psychopathic individuals are known for being sexually promiscuous, having many short-term relationships, being impulsive, and lacking the ability to have long-term and realistic goals, they are capable of expressing love and sustaining social connectedness with a partner for extended periods of time (Cleckley, 1972; Leedom & Anderson, 2011). These expressions of love are superficial and are carried out in order to exploit their partner for ongoing needs (e.g., financial, sexual, etc). Further, it is common for psychopathic abusers to engage in infidelities, and have aliases (e.g., a separate life that could include already being married/ having a family) while in a relationship with their partner (Anderson, 2012; Kirkman, 2005). Because of the deceitful and

manipulative tactics of psychopathic individuals, their romantic partners can spend years in a relationship with a psychopathic individual without being aware of the risk involved (Brown, 2008; Kirkman, 2005).

The possible prevalence and diversity of harm caused by individuals with elevated levels of psychopathic traits in the community has recently pushed research to include subclinical samples, in order to generalize findings to a wider array of individuals (Skeem, Poythress, Edens, Lillienfeld, & Cale, 2003; Williams & Paulhus, 2004). Before reviewing the literature on survivors of psychopathic abusers. I will describe psychopathy, specifically relating to their characteristics, types of crimes, emotional deficits, and interpersonal style.

Factor Structure Underlying Assessments of Psychopathy

As previously stated, the collection of traits that comprise psychopathy can be organized into four facets of lifestyle, antisocial, affect, and interpersonal. These facets represent the factor structure of the PCL-R, which has been referred to as the “gold standard” for clinically assessing psychopathy (Vitacco, Neumann, & Jackson, 2005).

The four-factor model has been supported using exploratory and confirmatory factor analysis in incarcerated offenders, including those in psychiatric settings. However, the items on many short-term relationships and sexual promiscuity were not found to load on any of the four factors (Hare, 2003; Hare & Neumann, 2006; Neumann, Hare, & Newman, 2007; Neumann et al., 2005; Mokros et al., 2011).

Research continues to investigate the correlates of an earlier two-factor model, which is based on Harpur and colleagues (1988) factor analysis of the PCL-R (Hare & Neumann, 2008). In the two-factor model, Factor 1 is termed by Hare (1991) as the factor

reflecting the “selfish and remorseless use of others” (p.76) and is comprised of those traits categorized under the affect and interpersonal facet. Factor 2 is described as the “chronically unstable and antisocial/socially deviant lifestyle” factor, and encompasses the antisocial and lifestyle facets (Hare, 1991, p.76). Criminal versatility, sexual promiscuity, and many short-term relationships were not found to load on either of the two factors (Harpur, Hare, & Hakstain, 1989). Table 1 displays a summary of traits falling under the two-factor and four-factor model.⁸

⁸ Research has also identified a three-factor model of psychopathy to focus on behavioral and personality features of the disorder. The three-factor model includes factors of: 1) an arrogant and deceitful interpersonal style, 2) deficient affective experience, and 3) impulsive and irresponsible behavioral style (Cooke & Michie, 2001).

Table 1

Summary of PLC-R items corresponding to traits underlying psychopathy in Harpur & colleagues (1989) two-factor model and Hare (2003)'s four factor model.

	Two-factor model		Four-factor model
Factor 1	<ul style="list-style-type: none"> • Superficial charm • Grandiose sense of self worth • Pathological lying • Manipulative • Lack of remorse/guilt • Shallow affect • Callous/lack of empathy • Failure to accept responsibility 	Affect Interpersonal	<ul style="list-style-type: none"> • Superficial charm • Grandiose sense of self worth • Pathological lying • Manipulative • Lack of remorse/guilt • Shallow affect • Callous/lack of empathy • Failure to accept responsibility
Factor 2	<ul style="list-style-type: none"> • Need for stimulation • Parasitic lifestyle • Lack of realistic long-term goals • Impulsivity • Irresponsibility • Poor behavioural control • Early behavioural problems • Juvenile delinquency • Revocation of conditional release 	Lifestyle Antisocial	<ul style="list-style-type: none"> • Need for stimulation • Parasitic lifestyle • Lack of realistic long-term goals • Impulsivity • Irresponsibility • Poor behavioural control • Early behavioural problems • Juvenile delinquency • Revocation of conditional release • Criminal versatility

Other tools for assessing psychopathy and other conceptualizations of psychopathic traits are also widely recognized. These include Levenson's Self-Report Psychopathy Scale (LSRP; Levensen, Kiehl, & Fitzpatrick, 1995), the Psychopathic Personality Inventory (PPI; Lilienfeld & Andrews, 1996), and the Personality Assessment Inventory (Morey, 1991).

In particular, the LSRP can be used to conceptualize psychopathy into two factors that are alternative to Factor 1 and Factor 2. The alternative factors are: 1) primary

psychopathy, which is centered on affective deficits (e.g., callousness, lack of empathy), and reflect psychopathic individuals who have low anxiety and elevated self-confidence, extraversion, and egocentricity, and 2) secondary psychopathy, which is centered on behavioural issues (e.g., poor behavioural control, impulsiveness) and is associated with low self-esteem, elevated levels of anxiety, and mood lability (Blackburn & Fawcett, 1999; Brinkley et al., 2008; Newman et al., 2005).

The triarchic model (Patrick et al., 2009) has also been used to conceptualize psychopathy into three factors of boldness (e.g., callousness, predatory behaviors), disinhibition (e.g., impulsiveness), and meanness (e.g., callousness). These factors correspond to dimensions on the PPI via subscales of fearless dominance, self-centered impulsivity, and cold-heartedness (Murphy, Lilienfeld, Skeem, & Edens, 2016). Due to the measurements used in the present project, which align with the PCL-R, the expanding literature on the triarchic model will not be discussed further.

Theories of Psychopathy

There are a few theories of psychopathy available to provide insight into the characteristics, and criminal and immoral behaviours of psychopathic individuals. Two of these theories are Glass and Newman's (2009) response modulation hypothesis and Blair's previously mentioned VIM model (Blair, 1995).

Response Modulation Hypothesis. Glass and Newman (2009) propose that psychopaths' impairments in processing and recalling emotional stimuli reflect an attentional deficit. The response modulation hypothesis (RMH) states that psychopathic individuals have an inability to automatically shift attentional resources to monitor contextual cues (even when emotionally significant) and if necessary, adjust goal-

directed behaviours to incorporate these cues (Blair et al., 2005; Newman & Lorenz, 2003).

Research indicates that psychopathic individuals maintain the ability to cognitively categorize emotion but are unable to experience emotion at a comparable intensity and/or duration to those who are low on psychopathic traits (Book, Quinsey, & Langford, 2007; Glass & Newman, 2006). Institutionalized psychopaths are found to have reduced startle responses when viewing unpleasant versus pleasant images (Patrick, Bradley, & Lang, 1993) and less intense bodily sensations (e.g., decreased SCR, heart rate, and blood pressure) during emotional stimulation via film clips, compared to non-psychopaths (Pham, Phillipot, & Rime, 2000).

Theoretically, attending to emotionally significant contextual cues involves interrupting goal-directed behaviours to: 1) emotionally react to the cue, 2) use information from the emotional reaction to reflect on how the cue may affect goal-directed behaviours, and 3) form an association in memory between information gathered from the cue (e.g., the environmental context in which it occurred) and the associated emotional response.

In sum, the RMH holds that attentional factors (e.g., whether a stimulus is in primary attentional focus or are a contextual cue) determine the quality of emotion processing (e.g., the duration that attentional resources are directed towards emotional stimuli; Glass & Newman, 2009).

Violence Inhibition Mechanism Model. Blair (1995) in his VIM model theorizes that psychopathic individuals have a dysfunctional VIM. Psychopathic individuals have a decreased experience of fear with the appropriate duration and

intensity, and are: 1) less sensitive to aversive feelings elicited by distress cues in others, 2) less likely to disengage behaviours that provoke distress in others (Adolphs & Tranel, 2000), and 3) unable to develop moral emotions, such as guilt, empathy, and remorse.

Support for Blair's VIM is evident in a sample of incarcerated psychopaths who experience lower levels of emotional arousal while committing violent offences compared to incarcerated non-psychopaths (Williamson, Hare, & Wong, 1987). In terms of psychopaths' predatory behaviours, the sadness and fear expressed in victims may not be properly processed and, thus, will likely be ignored by psychopaths.

In sum, Blair and colleagues (2005) argue that it is difficult to see how emotional information would not be attended to and processed to modulate behaviour. Instead of being unable to attend to certain information in their environment (e.g., punishment cues), Blair and colleagues (2005) propose that psychopathic individuals may have difficulty in learning from emotional information due to abnormal brain development, primarily in the amygdala. Psychopathic individuals' reduced ability to experience emotions likely contributes to their fearlessness (e.g., risk taking, impulsiveness) and exploitative behaviours through appetitive inhibition (Wheeler, Book, & Costello, 2009). Taking together the VIM and the RHM, there is no evidence suggests that these accounts of psychopathy are necessarily mutually exclusive. Recent theoretical research by Hamilton and colleagues (2015) proposes unifying attention and emotion-based models of psychopathy. Specifically, Hamilton and colleagues' Impaired Integration framework encompasses attention and emotion models of psychopathy by proposing that psychopathic individuals are deficit at the neural level in automatically integrating contextual associations with the consequences of their behaviours. Generally, in

following the Impaired Integration framework, psychopaths lack awareness and an ability to be aware of their experiences; particularly the consequences of their behaviours on other people (Hamilton, Racer, & Newman, 2015).

Language Use

While research has begun to assess whether patterns of natural language can reveal personality traits and psychological characteristics (Hirsh & Peterson, 2009; Pennebaker & King, 1999), there has been little examination of psychopaths' language (Hancock, Woodworth, & Porter, 2013). It is unclear how psychopathic individuals may be able to use language as a tactic to manipulate, charm, and deceive their victims. Psychopathic individuals' characteristic use of language is argued to be a result of a more general impairment in linguistic processing, rather than a side effect of their emotion deficits (Blair et al., 2006).

Psychopathic individuals are thought by Cleckley (1972) to suffer from semantic dementia: there is discordance between the expressed and experienced value of emotions (Blair et al., 2006). In quoting Johns and Quay (1962), Blair and colleagues (2006) state that it appears psychopaths "know the words but not the music" (Johns & Quay, 1962, p. 217). Psychopathic individuals tend to base their judgments about the associations of emotional words on learned semantic associations between words, rather than their affective value (Blair et al., 2006). The authors argue that this is due to weak affective priming from an amygdala dysfunction, which contributes to an impaired ability to build associations between environmental stimuli (i.e., semantic information) and affective representations (i.e., emotional experiences).

It appears psychopathic individuals are unable to empathize with others during conversations; they have difficulties processing the emotional value of words (Blair et al., 2006), extract less information from these word types (Williamson, Harpur, & Hare, 1991), and display fewer differences in event-related potentials (ERPs) when reading neutral versus affect-laden words than controls (Williamson et al., 1991). Psychopathic individuals' deficit in decoding emotion is also evident when reading words (Hiatt, Lorenz, & Newman, 2002) and metaphoric sentences (Hervè, Hayes & Hare, 2003) and hearing vocal affect (Bagley, Abramowitz, & Kosson, 2009; Mackenzie & Logan, 2014).

Despite these impairments, psychopathic individuals can semantically recognize the emotional significance of words, such as those associated with power, or those that can be used to obtain admiration (Blair & Mitchell, 2009; Endres, 2004; Sneiderman, 2006). De Almeida Brites (2016) argues that the ability to recognize the emotional significance of words, without experiencing the emotional connotation of the word, enables psychopathic individuals to readily and effectively manipulate (e.g., lie): they can focus on what words sound better to their conversational partner, without being withheld by emotional experiences (e.g., anticipation of guilt for lying).

Text analysis of homicide offending psychopaths' narratives revealed more: 1) cause-and-effect descriptives (e.g., "because", "since"), 2) disfluences ("um", "uh"), 3) past-tense words (Hancock et al., 2013; Smedley, 2015), 4) use of words denoting material needs (e.g., "money"), 5) fewer references to social relationships (e.g., family; Hancock et al., 2013), and 6) fewer figures of speech (Smedley, 2015), when compared to controls. Further, Hancock and colleagues (2013) found Factor 1 psychopathy to be associated with the production of words that were less emotional and intense, and more

negatively valenced in homicide offenders when they described their crimes.

Psychopathic offenders appear to have a primitive, predatory, yet rational quality to their language (i.e., viewing their crimes as justified and from a logical course of action; Hancock et al., 2013).

Generally, psychopathic individuals' language use is thought to reflect poor relational bonds with others, emotional detachment, and an inability to empathize with the effect their behaviours have on others' well-being (Hancock et al., 2013; Smedley, 2015). The high rates of disfluencies may represent difficulties describing emotional events due to an increased cognitive load (Hancock et al., 2013). Hancock and colleagues posit that psychopathic individuals engage in impression management to describe the event appropriately to their conversation partner. As a result of this increased load, psychopathic individuals may neglect attending to contextual aspects of their speech production that would normally ensure flow of statements (Brinkley, Newman, Harpur, & Johnson, 1999; Hancock et al., 2013). This may also lead to the presentation of less cohesive speech patterns. Less cohesive speech patterns were found by Williamson (1993) and Brinkley and colleagues (1999) in their analysis of psychopathic individuals' narratives. These authors also reported that when compared to controls, psychopathic individuals had a greater use of contradictory statements.

An emerging (but limited area of language research) is the frequency of personal pronoun use in relation to personality traits. Raskin and Shaw (1985) found increased first-person singular personal pronoun use ("I") and decreased plural personal pronoun use ("we") in relation to narcissistic traits. It was theorized that the increased use of "I" reflects egocentrism that is closely associated with narcissistic traits.

Morrow (2008) found a similar trend in a sample of incarcerated psychopathic offenders: increased rates of first-person singular pronouns (“I”) and a decreased rate of first-person plural pronouns (“we”). These findings were interpreted as reflecting the narcissistic traits of psychopathic individuals (i.e., grandiose sense of self), and the ability of psychopathic individuals to emotionally distance themselves from situations and their conversational partner. The increased first-person singular pronoun use (and lack of other-related pronoun use) is also thought to be reflective of their callousness, a lack of remorse, tendency to evade responsibility, and inability to identify with others (Hare & Neumann, 2006; Morrow, 2008).

To summarize, psychopathic individuals’ impairments in language use, such as poor linguistic cohesion, increased first-person singular personal pronoun use, or inability to process the affective value of words, may provide an advantage in exploiting others. Specifically, the: 1) reduced ability to form a relational bond or empathize with their conversational partner, and 2) self-focus during conversational exchange may provide an advantage in attainment of goals (i.e., exploiting others for financial gain). In romantic relationships, psychopathic individuals’ ability to utilize semantic associations of words, and the affective value they evoke in others (e.g., the phrase “I love you” with romantic partners) may assist them in obtaining and maintaining relationships to exploit the victim for their various needs (e.g., financial). However, the mechanisms underlying their use of language and how their emotional deficits may actually aid in the exploitation of others has not been investigated.

Psychopathy and Crime

Institutionalized psychopaths commit more serious crimes, and sadistic and violent acts, compared to institutionalized non-psychopaths (Hare, Cooke, & Hart, 1999; Hare & McPherson, 1984; Huss & Langhinrichsen-Rohling, 2000). Psychopathic individuals are often viewed as carrying out crimes with an instrumental motive; aggression is used as part of premeditative, goal-directed behaviours performed with the expectation of receiving a desired reward, such as power, status, material or financial gain. This is in contrast to reactive aggression, which is the result of an emotional reaction, is spontaneous, and is associated with high levels of emotional arousal (Blair et al., 2005). However, Blais and colleagues (2014) meta-analytic findings found psychopaths to carry out both instrumental and reactive aggression. Specifically, a strong relationship was found between the interpersonal facet and engaging in instrumental forms of aggression, while Factor 2 psychopathy was predictive of reactive aggression (Blais, Solodukhin, & Forth, 2014). Additionally, the interpersonal facet has also been found to have a stronger relationship with instrumental aggression in psychopathic offenders than, reactive aggression (Walsh, Swogger, & Kosson, 2009; Woodworth & Porter, 2002).

Emotion Deficits

Psychopathic individuals' aggression, exploitative nature, and criminal behaviours are thought to emerge primarily from their emotion processing deficits (Blair, Mitchell, & Blair, 2005). There is evidence of deficits for decoding emotional stimuli across modalities, including, hearing and reading words, as well as viewing facial expressions (Marsh & Blair, 2008). Although suggestions have been made from facial

affect research for a global emotion processing deficit (Habel, Kuhn, Salloum, Devos, & Schneider, 2002; Pham & Philippot, 2010; Prado, Teeby, & Crowe, 2015), research reliably indicates a specific deficit in decoding amygdaline emotions of fear and sadness in both psychopathic individuals who are incarcerated and those residing in the community (Campanella, Vanhoolandt, & Phillipot, 2005; Hastings, Tangney, & Stuewig, 2008; Munro et al., 2007; Stevens, Charman, & Blair, 2001).

It is important to take these findings with caution as some research has not found an effect of psychopathic traits on facial affect recognition (Book, Quinsey, & Langford, 2007; Glass & Newman, 2006). Wheeler and colleagues (2009) argue that the inconsistent findings across facial affect recognition studies may be due to differences in Factor 1 and Factor 2 psychopathy. Research finds that higher rates of Factor 1 psychopathy scores are associated with improved accuracy of facial affect recognition (Blair et al., 2001; Book et al., 2007; Habel et al., 2002; Sandvik, Hansen, Johnson, & Laberg, 2014). Wheeler and colleagues (2009) argue that psychopathic individuals' experience of emotion and their perception of emotion in others are distinct processes.

In terms of experiences of emotion, psychopathic individuals are impaired at using information from emotional signals to aid in decision making. Psychopathic individuals who are incarcerated and those living in the community are been found to have poorer IGT performance when compared to controls (Blair et al., 2001; Dean et al., 2013; Mahmut, Homewood, & Stevenson, 2008; Mitchell, Colledge, Leonard, & Blair, 2002; van Honk, Hermans, Putman, Montagne, & Schutter, 2002).

Similar to VMPC lesion patients, psychopathic individuals are theorized to have emotional impairments due to dysfunctions in the OFPC (Blair, Colledge, & Mitchell,

2001; Losel & Schmucker, 2004) and amygdala because of abnormal brain development (Blair et al., 2005). These dysfunctions are thought to impair the somatic marker process and are theorized to underlie some of the characteristics (e.g., poor interpersonal skills and criminal behavior) of the disorder (Blair et al., 2005; Damasio, 1994; Marsh, Kozak, & Ambady, 2007). While, the research in psychopathic individuals suggest they have reduced emotional experience (e.g., poor IGT performance) compared to normative populations, psychopathic individuals' emotion perception may be more complex. The following section will examine psychopathy in domestic abuse, and psychopathic individuals' ability to detect and use cues of vulnerability in their potential victims and/or romantic partners.

Psychopathy and Domestic Abuse

In both clinical and subclinical samples psychopathy is consistently found to be associated with domestic abuse (e.g., Fowler & Westen, 2011; Hervé, Vincent, Kropp, & Hare, 2001; Hilton, Harris, & Rice, 2001; Holtzworth-Munroe & Stuart, 1994; Holtzworth-Munroe et al., 2000; Huss & Ralston, 2008; Mager, Bresin, & Verona, 2014; Swogger, Walsh, & Kosson, 2007).

According to the Holtzworth-Monroe and Stuart's (1994) Batterer Typology, three distinct profiles of domestic abusers exist based on behavioural and personality characteristics: 1) family only batterers, who have low levels of psychopathology and commit violence inside the home, 2) borderline/dysphoric batterers, who engage in generalized violence, and engage in more severe forms of domestic violence than the family batterers, and have problems with emotional regulation and attachment, and 3) violent/antisocial batterers, who commit the most severe forms of violence (of the three

typologies), both inside and outside of the home.

These typologies were empirically confirmed with cluster analysis based on responses from 102 male domestic abusers (Holtzworth-Munroe et al., 2000). The sample was assessed with an expanded version of the Revised Conflict Tactics Scale (Straus et al., 1996), the Generality of Violence Questionnaire (created by Holtzworth-Munroe & Stuart to assess the generality of violence outside the home), and the Millon Clinical Multitaxial Inventory to examine pathological personalities (Choca & Van Denburg, 1997; Millon, 1983).

In comparison to the other subtypes, violent/antisocial batterers tended to be more impulsive, have greater substance use, engage in more criminal behaviours, possess poorer social skills, have a more dismissive attachment style, a higher dependency on others, attitudes that support violence and hostility toward women, and were also categorized as having emotion deficits (e.g., a lack of empathy; Holtzworth-Munroe et al., 2000). Across the typologies, violent/antisocial batterers had the most overlap with characteristics of psychopathy and researchers theorize that these batterers exhibit sufficient levels of the disorder to reach clinical significance (Chase, O'Leary, & Heyman, 2001; Huss & Langhinrichsen-Rohling, 2000; Huss & Langhinrichsen-Rohling, 2006; Swogger, Walsh, & Kossen, 2007).

Huss and Langhinrichsen-Rohling (2006) assessed Holtzworth-Munroe and Stuart's (1994) Batterer Typologies in males who were seeking treatment for domestic violence. Cluster analytic techniques were used to delineate batterer subgroups. Violent/antisocial batterers were found to have the highest rates of psychopathy, as assessed by Hart and colleagues' (1995) Psychopathy Checklist Screening Version

(PCL-SV).⁹ In comparison to the other batterer typologies, violent/antisocial batterers engaged in the most severe forms of domestic abuse, with the highest rates of sexual and psychological abuse, which was found to contribute to the highest rates of harm experienced by victims (in comparison to the other typologies). These batterers were also found to have the highest levels of anger, and drug and alcohol abuse. Substance abuse is a consistent risk factor for perpetration of domestic violence (Abramsky et al., 2011; Stith et al., 2004). Okano, Langille, and Walsh (2016) found that in a sample of psychiatric inpatients, alcohol use and psychopathic traits increased the risk for the perpetration of domestic abuse.

Further research on Holtzworth- Munroe and Stuart's (1994) batterer typologies finds violent/antisocial batterers to be associated with more: 1) psychologically abusive behaviours (e.g., threats of violence; Cunha & Goncalves, 2013; Graña et al., 2014; Petersson, Strand, & Selenius, 2016), 2) mental health problems, 3) substance abuse (Cunha & Goncalves, 2013; Graña et al., 2014; Petersson et al., 2016; Serie et al., 2015), 4) employment problems (Petersson et al., 2016), 5) risk factors for domestic abuse (e.g., violation of court orders, violent attitudes, relationship problems; Petersson et al., 2016), and 6) prior arrests (Cunha & Goncalves, 2013; Graña et al., 2014). Research also finds violent/antisocial batterers to have a high risk of repeatedly engaging in abusive behaviours (Huss & Ralston, 2008) and escalating their abusive behaviours into severe and deadly forms (Petersson et al., 2016).

Alternative studies corroborate the existence of a psychopathic subtype of

⁹ While interpretation of scores of the PCL-SV uses a cut off score of 18 for high psychopathy, in the domestic abuser sample, a cut off score of seven was used instead. This cut off was cited by Huss & Langhinrichsen-Rohling (2006) from a personal communication with Hare (1999).

domestic abusers. Fowler and Westen's (2011) assessment of 1,201 males seeking treatment for domestic abuse found subtypes (via a Q-analysis) of abusers to be: psychopathic, hostile/controlling, and borderline/dependent. The psychopathic subtype was reported by Fowler and Westen to parallel the violent/antisocial batterer in Holtzworth- Munroe and Stuart's (1994) batterer typologies. Fowler and Westen reported that psychopathic abusers had the poorest level of functioning (e.g., occupational, behavioural control), had early onset of childhood behavioural problems, and a history of childhood trauma, including physical and sexual abuse. Childhood trauma and abuse is a well-documented risk factor for the perpetration of domestic abuse in adulthood (Abramsky et al., 2011; Stith et al., 2004). Fowler and Westen describe psychopathic abusers as generally more abusive and aggressive (e.g., within and outside of romantic relationships) than the other subtypes. These behaviours were found to begin in childhood and continued throughout the lifespan (Fowler & Westen, 2011).

Facial affect recognition in psychopathic abusers. Research has begun to examine domestic abusers from an information processing framework. For example, whether deficits in facial affect recognition contribute to negative interpretations of social situations, which in turn facilitate aggressive behaviours. Irrespective of the level of psychopathic traits, domestic abusers generally: 1) respond with anger to a wide range of their partners' emotions (e.g., being non-reactive/neutral, sad, and anxious), 2) perpetuate physical abuse from a diminished sensitivity to their partner's expressions of fear (Holtzworth-Munroe & Smutzler, 1996; Marshall & Holtzwoth-Munroe, 2010), 3) have diminished perspective taking abilities (Covell, Huss, & Langhinrichsen-Rohling, 2007), and 4) are more maritally distressed and less likely to comfort or support their partner

(Holtzworth-Munroe & Smutzler, 1996).

The ability to decode facial affect varies across Holtzworth- Munroe and Stuart (1994) typologies, and the results are not consistent within the individual typologies. Marshall and Holtzworth-Munroe (2010) assessed psychopathic traits via Hare's (1985) Self-Report Psychopathy Scale (the antisocial facet items were excluded) in a community sample of couples with a male partner who had committed physical partner abuse in the past five years. They found abusive husbands' level of psychopathy to be associated with a diminished sensitivity to expressions of fear (misidentifying as neutral) in displays by both their wives and unfamiliar women's faces. Consistent with Blair's (1995) VIM, Marshall and Holtzworth-Munroe theorized from their findings that a diminished perception of fear attenuates empathy, remorse, and relational bonds that would normally inhibit violence against a romantic partner (Swogger et al., 2007).

Babcock and colleagues (2008) found that the ability to decode facial affect from Ekman and Friesen's (1976) facial affect set of basic emotions (e.g., disgust, fear) varied across the different typologies. Violent/antisocial batterers were classified via their Factor 1 psychopathy scores on the Self-Report Psychopathy Scale II (SRP-II; Hare, 1985) in a sample of males who engaged in physical abuse in at least the past year. Abusers who were high on psychopathic traits were deficit in recognizing anger, happiness, surprise, and neutral expressions, with a tendency to mislabel neutral and positive faces as more negative. Babcock and colleagues (2008) interpreted these findings as violent/antisocial batterers' fundamental recognition deficit in the initial decoding stage of processing social information. This produces a retaliatory and aggressive response in the abuser. However, it is unclear the role that Factor 2 psychopathy (which is more consistently

associated with reactive aggression than Factor 1 psychopathy) could have in explaining this finding, as these traits were not assessed in Babcock and colleagues' sample.

Babcock and colleagues (2008) interpretation of their findings of psychopathic traits in domestic abusers is contrast with that of Swogger and colleagues (2007). Unlike the retaliatory and reactive nature that Babcock and colleagues interpreted from their study findings, Swogger and colleagues did not find psychopathic domestic abusers to be emotionally labile, or to lack behavioural control.

Swogger and colleagues differentiated psychopathic abusers from a larger pool of antisocial offenders. They did not find a relationship between overall psychopathy scores, the antisocial facet, or the affective facet and domestic abuse. However, a negative relationship between domestic abuse and the lifestyle facet (associated with Factor 2 psychopathy) and a positive association for the interpersonal facet (associated with Factor 1 psychopathy) were found. While psychopaths' impulsiveness and irresponsibility may place them at risk for perpetration of general violence, these factors appear less predictive in the perpetration of domestic abuse. Domestic abuse appears contingent on the interpersonal facet. In the view of Swogger and colleagues (2007), psychopathic abusers appear methodical/instrumental (e.g., exploit victims for specific means) in their abusive relationships. They also seem to be fueled by callousness, a lack of relational bonds, and the attenuation of empathy, guilt, and remorse. The findings highlight that specific traits underlying the psychopathy construct are more important in domestic abuse than the higher-order contrast of psychopathy itself (Swogger et al., 2007).

Mager and colleagues (2014) found, in a sample of individuals seeking treatment for substance abuse, that while overall psychopathy scores were related to domestic

abuse, Factor 1 psychopathy scores had a stronger association, than total psychopathy scores and Factor 2 psychopathy scores. The inconsistent findings of psychopathic traits and domestic abuse between these three studies maybe due to setting and assessment tools. Swogger and colleagues (2007) examined clinical level of psychopathy in an offender population with the PCL-R, Babcock and colleagues (2008) examined subclinical psychopathy in a community setting with the SRP-II (Forth et al., 1996), and Mager and colleagues examined a sample of individuals seeking treatment for substance abuse with the PCL-SV (Hart, Cox, & Hare, 1995), which is based on the PCL-R but developed for non-offender populations.

Psychopathy and Victim Selection

The mixed findings of psychopathic domestic abusers and facial affect recognition may be due to differences in the conceptualization and measurement of psychopathy. The affective and interpersonal traits encompassed by Factor 1 psychopathy scores may highlight that psychopathic individuals can differentiate between cues of vulnerability (e.g., sad faces) and retaliation (e.g., angry faces; Babcock et al., 2008; Wheeler et al., 2009). These findings reinforce the notion that psychopathic individuals can cognitively assess what another individual is feeling (even if they do not feel the emotion themselves; Richell et al., 2003; Sandvik et al., 2014). Traits categorized as Factor 1 psychopathy may facilitate predatory behaviours, whereas Factor 2 psychopathy traits (e.g., impulsiveness, poor behavioural control, irresponsibility) may inhibit psychopathic individuals' ability to strategically prey on their victims (Book, Costello, & Camilleri, 2013).

Emerging research on psychopathy and victim selection has investigated the role

of body language. Non-verbal cues (e.g., eye contact, posture, synchronicity of gait, length of stride, walking speed) can portray information regarding life satisfaction, personality traits (Yeagley, Morling, & Nelson, 2007), and vulnerability for victimization (Grayson & Stein, 1981; Gunns, Johnston, & Hudson, 2002; Sakaguchi & Hasegawa, 2006). Wheeler and colleagues (2009) found Factor 1 psychopathy scores (but not Factor 2 psychopathy scores) in an undergraduate sample to be positively associated with accurate detection of victim status when viewing a short film clip of an individual walking. However, psychopathic individuals who accurately identified a victim target were not able to elaborate on their reasons for this selection.

Book and colleagues (2013) replicated Wheeler and colleagues' (2009) findings in a sample of incarcerated offenders who had histories of perpetrating interpersonal abuse. Total psychopathy scores (as indicated by the PCL-R) and Factor 1 psychopathy scores were associated with accuracy in detecting prior victimization experience. Further, only Factor 1 psychopathy scores were associated with attending to individuals' gait (e.g., level of confidence, walks like an easy target) in their assessment of vulnerability (Book et al., 2013).

Psychopathic individuals have also been found to have a predatory memory for vulnerable individuals (Babiak & Hare, 2006; Camilleri, Kuhlmeier, & Chu, 2010; Wilson, Demetriooff, & Porter, 2008). Wilson and colleagues (2008) found that subclinical psychopaths (as assessed by a total score on the PPI) were more likely to remember characters who were unsuccessful (e.g., janitor) and unhappy, than those characters who expressed other emotions and were more successful (e.g., lawyer). The authors argue that a psychopathic personality permits these individuals to shift existing

memory resources away from some characters and towards those who are more vulnerable. Psychopathic individuals have also been found to accurately assess the level of assertiveness in potential victims (Book, Quinsey, & Langford, 2007). Psychopathic individuals appear able to select individuals who are both more vulnerable, easy to control, and most useful to them (e.g., financially; Babiak & Hare, 2006; Dinkins, 2015).

It is thought that psychopathic individuals likely learn how to mimic others' use of language, gestures, and emotions to manipulate, charm, and deceive potential victims (along with the victim's social support network; Brown, 2008; Pagliaro, 2009).

Techniques used by psychopathic individuals to attract victims include the use of guilt, neediness, persistence, pity or dominance of the victim's emotions, projecting blame of their behaviours onto the victim, criticism, being overly caring, and gaslighting (Brown, 2008; Kirkman, 2005).

Gaslighting is a form of psychological abuse that centers on emotional manipulation. The term was first used in the 1944 movie *Gaslight*, in which a husband tries to convince his wife that she is mentally ill by manipulating her, her friends, and the physical environment (Abramson, 2014). The term has since been adapted to describe the manipulative and brainwashing tactics of abusers during romantic relationships (Brown, 2008). In cases of gaslighting, the abuser often presents the victim with false information, or withholds information, which results in the victim's anxiety and confusion. This causes the victim to doubt their rationality, memory, perceptions, and mental health status (Abramson, 2014; Brown, 2008).

In romantic relationships, the use of fear and other manipulative tactics, such as sexual coercion, coerced/forced use of intoxication, and physical and verbal intimidation

has also been found to be associated with psychopathic traits in an undergraduate sample (Hersh & Gray-Little, 1998; Munoz, Khan, & Cordwell, 2011; Williams, Spidel, & Paulhus, 2005). Additional relationship characteristics associated with elevated levels of psychopathic traits are a dismissive attachment style, lower feelings of commitment and trust towards one's partner, fantasies about committing infidelities, acceptance of rape myths, and attempts at male poaching (luring away someone in a committed relationship; Williams et al., 2005; Malamuth, 2003).

Additional evidence demonstrates that psychopathic traits in a romantic partner contributes to relational distress and breakdown (Han, Weed, & Butcher, 2003; Savard, Sabourin, & Lussier, 2006), sexual aggression (Hersh & Gray-Little, 1998; Munoz et al., 2011; Williams et al., 2005), committing infidelities (Ali & Chamorro-Premuzic, 2010; Egan & Angus, 2004), and short-term mating strategies (Jonason, Webster, & Schmitt, 2009; Munoz et al., 2011).

In summary, it has been readily established that a subset of domestic abusers are psychopathic in nature, and contribute to severe, versatile, and frequent forms of abuse. Psychopathic abusers have a distinct interpersonal style that is centered on deception, manipulation, and emotional disconnection. Psychopathic traits have been theorized to be the result of attentional and emotional deficits that can permit psychopathic abusers to engage in instrumental forms of aggression with the purpose of exploiting their victims for a specific gain (e.g., sexual, financial). Psychopathic abusers do not experience emotion to the appropriate degree or intensity, and have difficulties recognizing fear and sadness in their victims (e.g., vocal affect, facial expressions).

Psychopathic abusers who exhibit more Factor 1 psychopathy (associated with affective and interpersonal traits) display an enhanced ability to detect their victims' emotions and mental states. These traits have also been found to underlie psychopathic abusers' ability to detect cues of vulnerability that assist them in selecting victims that may be easier and more useful to exploit. Researchers have suggested that Factor 1 traits may be more integral to the construct of psychopathy, than criminal features. This may be particularly true for those psychopathic individuals who live relatively undetected in the community. It follows, in comparison to the other subtypes of domestic abusers, that an experience with an abuser who falls under the psychopathic subtype will leave survivors susceptible to more severe experiences of abuse, which contributes to detrimental declines to emotional and interpersonal functioning.

Survivors of Psychopathic Abusers

A relationship with a psychopathic partner contributes to their partners' reduced relational satisfaction (including being less satisfied in how conflicts are handled), diminished feelings of independence, and a greater degree of psychosocial problems, including depressive symptoms, somatic complaints, psychotic symptoms, paranoia, interpersonal sensitivity, and hostility (Uzieblo, Soetens, & Bijttebier, 2011).

Kirkman (2005) interviewed 20 women on their experience of having a romantic partner with high levels of psychopathic traits. The qualitative analysis resulted in three themes: 1) superficial charm and intelligence, 2) pathological lying, and 3) antisocial pursuit of power.

1) Superficial charm and intelligence. Women explained that charm initially made the psychopathic abuser attractive to them. Both charm and intelligence were

viewed as tools to convince the women and her friends and family that the psychopathic abuser was trustworthy.

2) *Pathological lying.* Participants identified pathological lying in all aspects of the relationship, which included the abuser providing false details about their home address, financial and unemployment status, the use of aliases, and engaging in infidelities.

3) *Antisocial pursuit of power.* Seventy-five percent of women became isolated due to their psychopathic partner directly imprisoning them (e.g., putting locks on their bedroom doors), damaging her relationship with family and friends, and preventing her from seeing and communicating with others. The psychopathic abuser's behaviours evoked fear in the women from their abuser's control of her eating and sleeping, engagement in sexual harassment, and refusing her access to money. Forty percent of the women experienced physical assault and 75% of the women described their partner as living a parasitic lifestyle; the woman's home and money were used for daily living, which included persuading the women to make expensive purchases.

Further research by Pagliaro (2009) found that victimization by an individual who displayed psychopathic traits had profound effects on interpersonal functioning and emotional well-being. In her sample of 627 survivors, 75% had been involved with a psychopathic abuser for 2-5 years. The majority of the sample experienced emotional abuse, deception (e.g., lying, infidelities), and spiritual abuse (causing one to question their belief system, purpose or meaning in life).

Similar to McCann and colleagues' (1988) and Carlson and Dalenberg's (2000) findings on reactions to trauma, Pagliaro (2009) found that individuals respond to

traumatic events across cognitive, emotional, biological, and behavioural experiences.

Table 2 outlines the responses to victimization by a psychopathic individual. Outcomes of abuse experiences vary depending on the duration, severity, frequency, and type of victimization. In general, greater distress is found in survivors who experience severe, versatile, and frequent victimization over an extended period of time by someone they have a close relationship with (Basile et al., 2004; Gutner, Rizvi, Monson, & Resick, 2006; Mechanic et al., 2008a; Mechanic et al., 2008b; Sullivan et al., 2009). In Pagliaro's sample, chronic exposure to psychopathic individuals (versus isolated incidents) was related to greater distress, and symptoms of PTSD and depression.

Table 2

Responses of victimization as indicated by McCann et al. (1998) with bolded font indicating responses experienced by survivors of psychopathic abusers as indicated by Pagliaro (2009).

Cognitive	Biological	Emotional	Behavioural	Interpersonal
Perceptual disturbances:	Physiological hyperarousal:	Decrease d self-esteem	Aggression and antisocial behaviours	Sexual problems
• Intrusion	• Heart Problems	Guilt and Shame	Suicidal behaviours	Intimate relationship problems:
• Dissociation	• Central nervous system/ peripheral nervous system	Anger	Personal hygiene	• Trust issues
• Hallucinations	• Respiratory issues	Depression	neglect	• Derisive of authority, less warm/ altruistic, sceptical/ critical, neediness, people-pleasing, less confrontational, sensitive to criticism
Memory problems	Somatic disturbances: disorders	Fear & Anxiety	Substance abuse	
Cognitive biases	• Skin effects, dental issues, back problems, weak immune system, digestive system issues, endocrine diseases, reproductive issues, urologic diseases, body tension/ aches, physical injuries, repetitive movements	Hate Mood swings	Impaired social functioning:	
Rumination / wishful thinking		Embarrassment	• Agoraphobia, social withdrawal	
Concentration problems		Denial	Personality disorders	
• Planning, decision making, obsessions	• Grief	Grief Disappointment	Sleep disturbances	Revictimization
			Speech changes	Survivor becomes abuser
			Occupational changes	

Beaudette and Forth's (2011) qualitative analysis of open-ended responses from Pagliaro's (2009) sample found survivors' experiences of mental health problems (including PTSD symptoms, depression, and anxiety), which were centered on being unable to control ongoing, strong emotions.

The majority of survivors in the sample engaged in problem-focused coping.¹⁰ However, those who engaged in avoidance coping often used social withdrawal, which resulted in decreased social support and added distress (Pagliaro, 2009). Additional qualitative analysis of Pagliaro (2009)'s dataset by Bergstrom and Forth (2011) found themes regarding a distrust in themselves and other people (e.g., questioning others' motives, fear of betrayal) and a zero tolerance for psychopathic behaviour (e.g., substance abuse, parasitic lifestyle). Survivors distrusted other people and/or themselves and, as a result, engaged in unwanted and/or self-induced isolation. Survivors' perceptions of relationships were altered. In subsequent relationships, sex was obsessively sought or withheld from others. One survivor stated she had to relearn how to interact with people as her relation with a psychopathic abuser was "completely removed from the norm of behaviour" (Pagliaro, 2009, p. 90).

Some survivors explained that they took on the abusive traits of their abuser and did not treat others well, or found themselves revictimized in subsequent harmful relationships (Pagliaro, 2009). Survivors feared they were less respected by others and felt their judgement of others was faulty (Brown, 2008; Pagliaro, 2009). They felt their

¹⁰ If the event is appraised as controllable, then problem-focused coping is used to alleviate the problem (e.g., taking action, seeking tangible support from other people, planning). This is in comparison to emotion-focused coping, when events are appraised as uncontrollable strategies are used to regulate one's feelings for the event (e.g., acceptance, turning to religion, substance use, self-blame, humour, venting, positive reframing), and avoidance coping, such as denial, self-distraction, and giving up the attempt to cope (Carver, 1997; Lazarus & Folkman, 1984).

friends or family no longer trusted by them. These feelings were amplified if there were allegations of fraud by the psychopathic abuser, or by legal authorities. There were also reports of survivors stating that other people considered the survivor to have poor judgments in relationships and that survivors felt they were unworthy of further acquaintance (Pagliaro, 2009).

In corroborating themes found by Pagliaro (2009), Brown's (2008) analysis of case studies of survivors of psychopathic abusers found that such judgments by those in the survivors' social network can be transferred onto survivors. Survivors reported they did not trust themselves to be knowledgeable enough to know if they were being revictimized in a subsequent relationship, or that individuals who are not psychopathic exist in society (Brown, 2008).

Brown (2008) found that a lack of trust (for themselves and other's motives) and low self-esteem left survivors susceptible to negative recovery outcomes by causing long-term damage to their ability to be in subsequent romantic relationships. Survivors described having high levels of harm avoidance, which resulted in anxiety during dating relations. This prevented the construction of new relationships and contributed to social isolation.

During the relationship with a psychopathic partner, and years following the end of the relationship, survivors described their emotions to be "frantic, irrational, and out of control" (Brown, 2008, p. 153). Survivors described feeling emotionally and physically drained, which can be attributable to the long-term health effects of stress (e.g., from trying to understand their victimization experiences) and health problems, including

contracted sexually transmitted diseases (as a result of the psychopathic partners' infidelities; Brown, 2008).

In summary, while there has been limited research in the area of survivors of psychopathic individuals following a romantic relationship, suggestions have been made regarding profound emotional and interpersonal consequences. These findings are not surprising considering that psychopathic traits, including emotional disconnection and ability to manipulate, exploit, and deceive others, and are found to contribute to frequent and severe forms of physical violence and psychological abuse. The recovery outcomes in survivors of psychopathic abusers parallel that of the pathway proposed by Whiffen and MacIntosh (2005). The severe experiences of abuse may disrupt somatic marker functioning and lead to the impaired ability to process and utilize emotional information from one's social network to aid in their recovery. Survivors of psychopathic abusers experience severe declines in emotional functioning that undermine their mental health and commonly experience a distrust for themselves and others, lower perceptions of social support, and isolation.

In Beaudette and Forth's (2011) qualitative analysis of Pagliaro's (2009) data, survivors mainly focused on "having lost a part of themselves" because of their relationship with a psychopathic abuser and were described as "unable to forge an identity beyond being a victim". However, a select number of survivors conveyed, according to Hunter's (2010) narrative typologies, a Narrative of Transformation,¹¹ as a

¹¹ Hunter's (2010) Narrative of Transcendence was also identified: individuals do not identify with the term victim/survivor and wish to be considered normal despite their trauma (Beaudette & Forth, 2011) and Narrative of Ongoing Suffering: "participants cannot forge an identity beyond being a victim and continue to experience strong emotions". The Narrative of Silence was not present in Pagliaro's (2009) sample, which is described as remaining silent about their experience and suppressing all thoughts of their victimization in an attempt to move on with their lives (Hunter, 2010).

result of their experiences with a psychopathic individual, these survivors expressed growth and a desire to help others (Beaudette & Forth, 2011; Bergstrom & Forth, 2011). Positive changes included actively pursuing hobbies (e.g., joining support groups, taking a self-defence class), gaining confidence, and feelings of independence and empowerment from their experiences. These survivors reported improvements in their relationships by trying to help others (e.g., repairing safe friendships, having an awareness of warning signs of potential psychopathic individuals), were more appreciative of people in their support networks, and developed stronger support networks. Yet, Beaudette and Forth state the narratives of “transformed” participants “failed to provide details of their process of transformation”.

Positive Outcomes Following Trauma

The majority of trauma research focuses on the negative effects of trauma on survivors. However, researchers have argued that the majority of survivors do not develop clinical level of mental health problems and can recover relatively well from their experiences (Levine et al., 2009; Tedeschi & Calhoun, 2006). Despite this, there is little empirical evidence to confirm this claim. Lynch and colleagues (2007) recognize that there is little research examining the *transformation* process that underlies resilience: the ability to “maintain relatively stable, healthy levels of psychological and physical functioning...and the capacity for generative experiences and positive emotions” after adversity (Mancini & Bonanno, 2006, p. 972). Further, there is limited research that examines survivors who experience growth following trauma, particularly in the area of abusive relationships.

Although resilience and post-traumatic growth are often used interchangeably in the literature (e.g., Hobfoll et al., 2007), they are distinct concepts (Levine et al., 2009). Post-traumatic growth is the positive outcome from coping with trauma. It is the result of the survivor's assumptive world view being invalidated, which causes them to actively engaging in benefiting finding and meaning making of their traumatic experience (i.e., engaging in cognitive processes, such as rumination to see the benefits and meaning that has come from the traumatic experiences; Helgeson et al., 2006; Park & Ai, 2006). Survivors who exhibit post-traumatic growth perceive various benefits stemming from their traumatic experience. This includes changes in their self-perception, interpersonal relationships, and philosophy of life (Tedeschi & Calhoun, 1996). In comparison, resilience is a trait-like characteristic that acts as a protective mechanism. It facilitates individuals' ability to manage, despite the traumatic experience, and emerge relatively unchanged (e.g., resist declines in mental health; Bonanno, 2004; Levine et al., 2009).

It is clear that individuals victimized by a psychopathic individual who fall under Hunter's (2010) Narrative of Transformation also fit the description of individuals who have experienced growth or resilience. Dutton and Greene (2010) state that "better knowledge of resilience can inform new approaches for enhancing pathways to positive outcomes following victimization by a crime", which can "be integrated into both the criminal justice and health care system" (Dutton & Greene, 2010, p. 215). Despite the differences between post-traumatic growth and resilience, they share a number of correlates that will now be reviewed, including engagement in adaptive coping strategies, experiences of positive affect, and enhanced interpersonal relationships.

Correlates of Resilience

Individuals with elevated levels of resilience who experience trauma are less likely to perceive a threat to their sense of self or worldview, and are generally less affected by the trauma, than those with lower levels of resilience (Levine et al., 2009).

Resilience in survivors of crime is negatively correlated with psychosocial problems (e.g., paranoia, somatic complaints, sleep problems), is associated with lower levels of PTSD symptoms, and greater self-reported physical health (Dutton & Greene, 2010).

Qualities widely found in resilient survivors include high self-esteem (Holliman, 2006; Williams & Mickelson, 2004), an internal locus of control¹² (Dutton & Greene, 2010), determination (Lynch, et al., 2007), actively seeking change (Bonanno, 2008; Lynch, et al., 2007; Madsen & Abell, 2010), and being able to manage overwhelming emotions through creativity and maintaining good physical health, such as through exercise (Lynch et al., 2007). In addition, optimism, which is defined as “perceived cognitive-emotional energy toward positive expectations about life and future outcomes” (Madsen & Abell, 2010, p. 225), is associated with resilience, along with positive mental and physical health (including faster recovery from illness and lower levels of PTSD symptoms), problem-focused coping, and seeking social support (Ai & Park, 2005; Arce et al., 2009; Holliman, 2006; Madsen & Abell, 2010; Richardson, 2002).

Generally, problem-focused coping leads to improvements in mental and physical health. However, in the case of domestic abuse survivors, it is important to note that problem-focused coping may place survivors at an elevated risk for harm (Clements &

¹² When a person believes they are in control of their life, which is in contrast to an external locus of control: environmental factors, other people, or a higher power controls what happens in their life (Rotter, 1990).

Sawhney, 2000; Lewis et al., 2006; Park & Adler, 2003). Examples of problem-focused coping in situations of domestic abuse may include leaving the abusive relationship, disclosing the abuse to friends and family, reporting the abuse to authorities, and attempts at holding the abuser accountable for their actions. These coping strategies may be beneficial in helping the survivor gain control and a sense of safety of their situation, but there is a risk of the abuser finding out and retaliating. The highest rates of violence are reported to occur when the victim attempts to leave or has left the relationship, with 25 – 65% of partner homicide cases occur when the victim is attempting to leave or has left the abusive relationship (Sinha, 2010; Statistics Canada, 2006). Despite this, resilience and optimism are associated with positive emotional experiences, which facilitate general cognitive process that aid survivors in their recovery.

Resilience and emotional experiences. Fredrickson (2001) argues in his broaden and build theory of positive emotions that positive emotions lead to broadened repertoires of thoughts and actions (e.g., self-awareness, exploratory thoughts, problem solving) and build long-term resources, such as self-awareness, executive control, and optimism (Cohn & Fredrickson, 2008). Fredrickson and Branigan (2012) tested this theory using emotional manipulation (via film clips) and a global-local visual processing task adapted from Kimchi and Palmer (1982), finding that positive emotions broadened the scope of attention and were related to more thought-action urges, whereas negative emotions narrowed attention. The authors found that positive emotions are beneficial for overcoming adversity by contributing to broadminded coping, goal planning, and cognitive reappraisals. Research has found support for the broaden and build theory in the

connection between positive emotional experiences and resilience (Cohn et al., 2009; Tugade & Fredrickson, 2004; Tugade, Fredrickson, & Barrett, 2004).

Arce and colleagues (2009) found that participants who had higher self-reported ratings of resilience showed a bias toward positive emotions when faced with uncertain emotional expressions; participants judged neutral faces less negatively and had an overall general bias towards happiness, compared to participants of lower resilience. Arce et al. concluded that higher levels of resilience is associated with bias to process information that is congruent with a positive view of the world, and an attenuated bias to processing negative emotional stimuli (i.e., negative emotional stimuli is processed less negatively than those with lower levels of resilience).

Research on domestic abuse survivors and resilience lends support to Fredrickson's (2001) broaden and build theory. Domestic abuse survivors with a higher tolerance for negative emotions have been found to have higher levels of resilience (Lynch et al., 2007). Although, negative emotional experience after trauma has also been associated with increased distress and long-term difficulties, the ability to experience both positive emotions (e.g., tranquility, joy) and negative emotions (e.g., fear, anger) is found to reduce PTSD symptoms when compared to experiencing lower levels of emotion (e.g., emotional numbness or repression; Bonanno, 2008; Gutner et al., 2006).

The level of positive emotional expression has been found to moderate levels of resilience by reducing levels of distress, moderating stress reactivity, quieting negative emotions, buffering depression, increasing contact with a support network, and improving social relations over time (Bonanno, 2008; Mancini & Bonanno, 2006).

Overall, resilient individuals have the capacity for flexible regulation of emotional

expression, and are in better control of their emotional experiences (Dutton & Greene, 2010; Mancini & Bonanno, 2006).

Correlates of Post-Traumatic Growth

Post-traumatic growth has a transformative quality that is reflected in survivors' search for meaning/benefit finding post-trauma, and their ability to positively reframe their experiences based on the changes they perceive in a variety of domains (Tedeschi & Calhoun, 1996; Tedeschi & Calhoun, 2004). Some examples of changes that can occur post-trauma include elevated feelings of self-reliance and assertiveness, increased self-appreciation and awareness, changes in priorities, openness to experience, increased ability for problem solving, acknowledgement of personal vulnerability, a greater ability to appreciate and empathize with others, and increased feeling of control over one's life (Cobb, Tedeschi, & Calhoun, 2006; Linley & Joseph, 2004; Tedeschi & Calhoun, 1996).

Similar to resilience, post-traumatic growth, is associated with emotional stability (Linley & Joseph, 2004), positive emotional experiences (Carver & Antoni, 2004), optimism (Prati & Pietrantoni, 2009), emotional expression (Tedeschi & Calhoun, 1996; Tedeschi & Calhoun, 2004), and the ability to accurately process and effectively utilize emotional information (Tedeschi & Calhoun, 2004). Thus, similar to resilience, positive emotional experiences and improved cognitive processes (e.g., problem solving) that is associated with post-traumatic growth also lends support to Fredrickson's (2001) broaden and build theory.

Post-traumatic growth and mental health impairments. There are large inconsistencies in the findings regarding the relationship between post-traumatic growth and mental health impairments. Research has found post-traumatic growth to be inversely

related to mental health impairments (e.g., lower levels of depression, PTSD, and anxiety; Frazier et al., 2001; Johnson et al., 2007; Park & Fenster, 2004). Research has also found a positive relationship (Bensimon, 2012; Park & Lechner, 2006; Tedeschi & Calhoun, 2004; Wu, Xu, & Sui, 2016) and no relationship between these variables (Powell et al., 2003; Widows et al., 2005). For example, in a domestic abuse sample, levels of depression were not related to survivors' level of post-traumatic growth (Cobb et al., 2006).

Research has also found support for a curvilinear relationship between post-traumatic growth and post-traumatic stress symptoms (Butler et al., 2005; Kleim & Ehlers, 2009; Kunst, 2010). Those survivors with moderate levels of post-traumatic stress symptoms had the most growth, whereas those with low or high rates of post-traumatic stress rates had the lowest rates of growth. Researchers argue that moderate levels of post-traumatic stress symptoms provide an indication that the trauma was: 1) severe, 2) perceived by the survivor to be significant enough to challenge their assumptive world view, and 3) prompts the survivor to engage in cognitive processes (e.g., deliberate rumination about the trauma) to reconstruct their cognitive schemas (Calhoun & Tedeschi, 2006; Frazier, 2001). For example, McFarland and Alvaro (2000) found survivors of more severe trauma indicated greater improvements (e.g., improved sense of self), than those survivors of mildly negative events. Domestic abuse survivors also reported that experiences of abuse that was more frequent and severe was associated with elevated levels of post-traumatic growth (Cobb et al., 2006).

Survivors with high levels of post-traumatic stress may be ill equipped to have post-traumatic growth, as their coping abilities may be undermined and they may not

have the cognitive or emotional resources needed to facilitate post-traumatic growth. Further, those with low levels of post-traumatic stress do not have a need, or opportunity to engage in the cognitive and emotional processes (e.g., “meaning making” of the trauma) for post-traumatic growth as they have not been negatively impacted by the trauma to have their assumptive world view invalidated (Joseph et al., 2012; Westphal & Bonanno, 2007). This may provide insight into why survivors’ level of resilience has been found to be inversely related to their level of post-traumatic growth (Levine et al., 2009). Yet, the negative relation between resilience and post-traumatic growth are not consistent (Bensimon, 2012).

A traumatic event that is severe can initially trigger intrusive thoughts and distress, but these reactions are likely to diminish over time. Thus, the relation between mental health impairments and post-traumatic growth may vary depending on the duration of time that has occurred since the trauma. As such, post-traumatic growth may be a process that occurs over a period of time (Tedeschi & Calhoun, 2006). Research finds post-traumatic growth is positively associated with both intrusive thoughts and distress when a shorter duration of time has occurred since the trauma (Helgeson et al., 2006). Elevated levels of post-traumatic growth and positive outcomes following trauma (e.g., optimism, lower symptoms of depression and intrusive thoughts) have been found when a longer period of time that has elapsed since the trauma (Helgeson et al., 2006).

Yet, the maintenance of post-traumatic growth has been argued to require periodic negative emotional reminders of the trauma to reinforce survivors’ memories of the positive changes that have occurred (Tedeschi & Calhoun, 2004). As a result, survivors may engage in deliberate and guided rumination of the trauma (Calhoun et al., 2000).

These survivors' willingness to engage in trauma-related cognitions, and having adequate levels of coping skills and resources to put toward processing and understanding the trauma, can buffer negative emotional experiences. All together these processes are thought to prompt post-traumatic growth (Kleim & Elhers, 2009). Theoretically, it is plausible that the time since trauma can lead to a decrease in post-traumatic growth if the survivor is no longer engaging in active rumination to remind themselves of the negative aspects of trauma, and the positive changes that have occurred since the trauma (Stanton et al., 2006).

Research has also found that survivors tend to construct their past and prior self as more negative, than their present and present self (McFarland & Alvaro, 2000). Survivors may use this strategy to assure themselves of the positive changes that have occurred since the trauma (McFarland & Alvaro, 2000). Thus, it is unclear whether survivors have experienced actual growth in response to trauma, or if post-traumatic growth is a coping strategy that is based on self-deception, an exaggerated sense of personal control and optimism, and denial of negative effects of the trauma (Davis & McKearney, 2003; Maercker & Zoellner, 2004; Sumalla, Ochoa, & Blanco, 2009). Further research is needed to investigate both the: 1) indicators of post-traumatic growth that can corroborate that survivors can actually experience growth following trauma, and 2) whether levels of post-traumatic growth vary with respect to the duration of time that has passed since the trauma.

Social Support

Survivors of crime who have access to social support and who receive support from others have greater resilience, post-traumatic growth, and lower levels of mental

health impairments (Cobb et al., 2006; Holliman, 2006; Lynch et al., 2007; Richardson, 2002; Tedeschi & Calhoun, 1996; Williams & Mickelson, 2004). Social support is comprised of “having caring relationships that offer positive feedback, a sense of being cared for, and positive expectations of the individual’s accomplishments” (Anderson, 2010, p. 72), and enhances feelings about the controllability of a stressor (Carlson & Dalenberg, 2000). Social support can be emotional (e.g., love or esteem), tangible (e.g., material goods), or informational (e.g., advice or feedback; House, 1981).

Canady and Babcock (2009) state that receiving social support helps survivors of domestic abuse learn different coping mechanisms, and provides an outlet for emotional expression and addressing emotions evoked from the abusive experiences. Specifically, emotional forms of support are found to be crucial in the time shortly after the trauma has occurred, and may be less necessary as time progresses (Schwarzer et al., 2006). Further, self-disclosure about trauma is associated with higher perceptions of emotional connection with others, feelings of closeness, and willingness to accept the support and opinions of others (Lepore et al., 2004; Tedeschi & Calhoun, 2004).

Out of 220 narratives from survivors of violence, 41.6% of them had said their social support network were what helped them overcome the negative effects of their victimization (Madsen & Abell, 2010). Coker and colleagues (2002) found greater levels of social support lead to higher perceptions of physical and mental health in a sample of women who experienced physical, sexual, and emotional abuse during a romantic relationship. Perceptions of social support were also found to help survivors of domestic abuse recover from mental health impairments (i.e., anxiety, PTSD, depression; Blasco-Ross et al., 2010).

The role of mentoring others who have experienced similar situations, or having a role model who experienced positive change following an abusive relationship is predictive of overall positive functioning following trauma (Dutton & Greene, 2010; Senester & Caldwell, 2002). Such role models may be found through social service agencies, which can provide survivors with a place of trust where they can talk to others who have had similar experiences, receive support, and other forms of assistance, such as protection from domestic abuse (Holliman, 2006; Lynch et al., 2007). Arguably, to increase levels of resilience and post-traumatic growth, especially after interpersonal victimization, it is important to be able to generate and maintain constructive, caring, stable relationships with others (Lynch et al., 2007; Madsen & Abell, 2010; Ramos & Leal, 2013; Williams & Mickelson, 2004). However, repeated victimization, which is common in the case of victims who are abused by individuals with high levels of psychopathic traits, may alter victims' perceptions of available social support, enhance social isolation, and exacerbate distress (Hanson et al., 2010; Yap & Devilly, 2004).

Cobb and colleagues (2006) found women in abusive relationships reported lower levels of post-traumatic growth (in comparison to those who exited an abusive relationship), particularly in their ability to relate to others. However, Ulrich (1998) argues that victims of an abusive relationship must experience post-traumatic growth to permit them to successfully leave an abusive relationship. Yet, the ability to develop post-traumatic growth during an abusive relationship may be dependent on the accessibility of social support, as well as the victims' perception of social support.

While research consistently associates post-traumatic growth with improved relationships (e.g., increased empathy, closeness, desire for empathy) the direction of this

relationship is not clear (Linley & Joseph, 2004; Prati & Pietrantoni, 2009). Research finds that survivors with post-traumatic growth actively seek out social support, accept the support offered by others, and invest in new support networks (Calhoun & Tedeschi, 2001). However, accessible social support after trauma may also act as a catalyst in prompting survivors' capacity to achieve post-traumatic growth (Prati & Pietrantoni, 2009). Further research is needed to clarify the interrelationship between post-traumatic growth and social support to provide reliable indicators of adjustment to trauma (Westphal & Bonnano, 2007). In particular, how social support may aid victims of domestic abuse to exit the relationship by facilitating post-traumatic growth, in order to ensure more positive outcomes in the survivors' recovery.

In summary, the majority of research on survivors has focused on the negative aspects of recovery. However, researchers argue that survivors can recover relatively well from their experiences. Emerging research posits that resilience and post-traumatic growth are two mechanisms that may underlie survivors' ability to experience positive outcomes during their recovery. Thus, while Whiffen and MacIntosh (2005) propose a negative feedback pathway between abuse survivors' declines in emotional functioning and interpersonal relationship, this feedback pathway may be influenced by the extent survivors' exhibit resilience or post-traumatic growth. Although survivors may experience initial distress reactions from the trauma, those who are more resilient may be better able to "bounce back" and avoid experiencing significant declines in emotional functioning and to effectively maintain and utilize support from their social network (p.1; Tugade and Fredrickson, 2004). On the other hand, survivors may experience more severe impairments to their mental health, which could prompt them to engage in

meaning making of their experiences and make changes in their life. Changes associated with post-traumatic growth often include a greater appreciation and utilization of one's social relationships. Overall, social support has been found to consistently facilitate these positive outcomes following trauma and improves survivors' mental health. While research has established that survivors of psychopaths can experience positive outcomes following trauma, the details of the process of their transformation is unknown.

Overview of Studies

The objective of the studies for the current project was to extend Whiffen and MacIntosh's (2005) feedback pathway to a sample of survivors who had a prior romantic relationship with a psychopathic abuser by examining their relationship experiences and recovery.

Whiffen and MacIntosh (2005) theorize that the strategies survivors use to cope with distress from victimization can perpetuate impairments in emotional functioning. It is common for survivors to either isolate themselves, or to maintain an emotional distance from others. As a result, they are often unable to form close, trusting relationships and develop further distress from a lack of social support. Whiffen and MacIntosh argue the pathways between interpersonal relations and impairments in emotional functioning require closer investigation. Thus, the current investigation focused specifically on how emotional functioning (e.g., mental health, utilization of emotional information from the environment) influenced information processing, and whether these processes affected outcome trajectories (e.g., of post-traumatic growth or mental health impairments) by influencing social relations.

Due to the exploratory nature of the research area, the project was divided into two separate studies. Broadly, Study 1 investigated whether survivors' abuse experiences and emotional functioning (e.g., mental health) during their recovery influences the level of psychopathic traits they ascribe to their abusive partner.

Study 2 provided additional evidence for the connection between psychopathic traits, mental health outcomes, post-traumatic growth, and resilience by including two tasks: a facial recognition task and the IGT. Both these tasks are theoretically tied to social decision making and provides an objective assessment of emotional functioning. The facial recognition task examined survivors' ability to accurately process emotional stimuli from social situations. The IGT examined whether survivors' can effectively make decisions by utilizing emotional information to learn from their experiences. Data from both tasks were used to provide insight into the role of somatic markers underlying survivors' recovery outcomes, in terms of their emotional (e.g., mental health, resilience), and interpersonal functioning (e.g., social support).

Study 1

Study 1 was carried out as an exploratory investigation of victimization by a psychopathic abuser in a romantic relationship. The purpose was to obtain baseline data for determining the extent survivors' experiences during the relationship (e.g., types and severity of abuse) and after the relationship ended (e.g., symptoms of mental illness) influenced their ratings of psychopathic traits they ascribed to their abuser.

Study 1 consisted of two parts. Study 1a was purely quantitative and utilized statistical analyses of participants' questionnaire responses (e.g., resilience, PTSD symptoms). Study 1b adopted a mixed-methods approach. It incorporated information

about participants' demographics, victimization experiences, and assessment of their abusers' psychopathic traits, together with a linguistic and qualitative analysis of participants' open-ended questionnaire responses. Beaudette (2012) applied a mixed-methods approach to her exploratory study, which investigated survivors of psychopaths in the workplace. Beaudette noted that mixed-methods approaches provide a means to assess data for a more comprehensive perspective of the phenomenon (Creswell & Plano-Clark, 2011; Teddlie & Tashakkori, 2009).

Research Question One: Do survivors who experience abuse that is more versatile, physically harmful, and frequent ascribe higher levels of psychopathic traits in their abusers (Study 1a)?

Recent research has explored the effect that abusers' psychopathic traits have on survivors' experiences during romantic relationships (Anderson, 2012; Brown, 2008; Kirkman, 2005; Leedom & Anderson, 2011; Pagliaro, 2009). Psychopathic traits are associated with a range of abusive behaviours, such as sexual aggression (Hersh & Gray-Little, 1998; Munoz et al., 2011; Williams et al., 2005) and engaging in infidelities (Ali & Chamorro-Premuzic, 2010; Egan & Angus, 2004). Psychopathic abusers have higher engagements in sexual, physical, and psychological abuse (Holtworth-Munroe et al., 2000; Petersson et al., 2016), a greater likelihood of repeated perpetration of domestic abuse (Huss & Ralston, 2008), and escalation of the abuse into more severe and deadly forms (Petersson et al., 2016).

Despite the prevalence of harm that can be perpetrated by psychopathic abusers, little research has focused on abusers' psychopathic traits as a predictor of the patterns of abusive behaviours survivors' experience throughout a romantic relationship.

Psychopathic abusers may have a tendency to engage in frequent and severe forms of both physical (e.g., physical, sexual) and non-physical (e.g., property, spiritual) forms of abuse. This may be due to their characteristic affective deficits, impulsiveness, poor behavioural control, risk-taking behaviours, tendency to engage in a parasitic lifestyle, and need for stimulation (Cleckley, 1972; Kirkman, 2005).

What may permit individuals with psychopathic traits to initiate and maintain romantic relationships over an extended period of time in the face of these negative characteristics is thought to be their ability to charm and manipulate (Leedom & Anderson, 2011). Psychopathic individuals have been found to engage in a number of tactics that permit them to effectively select and manipulate their victims (Anderson, 2012; Book et al., 2006; Book et al., 2013; Brown, 2008; Dinkins, 2015; Kirkman, 2005; Wheeler et al., 2009). For example, they are capable of accurately assessing cues of vulnerability (e.g., level of confidence, assertiveness, and prior victimization status; Book et al., 2007; Book et al., 2013). They are also capable of expressing feelings of love (even if they are unable to experience deep emotions) as a means to help their partner establish trust and connection with them (Anderson, 2012). Psychopathic individuals who can charm and manipulate their victims into a committed romantic relationship for a longer period of time likely have more opportunities to engage in abusive behaviours. For example, research suggests that longer relationships place victims at an increased risk for severe forms of abuse, including physical injuries (Mechanic et al., 2008a).

I expected that, independent of the length of the relationship, experiences of abuse that are reported to be more physically harmful, frequent, and versatile would predict participants' ascribing more psychopathic features to their abusers [H1a]. I also expected

that psychopathy would be associated both physical (i.e., physical, sexual) and non-physical (i.e., deception, emotional) types of abuse [H1b].

Research Question Two: Do survivors' current experiences of emotional functioning influence the level of psychopathic traits they ascribe to their abusers (Study 1a)?

Domestic abuse is extensively associated with declines in the emotional functioning of the abuse recipient (e.g., intense negative emotional experiences, depressive symptoms; Anderson, 2010; Campbell, 2002; Carlson & Dalenberg, 2000; Carney & Barner, 2012; Foa et al., 2000; Lawrence et al., 2009; Taft et al., 2006; Walker, 2009).

Although being in a relationship with a psychopathic abuser is thought to be a powerful predictor of continued physical violence (Huss & Langhinrichsen-Rohling, 2006; Petersson et al., 2016), it is also incredibly detrimental to the survivor on an interpersonal level. Emotional abuse, irrespective of the level of psychopathic traits in the perpetrator, has been found to consistently impair survivors' emotional functioning (Carney & Barner, 2012; Lawrence et al., 2009; Mechanic et al., 2008b). Psychopathic individuals' limited ability to respond to emotional cues and their capacity to manipulate and exploit others may allow them to perpetrate more severe, versatile, and frequent episodes of emotional abuse (Anderson, 2012; Brown, 2008; Kirkman, 2005; Leedom & Anderson, 2011; Pagliaro, 2009).

The recent attention to survivors of psychopathic individuals demonstrates that this population experiences profound declines in emotional functioning, with experiences of symptomology of PTSD, anxiety, and depression (Beaudette & Forth, 2011; Brown, 2008; Pagliaro, 2009; Uzieblo et al., 2011).

These detrimental effects of domestic abuse are exacerbated if the abuse is frequent and over an extended period of time (Humphrey et al., 2012; Sullivan et al., 2009). However, protective factors may mitigate these effects. The amount of time that has elapsed since trauma has been found to decrease the negative effects that trauma can have on well-being (Hayes et al., 2012; Kleim & Ehlers, 2009). In the current study, the amount of time since the survivor has last been in contact with their abuser may influence their levels of emotional functioning. In addition, resilience has also been found to attenuate the effects of adversity, and is found to be consistently associated with positive emotional experiences, lower levels of mental health impairments, and effective coping strategies (Arce et al., 2009; Cohn & Fredrickson, 2008; Lynch et al., 2007; Madsen & Abell, 2010).

I expected that, after controlling for the length of the abusive relationship, time since last contact with the abuser, and participants' level of resilience, participants who experience greater declines in emotional functioning (i.e., emotional experiences that are more negative than positive, and higher levels of PTSD, anxiety, and depressive symptoms) would describe their abusers as more psychopathic [Hypothesis Two].

Research Question Three: Do survivors' abuse experiences and current mental health impairments affect their ratings of specific categorizations of psychopathic traits (e.g., Factor 1, lifestyle facet, etc.; Study 1a)?

Research consistently indicates that mental health can be severely affected by physical and non-physical forms of abuse in both survivors of domestic abuse and those affected by psychopath victimization (e.g., Beaudette, 2012; Campbell, 2002; Carlson & Dalenberg, 2000; Pagliaro, 2009). While physical abuse is detrimental to survivors, non-

physical forms of abuse are found to be more frequent, long-term, and lead to significantly more detrimental effects on survivors' mental health (Carney & Barner, 2012; Lawrence et al., 2009; Queen, 2007; Taft et al., 2006; Townson, 2009).

Psychopathic traits are found to contribute to severe forms of physical violence, but also emotional disconnection and manipulation, which contribute to severe forms of emotional abuse. Psychopathic individuals can live relatively undetected in the community by exploiting others via immoral, rather than criminal, behaviours. However, little research has been done to unpack the effect that specific traits of psychopathy have on perpetrating forms of abuse during romantic relationships and their effect on the well-being of survivors.

The majority of research conducted on psychopathy in domestic abuse tends to only assess Factor 1 characteristics (i.e., affective and interpersonal traits; e.g., Marshall & Holtzworth-Munroe, 2010). Researchers have argued that Factor 2 characteristics (i.e., antisocial and lifestyle-based traits) are less relevant in the context of domestic abuse, which is thought to be due to the number of items associated with contact with the criminal justice system (see Babcock et al., 2008; Marshall & Holtzworth-Munroe, 2010). Research has also suggested a stronger association between Factor 1 psychopathy and domestic abuse, than Factor 2 psychopathy (Mager et al., 2014; Swogger et al., 2007). Research highlights that Factor 1 psychopathy scores (particularly the interpersonal facet) underlies psychopathic individuals' ability to effectively select and manipulate victims, process others' mental states, and contribute to engagement in instrumental aggression (Blais et al., 2014; Book et al., 2007; Book et al., 2013; Richell et al., 2003; Walsh et al., 2009; Woodworth & Porter, 2002; Wheeler et al., 2009).

In terms of Factor 1 psychopathy, psychopathic individuals' ability to emotionally disconnect may allow them to successfully exploit and manipulate others, allowing them to engage in abuse that is more frequent and detrimental to their victims (Anderson, 2012; Brown, 2008; Kirkman, 2005; Leedom & Anderson, 2011; Pagliaro, 2009). However, abusive behaviours, particularly those that are frequent, versatile, and physically harmful, may be more related to impulsiveness, irresponsibility, poor behavioural control, and a need for stimulation. These traits fall under Factor 2 psychopathy characteristics (and criminal versatility as it relates to the antisocial facet).

Based on these considerations, the hypotheses regarding the psychopathy factors for Research Question Three are:

- The frequency of abuse and participants' mental health (i.e., greater symptoms of PTSD, depression, and anxiety) were expected to be predictive of ascribed Factor 1 psychopathy scores [Hypothesis 3a].
- Abuse variables (i.e., frequency, degree of physical harm, and versatility) were expected to be predictive of ascribed Factor 2 psychopathy [Hypothesis 3b].

The hypotheses for the psychopathy facets are:

- Interpersonal and affective facets falling were expected to be the most strongly associated (of the facets) with participants' mental health impairments (i.e., greater symptoms of PTSD, depression, and anxiety) [Hypothesis 3c].
- The interpersonal facet was expected to be positively associated with abuse frequency [Hypothesis 3d].
- The lifestyle facet was expected to be positively associated with the versatility and frequency of abuse [Hypothesis 3e].

- The degree of physical harm and versatility of abuse were expected to be positively associated with the antisocial facet [Hypothesis 3f].

Research Question Four: How do psychopathic traits enhance abusers' ability to gaslight their victims (Study 1b)?

Recently, research has focused on the profound effects that emotional abuse in the context of romantic relationships can have on the mental and physical health of survivors. Emotional abuse is often reported to occur in conjunction with other forms of abuse (e.g., financial), precedes physical abuse, and is reported to be more long-term, terrorizing, and result in greater health impairments than physical abuse (Coker et al., 2002; Foran et al., 2014; Lawrence et al., 2009; Queen, 2007; Schumacher & Leonard, 2005; Taft et al., 2006; Walker, 2009).

A particularly debilitating and subtle form of emotional abuse is gaslighting. As noted earlier, gaslighting is the presentation of false information used to disorient the victim and cause them to doubt their own reality (i.e., memory, perception, feelings, and mental stability). While gaslighting is often based on the outcome of the abuse recipient feeling like they are mentally ill, the focus of Research Question four will be on the processes surrounding gaslighting as specifically related to abuse recipients doubt their own reality, which is inclusive of doubting their mental stability (e.g., feeling mentally ill), but also doubting their perceptions of situations and feelings.

Gaslighting tactics carried out by abusers include: 1) stating to the victim that they are crazy or paranoid, 2) invalidating the victim's emotions, 3) stating to the victim that they do not understand the victim's point of view, and 4) stating that the victim misremembered a situation, and/or that a situation never occurred. It follows that due to

the feelings of self-doubt and confusion from emotional abuse, and specifically gaslighting experiences, it can be difficult for victims to: 1) define the abusers' behaviours as abusive, and 2) to discern the severity of abuse in the relationship (Lynch, 2013; Queen, 2007; Walker, 2009).

Evans (2010) argues that the experience of emotional abuse is context-related and individually constructed because it is based on the victim's perception of the world, social context, and language. Emotional abuse, especially when it occurs covertly (i.e., manipulation, lying, in comparison to overt forms, such as name-calling), can alter victims' notion of reality, which includes their assumptive worldview (e.g., that the world is meaningful and just, the self is worthy; Evans, 2010).

In healthy romantic relationships, each partner approaches the relationship from a shared reality of mutual worth, connection, respect, support, and encouragement (Evans, 2010). However, in abusive relationships, the reality between the partners is not shared. The abuser's reality is based on power and control, and the victim approaches the relationship from the assumption of a shared reality of mutual worth and connection (Carney & Barrner, 2012; Evans, 2010; Follingstand & Dehart, 2000; Johnson & Ferrero, 2000).

During the abusive relationship, the victim projects their assumption of a shared reality, which includes their belief of what constitutes a loving and mutually supportive relationship, along with their desire for that loving and mutually supportive relationship. Unbeknownst to the victim, the abuser attempts to fulfil their need for power by exploiting the victim's reality, including the victim's beliefs and projections (Carney & Barrner, 2012; Evans, 2010; Follingstand & Dehart, 2000; Johnson & Ferrero, 2000).

Thus, when abusers begin to engage in abusive behaviours, the victim attempts to adjust to the situation for the sake of the relationship.

Abusive episodes are often followed by honeymoon-like phases that mimic the courtship period of the relationship (i.e., a time at the beginning of the relationship when the abuser demonstrated love and commitment to the victim; Walker, 2009). Victims may be fixated on the courtship period as the baseline level of the relationship. Victims may view any strains in the relationship as temporary problems that, once fixed, will return the relationship to baseline levels. Walker (2009) argues that abusers maintain control over their victim in romantic relationships by cycling through abusive episodes and honeymoon phases (i.e., termed the Cycle of Violence).

A romantic partnership with a non-empathetic partner, such as those with one who is psychopathic, can result in distress, especially if there are abusive behaviors (Milller, 1994). Victims often alter their identity by focusing on their partner's needs instead of their own as a means to both mitigate their own distress and as an attempt to connect with their partner (Hormouth, 1990; Miller, 1994). Research has also suggested that victims strategically shift attention away from their own wants and needs to that of their partner, in order to anticipate and prevent future episodes of abuse (Lynch, 2013). Through repeated experiences of this Cycle of Violence, victims' self-worth and energy deteriorate, and feelings of self-blame and helplessness increase (Othman, Goddard, Pieterman, 2014; O'Neill & Kerig, 2000; Walker, 2009). Walker (2009) argues that the cycle between abusive and non-abusive episodes, taken with the victim's reactions (e.g., distress during abuse episodes, happiness/relief during the honeymoon phase) conditions

victims to remain in abusive relationships as their self-esteem can become dependent on their abuser.

Due to psychopathic individuals' manipulative, exploitative, and deceitful characteristics, these individuals appear to be prime candidates for using gaslighting tactics as a means to fulfill their needs for power and control during a romantic relationship. Based on these considerations, the central question for Study 1b is how can someone else convince another person that their reality (e.g., beliefs, feelings, memories) is wrong? The focus will be on how psychopathic traits enhance abusers' ability to use language to gas light their victims during romantic relationships.

Method

Participants

Following Ethics approval from Carleton University, adult participants (over the age of 18), who self-identified as having a prior experience of being in a heterosexual abusive relationship with someone who displayed psychopathic characteristics were voluntarily recruited from the community. A list of psychopathic traits was listed on the recruitment announcement, which were posted on domestic abuse survivor support websites over a period of six weeks (following permission from the website administrator; see Appendix A for Recruitment Announcement¹³). These websites included those that offered support for domestic abuse survivors and those websites that focused on surviving abusers who exhibited narcissistic, sociopathic, or psychopathic characteristics.¹⁴ Prior research by Pagliaro (2009) used similar methods to recruit

¹³ Contrary to the description in the recruitment announcement and informed consent form in Appendix A and Appendix C, no data from undergraduate students or a control groups were collected.

¹⁴ The reasoning for this gain a variable range of types of participants as possible. Survivors may be hesitant to label their abuser as psychopathic as a layperson may associate the term with serial killers

survivors of psychopathic abusers to gain a large sample size that would have sufficient power and a variable range of scores on the measures. Riva and colleagues (2003) found that conducting psychological research online can be a viable alternative to lab-based studies.

Participants included 105 adult survivors of a heterosexual abusive relationship. The majority of participants identified as female ($n = 78$; 93.9%), Caucasian ($n = 75$; 90.4%) and reported an average age of 41.16 ($n = 83$; $SD = 9.81$). Participants were well educated, with the highest level of education achieved ranging from 18.1% with a graduate degree ($n = 15$), 37.4% completed university ($n = 31$), 30.1% completed college ($n = 25$), and 13.3% finished high school ($n = 11$). In terms of employment status, approximately, 57.6% of participants worked full-time ($n = 47$), 14.5% were unemployed and not looking for work ($n = 12$), 12% worked part-time ($n = 10$), and 6% worked seasonally ($n = 5$).

Procedure

Participants were directed to a secure website (www.cuaftermath.com) from the recruitment announcement. Participants created a secure account on the website with their own username and password. Upon making an account, participants were asked to read a webpage entitled Warnings and Precautions for Victim Populations, which provided a description of common symptoms of mental health problems that can occur in domestic abuse survivor populations (Appendix B). This information was anticipated to help participants assess their current state and if they were emotionally fit to participate in the study. Following acknowledgement that the participant had read the Warnings and

(Smith, Edens, Clark, & Rulsey, 2014). A layperson may also be more familiar to traits associated with narcissism than those specifically associated with psychopathy.

Precautions for Victim Populations webpage (by indicating yes or no on the option bubble provided), each participant was directed to the Informed Consent webpage where they provided their consent to participate in the study (see Appendix C for the Informed Consent form).

Participants were told that if wished to take a break from the study and continue at their convenience, the information they provided up to that point would be saved in their secure account. Participants were able to do this using the Sign Out option, which was an important feature due to the length of the study and the cognitive and attention deficits that can result from trauma (Brandes et al., 2002). Alternatively, participants were also given an option to Withdraw from the Study, where they were asked if they would like to stop participation in the study and not return to their account by indicating yes in the yes/no option provided. If they indicated yes, they were presented with the Debriefing Form (Appendix D).

Participants completed eight self-report questionnaires that were estimated to take one and a half hours to complete. The questionnaires were in a fixed-order as they will be presented in the following section on Measures. Following completion of these questionnaires, participants were provided with a Debriefing form.

Measures

1) Demographics. Participants completed a five-item demographics questionnaire, which included items on age, gender, ethnicity, employment status, and level of education (see Appendix E for a complete listing of items in this measure). Age was treated as a continuous variable where participants were asked to type their answer in a text box. Dichotomous variables included gender (0 = male, 1= female) and categorical

variables included ethnicity and employment status. Education level was treated as an interval variable and was coded sequentially from lowest (elementary school = 0) to highest level (graduate school = 5) of education. Participants were asked their gender in a provided option bubble. The remaining questions were answered by selecting an option from a list in a series of drop down menus.

2) Victimization Screening Survey (VSS). A 10-item questionnaire was created for Study 1 based on Pagliaro's (2009) questionnaire that assessed experiences with a psychopathic individual. Appendix F provides details of the full scale.¹⁵

The VSS requested demographic information about the abuser (e.g., gender, ethnicity), length and type of relationship, time since last contact with the abuser, frequency of abuse, degree of physical harm from abuse, and provided a list of eight types of abuse with examples: physical (e.g., punching, choking, blocking), sexual (e.g., psychological or physically forced coercion into sexual acts), substance (e.g., forced use of substances), property (e.g., destruction of property, harming pets), financial (e.g., disruptions at place of employment, control of finances, pressuring purchases, monetary theft), deception (e.g., lies, aliases, infidelities), emotional (e.g., passive aggression, name-calling), and spiritual abuse (e.g., causing one to question belief system/religion, purpose/meaning in life).

The type of relationship was coded as: 0 = boyfriend/girlfriend, 1 = common-law, 2 = spouse, 3 = other. Time since last contact with the abuser was coded as: 0 = N/A (applicable if the survivor is in current contact with their abuser), 1 = less than six

¹⁵ Due to requests by the Ethics committee, participants were asked if they were being treated for a mental health issue and if so, whether they had received clearance from their counsellor/doctor to participate in the study. This data was not included in the analysis.

months, 2 = six to twelve months, with the remaining options in years (e.g., two to five years, 20+ years). The length of relationship was coded as: 0 = less than six months, 1 = six to twelve months, etc., and the remaining options were in years.

Each of the eight types of abuse were treated as dichotomous, where each variable was coded with a 0 = no and 1 = yes for if the participant did or did not experience the specific type of abuse. Frequency of abuse and the degree of physical harm sustained from were treated as interval variables and sequentially coded as presented on the questionnaire [i.e., for degree of physical harm 0 = none, 1 = mild injury/ no medical treatment, etc., for frequency 0 = rarely, 1 = sometimes (a limited number of incidents)].

3) Modified Self-Report Psychopathy Scale-Short (MSRP-S). The MSRP-S is a 29-item scale that asked participants to assess the extent their abuser exhibited psychopathic characteristics on a Likert range from 1 (Disagree Strongly) to 5 (Strongly Agree; Appendix G). In following the protocol of Pagliaro (2009) and Beaudette (2012), participants were asked to only answer questions they were certain about based on their observations of their abuser and to leave the remaining blank. A higher score on the MSRP-S indicated a greater degree of psychopathic characteristics in the abuser, with a maximum score of 145.

The MSRP-S is based on the long-version first used by Pagliaro (2009) in their study of victims of psychopaths. The MSRP-Long (MRSP-L) was based on the 64-item Self-Report Psychopathy Scale-III (SRP-III), which was designed to assess psychopathic traits in the general population (Paulhus et al., 2016). The MSRP-S is modified from the short-form of the Self-Report Psychopathy Scale (SRP-SF; Paulhus et al., 2016), to evaluate psychopathic traits from a third-party perspective.

Beaudette (2012) found in their sample of survivors of psychopathic abusers in the workplace, that the MSRP-S demonstrated fair internal consistency ($\alpha = .42$ to $.80$).¹⁶ To ensure that the sample was representative of psychopath survivors, those who ascribed low rates of psychopathic traits to their abusers were removed, which lead to an average MSRP-S score of 87.20 ($SD = 17.68$).

The SRP-III and SRP-SF are based on the PCL-R. Unlike the PCL-R, however, both versions of the SRP do not offer a cut-off score for a clinical diagnosis of psychopathy. Instead, the scales offer an assessment of the degree to which an individual exhibits psychopathic traits. Examining psychopathy in the general population as a continuum, rather than dichotomously (with a cut off score) has been readily supported (Hare & Neumann, 2008; Seara-Cardoso, Neumann, Roiser, McCrory, & Viding, 2011).

Validity of the SRP-III and SRP-SF. Both the SRP-III and SRP-SF demonstrate good reliability and validity in subclinical populations (Neal & Sellbom, 2012; Williams, Nathanson, & Paulhus, 2003; Williams, Paulhus, & Hare, 2007), with good internal consistency ($\alpha = .79$; Paulhus & Williams, 2002).

Mahmut and colleagues' (2011) factor analysis revealed the SRP-SF to contain a four-factor structure that coincides with the facets of psychopathy: lifestyle (7 items), affective (7 items), interpersonal (7 items), and antisocial (8 items). All items of the SRP-SF were found to have good internal consistency, with a Cronbach's alpha of .86. Paulhus and colleagues (2016) provide normative data of the total SRP score and the four facets. Paulhus and colleagues reported an average total score of 41.83 ($SD = 10.60$) in a sample of 638 drawn from the community, with an average for the affective facet ($M =$

¹⁶ No additional information in Beaudette (2012) was provided regarding whether the alphas are about the subscales, and/or total score.

10.48, $SD = 3.24$), interpersonal facet ($M = 11.64$, $SD = 3.49$), lifestyle facet ($M = 11.83$, $SD = 4.22$), and antisocial facet ($M = 7.87$, $SD = 2.89$).

Williams and colleagues (2003) performed a confirmatory factor analysis on the SRP-III based on responses from 274 undergraduate students. For convergent validity, the SRP-III correlated with: 1) related measures of psychopathy and antisocial behaviours, including the LSRP (Levenson et al., 1995), $r = .62$, Eysenck Personality Questionnaire-Psychoticism (Eysenck & Eysenck, 1985), $r = .62$, and the PPI (Lilienfeld & Widows, 2005), $r = .34$, and 2) traits similar to psychopathy, such as narcissism, $r = .46$, and Machiavellianism, $r = .58$. The SRP-III was also found to be related to bullying, $r = .37$, drug use, $r = .24$, crime, $r = .27$, anti-authority attitudes, $r = .29$, sexual aggression, $r = .38$, and dating violence, $r = .32$ (Williams, Spidel, & Paulhus, 2005).

Potential strengths and limitations. Although preliminary research on psychopath survivors has used the MSRP-L and MRSP-S to assess psychopathic traits in abusers (e.g., Beaudette, 2012; Pagliaro, 2009; Uzieblo et al., 2011), there are potential limitations. These include survivors exaggerating the presence of psychopathic traits in their abuser due to possible feelings of resentment from the harm the abuser caused.

To assess the potential bias in victim's using the MSRP-S, Uzieblo et al. (2011) asked 154 female participants to evaluate (via the MSRP-S) psychopathic traits in their current male partners¹⁷, while the male partner evaluated these traits in themselves (via the SRP-SF). There were significant correlations between the total score and facet scores (e.g., affective, lifestyle) between the SRP-III and the MSRP-S. However, in comparison to the male participants' self-reported ratings, their female partners tended to

¹⁷ The extent of abusive behaviors perpetrated by the male partners was not provided on the conference presentation.

underestimate the males' psychopathic traits. This could be because the victim may not know the extent of the abuser's antisocial behaviours (participants can skip questions on either the long or short versions of the MSRP if they are unsure), which may be because psychopathy is associated with pathological lying, deception, and the use of aliases. It could also be because victims may not be aware of their partners' previous history.

Victims may also doubt their own judgment about their partner due to emotional abuse (i.e., the abusers may cause victims to doubt their perceptions and memory), shame, denial, and self-blame. Uzieblo et al. highlight a possible social desirability bias where victims may want to show their partner in a positive light, especially because they are currently in the relationship with the psychopathic individual.

Psychopathic individuals who live in the community may engage in immoral behaviours (falling under the interpersonal facet), as opposed to criminal behaviours (falling under the antisocial facet), which may be the reason why psychopathic individuals are able to remain relatively undetected in the community. Thus, ratings on items related to the antisocial facet on the MSRP-S and MSRP-L may be lower than items assessing the antisocial facet in an offender population.

Individuals who have survived a romantic relationship with a psychopathic partner provide a useful resource for understanding the relationship dynamics and personality patterns associated with psychopathy. This is because personality disorders have a central theme of a unique, yet dysfunctional interpersonal style (Widiger & Frances, 1985). In addition, the majority of items used to assess psychopathy (such as those in the PCL-R) address how psychopathic traits manifest in interactions between significant others. An individual who has survived a close, intimate relationship with a

psychopathic individual for an extended period of time has the potential to provide valuable, and perhaps more accurate knowledge of the individual's personality, when compared to a stranger trained in psychopathy assessment tools.

4) Affect Intensity Measure (AIM; Weed, Diener, & Larsen, 1986). The AIM is a 40-item measure designed to assess the intensity of participants' experiences of emotion in relation to cognition, interpersonal relations, and physiological perceptions. Affect intensity is associated with frequent changes in mood, greater expression of emotion, decreased regulation of emotions, and experiences of mental health problems (Eisenberg et al., 1996; Goldsmith & Walters, 1989; Henry et al., 2001; Larsen & Diener, 1987). Participants rated a series of statements in relation to themselves on a 5-point Likert range from 0 (Not at all) to 4 (Extremely).

Researchers have used multiple scoring methods for assessing affect intensity with the AIM. Initially, the AIM was scored as a unidimensional construct, which was found to have high internal consistency, $\alpha = .90$ (Larsen, 1984). In terms of criterion validity, the AIM is significantly correlated with related measures physiological arousal (e.g., resting heart rate), but not with measures of depression (Larsen, 1984). Larsen (1984) also found the AIM to have good test-retest reliability, with significant correlations of $r = .80$, $r = .81$, and $r = .81$, administered once a month over a period of three months.

Research has also found support for a multidimensional construct of affect intensity. Weinfurt and colleagues (1994) carried out a confirmatory analysis and found that a four-factor structure of positive affectivity, negative affectivity, positive intensity, and negative intensity to be best suited as underlying the AIM. Research continues to

support the use of a multidimensional assessment of affect intensity (Bryant, Yarnold, & Grimm, 1996; Rubin et al., 2012). The subscales of the four factors were found to have good internal consistency in a sample of 433 undergraduate students: positive affectivity ($M = 3.84$; $SD = .75$), $\alpha = .93$, positive intensity ($M = 3.48$; $SD = .71$), $\alpha = .81$, negative intensity ($M = 3.17$; $SD = .71$), $\alpha = .81$, and negative reactivity ($M = 3.78$; $SD = .79$), $\alpha = .76$ (Rubin et al., 2012). O'Brien (2004) also found skewed mean ratings for an overall AIM score for men ($M = 3.51$; $SD = 0.44$) and women ($M = 3.84$; $SD = 0.46$).

Rubin and colleagues (2012) found the four-factor model of the AIM to demonstrate convergent and divergent validity. Positive intensity had a significant positive association with extraversion, $r = .32$. Positive affectivity had a positive association with extraversion, $r = .35$, positive mood, $r = .36$, and cognitive reappraisal, $r = .23$. Negative reactivity was positively related to negative mood, $r = .24$, depressive symptoms, $r = .16$, PTSD, $r = .22$, suppression of unwanted thoughts, $r = .21$, rumination, $r = .31$, and neuroticism, $r = .35$. Negative intensity was found to have positive association with negative mood, $r = .42$, depression, $r = .28$, neuroticism, $r = .72$, PTSD, $r = .37$, tendency to suppress negative thoughts, $r = .36$, and rumination, $r = .53$. Negative intensity was found to be negatively related to a decrease in self-compassion, $r = -.55$, and cognitive reappraisal, $r = -.24$.

Bryant and colleagues' (1996) coding scheme was utilized in the current study to calculate subscales for positive intensity, positive reactivity, negative intensity, and negative reactivity. In order to calculate differences in experiences for the intensity of positive emotions and negative emotions, the positive intensity and positive reactivity subscales were averaged to provide a score for positive emotional experience (15 items),

and negative reactivity and negative reactivity for negative emotional experience (12 items).

5) Impact of Events Scale-Revised (IES-R; Weiss & Marmar, 1997). The IES-R is a 22-item measure designed to assess the existence of post-traumatic stress related symptoms specific to an abusive relationship. The scale includes factors that assess intrusive thoughts (8 items), hyperarousal (6 items), and avoidance behaviours (8 items) that are meant to reflect the DSM-5 criteria for PTSD (American Psychiatric Association, 2013). Participants were asked to rate on a 5-point Likert scale the degree to which the statements related to them from 0 (Not at all) to 4 (Extremely).

For the current study, a total score was summed for a possible total score of 88. A high score is not intended to provide a clinical diagnosis of PTSD, but reflects greater symptomatology of the disorder. Creamer, Bell, and Failla (2003) propose that a score greater than 33 indicates a high degree of PTSD symptomology.

The IES-R has been widely used measure across trauma populations (Cody et al., 2015; Weiss & Marmar, 1997). The IES-R demonstrated excellent internal consistency in a sample of domestic abuse survivors, $\alpha = .93$. Beck and colleagues (2008) found the IES-R to correlate with other measures relating to post-traumatic symptoms, such as the Beck Depression Inventory (BDI; Beck, Steer, & Brown, 1996), $r = .65$, and the Beck Anxiety Inventory (BAI; Beck, Epstein, Brown, & Steer, 1988), $r = .63$. Subscales of the IES-R were also found to have high internal consistency coefficients and correlate with the Clinician Administered PTSD Scale (Blake et al., 1990) subscales of re-experiencing, $r = .66$, avoidance and numbing, $r = .53$, and hyperarousal, $r = .50$ (Beck et al., 2008).

6) Ego Resilience Scale (ERS; Block & Kreman, 1996). The ERS is a 14-item self-report scale that provides an assessment of individuals' capability to adapt and monitor their desires, in light of adversity, and provides a means to assess survivors' level of positive functioning in their recovery. Participants were asked to rate whether the items related to them on a 4-point Likert scale ranging from 1 (Doesn't apply at all) to 4 (Applies very strongly). Following Block and Kreman's (1996) scoring procedures, scores were summed to provide an indication of low resilience (from 20- 38), average resilience (from 39- 42), and above average resilience (from 43- 56). Galatzer-Levy and colleagues (2012) found normative data on the ERS to indicate above average resilience for a sample of undergraduate students ($M = 43.68$).

The ERS has been used in a wide array of undergraduate samples and demonstrates good internal consistency of $\alpha = .76$ (Block & Kremen, 1996; Letzring, Block, & Funder, 2005). In terms of validity, the ERS did not significantly correlate with measures of intelligence, has been found to tap into personality and social characteristics captured by the California Adult Q-sort (Block, 1961), and was negatively correlated with measures of psychopathology in the Minnesota Multiphasic Personality Inventory-2 (Butcher & Williams, 2000), such as schizophrenia, $r = -.25$, depression, $r = -.37$, and college maladjustment, $r = -.33$ (Block & Kremen, 1996; Letzring et al., 2005).

7) Symptom Checklist-90 Revised (SCL-90; Derogatis, Lipman, & Covi, 1973). The SCL-90 is a 90-item scale, which assesses global symptomatology of psychopathology by examining nine symptom dimensions of: somatization (12 items; distress over bodily perceptions), obsessive compulsive (10 items; thoughts and behaviours that are considered unavoidable), interpersonal sensitivity (9 items; feelings of personal

inadequacy, inferiority and uneasiness during social interactions), depressive symptoms (13 items; e.g., lack of motivation, loss of energy, feelings of hopelessness, and suicide ideation), anxiety (10 items; e.g., tension, feelings of panic, nervousness), hostility (6 items), agoraphobia (7 items; persistent fear of an object, event, or person), paranoia (6 items), and psychoticism (10 items; mild social isolation to symptoms of a psychotic episode). The remaining seven items examine sleeping problems and appetite. Participants were asked to rate the items depicting these varying problems on a 5-point Likert scale from 0 (Not at all) to 4 (Extremely).

For the purpose of the current study, I only analyzed the depression and anxiety subscales. Scores on the items corresponding to these subscales were summed with a total possible score of 52 for the depression subscale and 40 for the anxiety subscale.

Uzieblo and colleagues (2011) assessed depression and anxiety via the SCL-90 in heterosexual couples. Female partners who reported psychopathic traits in their partner exhibited greater symptoms of depression ($M = 34.00$, $SD = 9.17$), compared to couples who did not have a psychopathic partner ($M = 27.68$, $SD = 9.92$). Levels of anxiety were not significantly different between the two groups ($M_{non-psychopathic} = 16.09$, $SD = 6.48$; $M_{psychopathic} = 17.79$, $SD = 6.28$).

The SCL-90 subscales and global indices have demonstrated good internal consistency in both controls and psychiatric patients, with a range from $\alpha = .77$ to $\alpha = .90$ (Holi, 2003). The SCL-90 demonstrates good convergent and divergent validity (Holi, 2003). For example, in a sample of 900 psychiatric outpatients, the anxiety subscale correlated with the BAI (Beck et al., 1988), but not the BDI (Beck et al., 1996). On the other hand, the depression subscale correlated with the BDI, but not the BAI (Derogatis,

2000). In terms of construct validity, Holi (2003) found a high level of interdependence, with a mean intercorrelation of $r = .67$ in controls and $r = .57$ in patients. There is also support for test-retest reliability in psychiatric patients at a test-retest interval of ten weeks, ranging from $r = .68$ to $r = 0.80$ (Derogatis, 2000).

8) Open-ended questions. The 11 open-ended questions were used to gather qualitative data regarding the context surrounding an abusive relationship (Appendix H). Question topics ranged from the participant's mental health experiences, perceptions of interpersonal relations (before, during, and after the abusive relationship), reactions from their social network (e.g., first impression of the abuser), effects of abuse on the participant's well-being, participants' first impressions of the abuser, and the abusers' use of deception. The open-ended questions were adapted from items used in Pagliaro's (2009) study on survivors of psychopaths.

Data analysis

All data analyses were completed using IBM SPSS statistical software (version 24).

Study 1a

Descriptive statistics. Cronbach's alpha was used to check all the questionnaires and subscales used for the analysis for internal consistency. While Cronbach's alpha has been criticized, it remains a widely-used measure of reliability (Dunn, Baguley, & Brunsden, 2013), and is useful when comparing results from the present study to previous findings.

Descriptive statistics were tabulated for participants' demographic information (e.g., age, gender, ethnicity, education level), resilience, relationship characteristics (i.e., relationship length and type, time since last contact with abuser), and abuse experiences

(i.e., abuse frequency, versatility of abuse,¹⁸ types of abuse experienced, and degree of physical harm). Descriptive statistics were tabulated for participants' emotional functioning in relation to negative and positive emotional experiences and symptoms of PTSD, anxiety, and depression.

Descriptive statistics were also tabulated for the abusers' demographics (e.g., age, gender, and ethnicity), and level of psychopathic traits, including the factors and underlying facets (e.g., lifestyle, affective, antisocial, and interpersonal). Factor 1 psychopathy scores were compiled by summing scores on the affective and interpersonal subscales. Factor 2 psychopathy scores were compiled by summing scores on the antisocial and lifestyle subscales.

Regression analyses. A hierarchical multiple regression analysis using the Enter procedure was used to investigate Hypothesis 1a. The model investigated if abuse experiences were predictive of the level of ascribed psychopathic traits in abusers when controlling for the length of the relationship. Block one controlled for the length of the abusive relationship. Block two included predictor variables of the versatility of abuse, degree of physical harm, and frequency of abuse. The outcome variable was the ascribed level of psychopathic traits in abusers.

Hypothesis Two utilized a hierarchical multiple regression model to investigate if participants' emotional functioning was predictive of the level of ascribed psychopathic traits in their abusers, while controlling for the length of the relationship, time since last contact, and participants' levels of resilience. The Enter procedure was used in: 1) Block to control for the length of the abusive relationship, 2) Block two to control for the length

¹⁸ Versatility of abuse refers to the number of different types of abuse experienced, such as deception or physical abuse.

of time that has passed since the participants was last in contact with their abuser, and 3) Block three to control for levels of resilience. Block four included predictor variables of the negative emotional experiences, positive emotional experiences, and symptoms of PTSD, depression, and anxiety with the Forward entry procedure. The outcome variable was the ascribed level of psychopathic traits in abusers.

The Forward procedure is ideal for excluding predictor variables in the regression model that may be vulnerable to suppressor effects (Field, 2013; Woolley, 1997). A non-linear relationship can exist between two continuous variables, which are not detected by a bivariate correlation analysis (Wolley, 1997). A predictor may have a negligible correlation with the outcome variable, but may have a strong correlation with other predictor variables (Hinkle, Wiersma, & Jurs, 1995). If these variables are both added in the model as predictors then it may be increasing the predictive power of the model because of its association with another predictor (Horst, 1966).

The predictors for Hypothesis Two did not violate the assumption of multicollinearity, or exceed an $r < .80$. However, anxiety had a significant and strong association with PTSD, $r = .70, p < .01$, and depression, $r = .73, p < .01$. The Forward procedure first detects the independent variable that best predicts the model (via the strongest correlation); the next variable is selected based on whether the variable can contribute to explaining a good portion of the remaining unexplained variance, as opposed to contributing to the already explained variance of the first predictor.

For Hypothesis 3a and 3b, two sets of multiple regression analyses were used to examine the relation between abuse experiences and mental health impairments in the level of ascribed Factor 1 and Factor 2 psychopathy in abusers.

The two regression analyses for Hypothesis 3a and 3b controlled for relationship length, time since last contact, and resilience only if the findings for Hypothesis 1a and Hypothesis Two found a significant effect for these control variables in the model. If these findings were not significant then the analyses for Hypothesis 3a and Hypothesis 3b proceeded as follows. The first analysis examined Factor 1 psychopathy scores as an outcome variable. Predictor variables included (via the Forward procedure) versatility of abuse, degree of physical harm, frequency of abuse, and levels of symptoms of PTSD, depression, and anxiety. The second analysis examined Factor 2 psychopathy scores as an outcome variable. Predictor variables included (via the Forward procedure) versatility of abuse, degree of physical harm, frequency of abuse, and levels of symptomology of PTSD, depression, and anxiety.

Correlational analyses. Bivariate correlational analyses were used for part of the descriptive analysis to examine trends in relation to demographic characteristics of the participants and abuser, along with their recovery outcomes (e.g., resilience, positive emotional experiences), and abuse experiences (e.g., physical abuse, frequency of abuse) that were not specific to the abusers' level of psychopathy. This analysis was presented for informational purposes, as it was not related to any hypotheses.

Bivariate correlational analyses assessed the relationship between predictor variables to the outcome variables in the sets of regression analyses for Hypothesis 1a, Two, 3a, and 3b.

Specifically, for Hypothesis 1b and 3c to 3f, bivariate correlations analyses with a Bonferroni correction were carried out to examine the relationship of: 1) ascribed level of psychopathic traits in abusers and the types of abuse participants' experienced (e.g.,

deception, property, sexual, physical, emotional, spiritual, financial), and 2) ascribed psychopathy facet scores (i.e., affective, interpersonal, lifestyle, and antisocial), mental health impairments (symptoms of PTSD, anxiety, and depression), and abuse experiences (versatility, harm, and frequency). Although the Bonferroni correction increased the likelihood of a Type 2 error, it was used in these analyses to protect against committing a Type 1 error (Gelman, Hill, & Yajima, 2012). In the case of the correlational analyses regarding the total psychopathy scores, the adjusted p-value was .006, and .005 for the correlational analyses involving the psychopathy facet scores.

Study 1b

Descriptives. A descriptive analysis was carried out for the demographic information (e.g., age, gender, ethnicity, education level), aspects of the relationship (type and length) and abuse (abuse frequency, versatility of abuse, types of abuse experienced, and degree of physical harm), and level of psychopathy in abusers as ascribed by each participant.

Applied linguistics. To address Research Question Four, I needed to establish that participants did experience episodes of gaslighting. A word frequency count was performed on the open-ended survey responses that include quotes, descriptions of abuse, and recalled dialogue between the participant and abuser. The word frequency count performed for the words abusers uttered to each participant that are associated with gaslighting (i.e., you are “crazy”), along with each participant’s reactions associated with successful gaslighting (i.e., I felt “crazy”).

Semantic coding was used in the word frequency count for words or statements that had the same meaning, such as “there is something wrong with you” and “you have

problems”, which corresponded to the abuser telling the participant that there is something “wrong” with the participant.

To supplement the word frequency count, and to ensure that participants did experience gaslighting, a descriptive analysis was carried out on the qualitative data. These included providing quotes from participants and explanations of general examples of gaslighting, common reactions to gaslighting, and the effects the abusive relationship had on participants’ mental health.

An assessment of personal pronoun use was also performed to supplement findings during the qualitative analysis (e.g., theme development) to examine a specific pattern of language use in abusers as detailed by participants. The narratives were examined by taking a word frequency count of personal pronouns in the first-person (“I” and “me”) and second-person (“You”) for participants who provided recalled dialogue between themselves and their abuser.

Qualitative methods. Qualitative analysis is an ideal method of choice for research areas that are under-investigated, as they are often not well understood and are difficult to define (Kardin, 2003). This type of analysis is useful in interpreting complex phenomenon as it allows for the researcher to: 1) use participants’ perspectives and how they were created (e.g., context, participant’s feelings), and 2) apply the researcher’s values and theoretical background (Fallon et al., 2006).

Due to the exploratory nature of Study 1, a qualitative component was valuable because no established theories on either psychopath survivors or gaslighting were available to either confirm or refute. Qualitative analysis was anticipated to provide a platform for further understanding of the experience of emotional abuse, the process of

gaslighting, and the general experiences that psychopathic traits in a partner during a romantic relationship.

In the current study, the central question is: how can someone else convince another person that their reality (e.g., beliefs, feelings, memories) is wrong? The focus was on the role that language has in abusers' ability to alter the reality of their victims during a romantic relationship, and how this may relate to psychopathic traits. Specifically, the focus was on the processes associated with gaslighting, which is a type of abuse that causes the abuse recipient to feel that they are mentally ill. However, to provide a more holistic view of gaslighting decided to examine the processes associated with doubting one's reality more generally, which allowed me to examine the earlier stages of gaslighting (e.g., uncertainty of memories of situations) and how the process of gaslighting over time can lead more severe effects on mental health (e.g., feelings of mental illness).

The current sample of survivors of an abusive relationship were recruited for their experience with an abuser who displayed psychopathic characteristics. These participants are presumed to be particularly knowledgeable about the psychopathic personality and their use of emotionally manipulative tactics, including gaslighting, in the specific context of a romantic relationship. To investigate these participants' experiences, responses from 11 open-ended questions, victimization experiences (from the VSS), and the level of ascribed psychopathic traits in their abusers (as taken by scores on the MSRP-S) were used in an attempt to capture a holistic view of the phenomenon.

Thematic analysis. Braun and Clarke's (2006) method for thematic analysis was chosen as the type of qualitative analysis for Study 1b. Thematic analysis focuses on

identifying patterned meaning, in the form of themes, across a textual dataset to answer a specific research question (Braun & Clarke, 2006).

Themes are an integration of pieces of data that represent a level of patterned meaning that exists across the dataset (e.g., across participants and survey items; Braun & Clarke, 2006; Sandelowski & Leeman, 2013). Themes do not emerge from the data but are developed through an iterative process of familiarization, coding, interpretation, and comparing and contrasting across the dataset (Braun & Clarke, 2006). Themes do not map onto the specific items in the survey, paraphrase participants' responses, or depend on frequency counts as a means to determine the value of the data in contributing to a theme (Braun & Clarke, 2006; Pyett, 2003). Themes must have an identifiable and central organizing concept that captures a distinct aspect of the phenomenon. However, the theme still has to relate to other themes, and all themes must be directly related to the research question (Braun & Clarke, 2006; Spencer et al., 2003)

The analysis begins by familiarisation with the dataset by reading, rereading, and immersing oneself with responses for each item of the open-ended survey. This process occurs for each participant and item, along with across the participants and items.

Second, the responses are coded line-by-line using an inductive (bottom up) approach that is directed by the content of the data. This is opposed to a deductive (top down) approach that is directed by pre-existing theories/hypotheses that are anticipated to be found in the data set (Braun & Clarke, 2006). In terms of the types of codes, there are: 1) semantic codes that capture descriptive content, which are systematic, at the surface level, easily recognizable, low-level, and explicit (e.g., inVivo codes¹⁹), and 2) latent

¹⁹ inVivo coding is when a quote taken directly as the participant used in their open-ended responses.

codes that capture content that is open to interpretation and reports concepts underlying the data (Braun & Clarke 2006).

Memoing was used to identify and record initial codes, their importance to understanding the phenomenon, support for each code from chunks of data (e.g., quotes from participants), and when codes did or did not apply to the data (Holton, 2010). Sets of codes were compared and contrasted against each other, and against the original dataset. Sets of codes were then collated and grouped according to patterned meaning in the data. Codes were conceptually reintegrated as a means to develop themes (Braun & Clarke, 2006; Holton, 2010).

Themes were reviewed by comparing and contrasting them against each other and the entire dataset. Themes were then split into separate themes, combined, relabelled as subthemes, or discarded (Braun & Clarke, 2006). This recursive process was carried out to ensure that theoretical saturation (when no further themes become present) is met and a coherent analytical narrative has developed from the dataset (Braun & Clarke, 2006). A limited number of quotes (e.g., two or three) are selected to be representative of a particular theme or subtheme. The quotes are evenly sampled from each participant to ensure that the evidence for the themes is representative of the dataset (Braun & Clarke, 2006).

Following this, themes and subthemes were interpreted using the researchers' theoretical background, contextualized in research on psychopathy [e.g., Blair's (1995) VIM and Glass and Newman's (2009) RMH], and participants' ascribed level of psychopathic traits in their abuser (Braun & Clarke, 2006; Patton, 2004). Each theme (and any possible subthemes) were labeled, defined, supported by evidence (i.e., quotes),

and included a detailed analysis of their contribution to the narrative needed for answering the research question (Braun & Clarke, 2006).

Sample size. Due to the richness of qualitative data, qualitative methods often utilize a smaller sample size than those used in quantitative studies. However, the appropriate sample size for a qualitative analysis is heavily debated and there are no clear-cut guidelines even among specific forms of qualitative analyses (i.e., Grounded theory, thematic analysis; Emmel, 2013; Fugard & Potts, 2015; Guest, Bunce, & Johnson, 2006). There appears to be some consensus among researchers that theoretical saturation can be reached in as early as six participants (Glaser, 1965). Research has also suggested that the required sample size is a subjective judgement by the researcher that is based on the goals of the study. This judgement is often guided by the view that the sample size needs to be small enough to be manageable, but large enough to see patterns in the data that could provide a comprehensive understanding of the phenomena. Research that subscribes to this view has found at least six participants to be sufficient (Guest et al., 2006; Braun & Clarke, 2013; Fugard & Potts, 2015; Sandelowski, 1995).

Inter-rater reliability. Thematic analysis is a reflexive, flexible, and interpretive process that depends on a single researcher's' familiarization with the dataset, theoretical background, and application of background research (Braun & Clarke, 2006). Braun and Clarke (2006) state that thematic analysis does not require inter rater reliability and does not advocate for multiple coders of the dataset. Inter rater reliability is founded on the belief that there is an accurate reality in the dataset (e.g., themes exist before analysis and can emerge from the data, as opposed to being developed) that can be captured through coding (Braun & Clarke, 2006). Inter rater reliability demonstrates that multiple

researchers can be trained to code the same way, but that this does not show that the coding procedures are more accurate or reliable (Braun & Clarke, 2006). For Study 1b, following the suggestions of Braun and Clarke (2006), multiple coders were not deemed necessary for analysis of this dataset. Table 3 provides a summary of the types of quantitative and qualitative analyses that were carried out in Study 1 to address the four research questions.

Table 3

Summary of the types of analyses to investigate each research question for Study 1.

Research Question	Analyses
1. Abusers' ascribed psychopathic traits and abuse experiences	<ul style="list-style-type: none"> • Hierarchical multiple regression • Correlational analyses
2. Abusers' ascribed psychopathic traits and participants' emotional functioning	<ul style="list-style-type: none"> • Hierarchical multiple regression
3. Participants' abuse experiences and mental health impairments in relation to abusers' ascribed psychopathy factor and facet scores	<ul style="list-style-type: none"> • Multiple regression • Correlational analyses
4. Gaslighting and psychopathic abusers' language	<ul style="list-style-type: none"> • Applied linguistics • Descriptive analysis • Thematic analysis

Results

Data Treatment

Data collection was carried out online via a data collection website. A large number of participants were anticipated using this data collection method, but there was also the likelihood of a high dropout rate. All participants who provided their consent to participate in the study, but did not proceed with the remainder of the study were removed from the analysis. After these participants were deleted ($n = 51$), 117

participants remained who had either fully completed or partially completed the battery of self-report questionnaires. Of these participants, 13 were discarded, as they did not meet the inclusion criteria (e.g., prior heterosexual abusive romantic relationship): nine identified as not being abused and four cited victimization by someone other than a romantic partner (i.e., their parent, child).

Quantitative Data Cleaning

Data was checked for data entry errors and for appropriate scoring procedures. Responses to items on the MSRP-S that were missing ($n = 149$) for the 78 participants who completed the survey were scored with a rating of zero in accordance with prior research utilizing this scale (see Beaudette, 2012, Pagliaro, 2009). As previously described, the MSRP-S is based on a self-report survey that was not intended to be used for third party assessments. Participants may not know the extent of their abusers' behaviours and may be unable to accurately respond to certain items on the scale. Participants had been instructed to skip items they were not confident in answering. Unlike Pagliaro (2009) and Beaudette (2012), low scorers on the MSRP-S were not removed. The reasoning for this was to examine the effect psychopathic traits (as a continuous variable) had on survivors' experiences, thus making it necessary to have as wide a range of scores on the MSRP-S as possible. Beaudette's (2012) sample of survivors of workplace psychopaths had an average score of 87.20, after the removal of low scores on the MSRP-S²⁰. The current sample had an average score of 102.4, which suggests the current sample, even *without* the removal of low scorers, experienced abusers who were more psychopathic than Beaudette's (2012) sample.

²⁰ MSRP-S scores based on the 29-item scale from Study 1a could not be directly compared to Pagliaro (2009) as she used the 64-item, MSRP-L.

Missing data. For each participant, the amount of missing data ranged from 0% to 54.6% (0 to 18 items). In total, forty-four participants were missing at least one full survey for the quantitative portion of the study. Table 4 displays the number of participants who completed each of the questionnaires.

The missing data was attributed to: 1) the high dropout rate that is common when collecting data online, and 2) the sensitive topic of the study (the VSS was the first survey provided to participants), and 3) the length of the study, which may be problematic for participants who experience attention and cognitive deficits from their trauma (Brandes, 2012). Participants may have also begun the study and logged out of their account to complete the study at another date and forgot to log back in to finish the study.

Table 4

Number and percentage of missing and complete data for each survey for the quantitative portion of Study 1.

Survey	Completed [N (%)]	Missing [N (%)]
VSS	105 (100.0)	0 (0.0)
Demographics	83 (79.0)	22 (21.0)
MSRP-S	78 (74.3)	27 (25.7)
SCL – 90	70 (66.7)	35 (33.3)
AIM	64 (61.0)	41 (39.0)
IES-R	62 (59.0)	43 (41.0)
ERS	61 (58.1)	44 (41.9)

Note. VSS = Victim Screening Survey, MSRP-S = Modified Self-Report Psychopathy Survey short, SCL-90 = Symptom Checklist – 90, AIM = Affect Intensity Measure, IES – R = Impact of Events Scale – Revised, ERS = Ego Resilience Scale

On the variable level, when the missing questionnaires were excluded from the analysis, it was determined that only one item in one of the questionnaires contained missing data. Information on the ethnicity of the abuser from the VSS was missing for two cases

(2.0%). Little's MCAR test concluded that there was no pattern to the missing data, with a non-significant result ($\chi^2 = 28.344, df = 119, p = 1.00$). The low rate of data that were missing at random, as indicated by the results of the Little's MCAR test, allowed for the missing data to be ignored as it was not thought to bias the results (Howell, 2009).

In order to maximize the sample size of each analysis, pairwise deletion was used to prevent losing data from the 44 participants (41.9%) who did not complete all of the questionnaires. Listwise deletion is used when there are less than 5% of data is missing (Tabchanick & Fidell, 2007).

Identification of univariate outliers. The variables for the analyses were plotted to visually inspect linearity and the existence of outliers. The identification of univariate outliers for each of the variables was further examined by transforming the values into standardized z-scores. Z-scores that were $+/- 3.29$ were deemed extreme values as these values were 3.29 standard deviations away from the mean (Field, 2005). The only variable with extreme values was the Lifestyle MSRP-S subscale with a z-score of -3.32 , which translated to a score of seven. The average score on the subscale was $25.78 (SD = 5.65)$. The extreme value was transformed from seven to 11, which was the next closest value in the range, and had minimal impact on the average of the Lifestyle MSRP-S subscale ($M = 25.83; SD = 5.50$).

Normality. Each variable used for the analysis were assessed for statistical significance of skewness and kurtosis with the techniques outlined by Cramer and Howitt (2004). The statistical significance for skewness and kurtosis was found by dividing the statistic by the standard error where a result greater than $+/- 1.96$ with a $p < .05$ was deemed statistically significant.

All variables were found to be in the acceptable range for kurtosis. The MSRP-S and positive emotional experience were the only variables found to have a significantly skewed distribution with an obtained skewness statistic of – 2.44 for the MSRP-S and 1.98 for positive emotional experiences. The distribution of the MSRP-S was negatively skewed and leptokurtic due to the high frequency of scores between 98 and 126. Values on the scale ranging from 44 to 135 ($M = 102.37$; $SD = 20.12$). The distribution of positive emotional experience had a slight deviation from a normal distribution. It had a positive skew, but was more mesokurtic in nature with the majority of scores falling between 2.17 and 3.75. Values on the scale ranging from 1.33 to 5.92 ($M = 3.16$; $SD = 1.0$). While statistically significant skewness statistics fall at or above $+/- 1.96$, skewness statistics that fall below $+/- 3.29$ are deemed to be in the acceptable range to carry out basic analyses, such as correlations and regression (Cramer & Howitt, 2004; Field, 2009).

Multicollinearity. Bivariate correlation values, the Variance Inflation Factor (VIF) values, tolerance values, and the condition index of the variance portion of the predictors were used to assess multicollinearity. Bivariate correlations $r > .80$, VIF values < 5.0 , tolerance values < 10.0 , and condition index values $< .10$ are a cause for concern for multicollinearity of the variables (Belsley, 1991; Braunstein, 2007; Montgomery, 2001; Field, 2005). Based on these criteria, multicollinearity was sufficiently low that it did not jeopardize the analysis.

Regression diagnostics. Multivariate outliers were assessed according to the case wise diagnostics procedures outlined by Field (2013) to detect standardized residuals greater than $+/- 2$ standard deviations. Less than 5% of the standardized residuals were outside the limit of $+/- 2$ standard deviations and were deemed appropriate for the

regression model. High leverage points were assessed by examining leverage values greater than $(2k+2)/N$, where k refers to the number of predictors in the model (Chen, Ender, Mitchell, & Wells, 2003). Influential points were detected by Cook's distance values greater than 1.0 (Field, 2013). No issues were found regarding high leverage or influential points for the regression models.

Durbin-Watson values were used to assess the independence of observations in the models. No values below 1.0 and above 3.0 were found that may suggest that adjacent residuals in the regression models are correlated (Field, 2013).

Normal distributions of standardized residuals were visually inspected using a histogram and p-plot (Field, 2013; National Centre for Research Methods, 2011).

The variables demonstrated homoscedasticity when standardized residuals were plotted against predicted values to verify that there is a constant error variance across each level of the predictor variables (Field, 2013; National Centre for Research Methods, 2011).

Qualitative Data Cleaning

Of the 105 participants that remained after quantitative data cleaning, only 32 opened the webpage that hosted the open-ended survey. Of these 32 participants, only 14 of them provided responses for the open-ended survey. For each of these 14 participants the amount of missing data ranged from 0% to 75% (0 to 9 items). Participants with nine items of missing data (out of the 11 total items in the survey) were discarded from the analysis as there was not a sufficient amount of qualitative data needed to form a narrative of these participants' experiences. For the remaining participants ($n = 11$) their responses were checked for quality of the data. Participants who provided one-word

answers, incomprehensible statements, or incomplete sentences to the majority of their questions were discarded, as there was not a sufficient amount of data. Seven participants remained for Study 1b for further analysis.

Study 1a

Reliability Checks

In terms of reliability, the MSRP-S demonstrated excellent internal consistency ($\alpha = .88$). The subscales for Factor 1 ($\alpha = .85$) and Factor 2 psychopathy ($\alpha = .80$), along with the facet measures of interpersonal ($\alpha = .82$) also demonstrated excellent internal consistency. Fair internal consistency was found for the subscales for the facets of lifestyle ($\alpha = .71$), affect ($\alpha = .69$), and antisocial ($\alpha = .71$).

The subscales of the AIM also demonstrated good internal consistency. The positive emotional experience subscale demonstrated a Cronbach's alpha of .92 and the negative emotional subscale had a Cronbach's alpha of .84. The remaining measures for the IES-R ($\alpha = .93$), ERS ($\alpha = .82$), and the subscales of the SCL-90 for depression ($\alpha = .93$) and anxiety ($\alpha = .91$) also showed excellent internal consistency.

Descriptive Statistics

The majority of abusers were male ($n = 86$; 81.9%) and Caucasian ($n = 90$; 87.4%). Approximately four percent of participants identified their abuser as either Hispanic or African ($n = 4$), and 3% were identified as Other (e.g., mixed race, West Indian; $n = 3$). In terms of the type of relationship participants had with their abuser, the majority of participants reported that their abuser was their spouse (52.4%, $n = 55$), followed by 32.4% who reported a dating relationship ($n = 34$), and 12.4% who reported common-law ($n = 13$). The Other category was selected for 2.9% ($n = 3$), where

participants referred to the relationship as a friendship or a complicated romantic relationship. The majority of participants reported that they were in a long-term (defined here as more than two years) romantic relationship with their abuser (for frequencies and percentages of relationship length see Table 5).

Table 5

Frequency and percentage of participants for each category of relationship length.

Relationship length	Frequency	Percentage
Less than 6 months	7	6.7
6 - 12 months	6	5.7
1 - 2 years	6	5.7
2 - 5 years	32	30.5
5 - 10 years	18	17.1
10 - 20 years	27	25.7
More than 20 years	9	8.6

N = 105

The majority of participants had recently ended contact with their abuser, with 21% reporting that last contact was six to 12 months prior to participation in the study ($n = 22$), and approximately 27% had their last contact with their abuser less than six months prior to participation ($n = 29$; see Table 6 for frequencies and percentages). Eighteen percent of participants responded N/A to when they were in last contact was with their abuser ($n = 19$).

Table 6

Frequency and percentage of participants' length of time since last contact with their abuser.

Last contact	Frequency	Percentage
In current contact	19	18.1
Less than 6 months	29	27.6
6 - 12 months	22	21.0
1 - 2 years	11	10.5
2 - 5 years	14	13.3
5 - 10 years	7	6.7
10 - 20 years	3	2.9
More than 20 years	0	0

N = 105

Note. In current contact has been inferred from the N/A response on the scale

In terms of experiences in their romantic relationship, most participants reported that the abuse was very frequent ($n = 72$; 68.6%) or frequent ($n = 26$; 24.8%). On average, participants reported experiencing 4.71 types of abuse ($SD = 1.69$), with the greatest reported types of abuse being emotional abuse ($n = 105$; 100.0%) and deception ($n = 89$; 84.8%). See Figure 2 for frequencies and percentages of the reported types of abuse.

Despite the high degree of non-physical forms of abuse that were experienced, 65.7% of participants were abused physically ($n = 69$) and 47.6% were abused sexually ($n = 50$). In terms of the degree of physical harm that these types of abuse contributed to, 40.0% of participants reported experiencing a mild degree of physical harm ($n = 42$), 21.9% a moderate degree ($n = 23$), and 6.7% required hospitalization from an extreme degree of physical harm ($n = 7$). Approximately 31% of participant reported no degree of physical harm ($n = 33$).

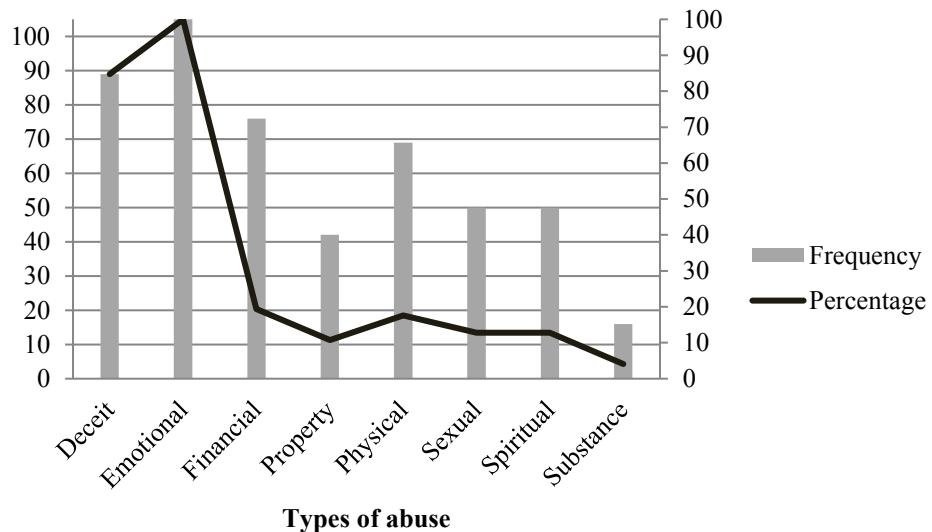


Figure 2. Frequencies and percentages of the different types of abuse experienced by participants during their relationship in Study 1

Participants reported that their abusers had moderate levels of psychopathic traits ($n = 78$; $M = 102.4$; $SD = 20.12$). The psychopathy scores in the current sample were higher than that of the normative psychopath survivor data from Beaduette (2012). Abusers' Factor 1 psychopathy scores ($n = 78$; $M = 51.20$; $SD = 10.03$) were higher than their Factor 2 scores ($n = 78$; $M = 47.48$; $SD = 11.69$).

Participants rated their abusers as exhibiting more traits associated with the interpersonal facet ($n = 78$; $M = 29.10$; $SD = 6.0$) and the lifestyle facet ($n = 78$; $M = 25.83$; $SD = 5.53$) than the affective and antisocial facets. The ratings of traits associated with the antisocial facet ($n = 78$; $M = 21.55$; $SD = 7.70$) and affective facet ($n = 78$; $M = 22.26$; $SD = 5.1$) had comparable scores.

Participants had moderate levels of resilience ($n = 61$; $M = 42.54$; $SD = 6.36$) and positive emotional experience, ($n = 64$; $M = 3.16$; $SD = 1.00$). This was despite experiencing high levels of PTSD symptoms ($n = 62$; $M = 57.68$; $SD = 17.16$), moderate

levels of negative emotional experience, ($n = 64$; $M = 4.0$; $SD = .93$), moderate levels of depression ($n = 70$; $M = 27.56$; $SD = 13.42$), and low to moderate levels of anxiety ($n = 70$; $M = 16.99$; $SD = 9.57$).

The following provides a snapshot of trends of the present sample of survivors who identified as being in a romantic relationship with a psychopathic abuser (See Appendix I for specific details regarding the bivariate correlations and p-values of demographic, abuse and relationship experiences, and recovery outcomes):

- Female participants with male abusers reported more instances of spiritual and financial abuse.
- Relationships that symbolize more commitment (e.g., marriage) were associated with more instances of financial and physical abuse. Abuse in more symbolically committed relationship was also reported to be more frequent, physically harmful, and versatile, when compared to less-symbolically serious relationships.
- A higher degree of physical harm from abuse tended to be related to more versatile forms of abuse, and more experience of abuse that was categorized as physical, sexual, financial, or property. It was also found to be related to elevated ratings of PTSD symptomology and negative emotional experiences.
- Sexual abuse was associated with more instances of physical abuse, substance abuse, and property abuse.
- Financial abuse was associated with elevated levels of anxiety and abusers' perpetration of deception, substance abuse, and property abuse.
- Diminished experiences of positive emotions were associated with abusers' perpetration of deception and property abuse.
- Elevated experiences of positive emotions were associated with participants who were more resilient.

Research Question One: Do survivors who experience abuse that is more versatile, physically harmful, and frequent ascribe higher levels of psychopathic traits in their abusers (Study 1a)?

A hierarchical multiple regression analysis revealed that the length of the abusive relationship did not significantly contribute to participants' ratings of ascribed psychopathic traits in abusers, $F(1, 76) = .24, p = .63, R^2 = .003$.

As displayed in Table 7, the predictive power of the model increased when the variables of abuse experiences (versatility of abuse, degree of harm, and frequency of abuse) were introduced. The ΔR^2 significantly increased from .003 to .266, $F(3,73) = 8.72, p < .001$. The versatility of abuse and frequency of abuse were found to be unique predictors of the level of ascribed psychopathic traits in abusers. After controlling for the length of the relationship, the model explained approximately 27% of the variance in the ascribed level of psychopathic traits in abusers, $F(4,73) = 6.73, p < .001, R^2 = .269$. Specifically, experiences of abuse that were more frequent and of a greater variety (as indicated by positive beta weights), contributed to participants ascribing higher rates of psychopathic traits in abusers. The frequency of abuse had a slightly stronger effect than the versatility of abuse.

The degree of physical harm was not found to uniquely contribute to the regression model as the beta weight, $\beta = .211, p = .08$, despite having a significant correlation with the ascribed level of psychopathic traits, $r = .382, p < .001$.

Table 7

Hierarchical multiple regression analysis of the impact that abuse experiences have on ratings of psychopathic traits in abusers when controlling for relationship length.

	ΔR^2	Adj R ²	Pearson's r	β	95% Cis	
					Lower	Higher
Model 1	.003	-.010				
Length			.056	.056	-2.200	3.632
Model 2	.266	.229***				
Versatility			.421***	.244*	-.002	6.002
Frequency			.346***	.255**	1.703	17.114

n = 78

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

Note. Length = relationship length in months and years, Harm = degree of physical harm sustained from abuse, Frequency = frequency of abuse, Versatility = versatility of abuse.

In terms Hypothesis 1b and the specific types of abuse, the bivariate correlation matrix revealed that abusers who were ascribed a higher level of psychopathic traits were more likely to engage in abuse that fell under the categories of physical, financial, and property (see Table 8). Deception approached significance with psychopathic traits with $r = .253$, $p = .02$.²¹ As noted in Table 8, emotional abuse was not included in the analysis as 100% of participants indicated experiencing this type of abuse.

²¹ Due to the Bonferroni correction variables that are specific to a hypothesis and would normally reach significance with a p-value of .05 are noted.

Table 8

Bivariate correlations of abusers' ascribed level of psychopathic traits and types of abuse experienced by participants.

	1	2	3	4	5	6	7	8
1.Psychopathic traits	-							
2.Physical	.324*	-						
3.Sexual	.095	.247	-					
4.Financial	.321*	.182	.120	-				
5.Deceit	.253	.085	-.073	.449**	-			
6.Spiritual	.075	.247	.122	.077	-.073	-		
7.Substance	.136	.083	.286*	.203	.106	.126	-	
8.Property	.317*	.139	.195	.330**	.346**	.117	.249	-

n = 78

p* < .006, *p* < .001

Note. Emotional abuse was not included due to the lack of variability in the scores (*n* = 78).

The hypotheses for Research Question 1 were partially supported. In terms of H1a, all three abuse experience variables were significantly associated with ascribed psychopathic traits in abusers. However, only the versatility and the frequency of abuse were retained in the model as contributing to a significant and unique portion of abusers' ascribed level of psychopathic traits, after controlling for the length of the relationship. Psychopathic traits were associated with both physical and non-physical forms of abuse (i.e., financial, property, and physical), lending partial support for H1b as sexual abuse and deception not significantly associated with psychopathy scores.

Research Question Two: Do survivors' current experiences of emotional functioning influence the level of psychopathic traits they ascribe to their abusers (Study 1a)?

The length of the abusive relationship was not found to contribute to the level of psychopathic traits ascribed to abusers, $F(1,59) = .00, p = .99, R^2 = .00$ (Table 9). The introduction of time since last contact with the abuser did not significantly change the predictive power of the model, $F(1,58) = .013, p = .91, R^2 = .00$, nor did the introduction of resilience into the model, $F(1,57) = .014, p = .91, \Delta R^2 = .00$.

When the emotional functioning variables were introduced to the model, PTSD was retained as the strongest predictor and there was a significant change in R^2 by 12%, $F(1,56) = 7.80, p < .01, \Delta R^2 = .123$. However, the model itself was not significant, $F(4,56) = 1.96, p = .11, R^2 = .123$. Anxiety was significantly associated with the ascribed level of psychopathy but was not retained as a unique predictor in the model, $r = .315, p < .01$.

The addition of positive emotional experiences into the model significantly increased the predictive power by 6%, $F(1,55) = 4.40, p < .05, \Delta R^2 = .065$. PTSD and

positive emotional experiences significantly accounted for 18% of the variance, $F(5, 55) = 2.50, p <.05, R^2 = .188$. Each of these variables predicted a unique portion of the variability in the degree of psychopathic traits participants ascribed to their abusers. Specifically, participants who experienced higher levels of PTSD symptoms and those who experienced lower levels of positive emotional experiences ascribed a higher level of psychopathic traits to their abusers.

Table 9

Hierarchical multiple regression analysis assessing the impact emotional functioning has the degree of psychopathic traits ascribed to abusers when controlling for relationship length, time since last contact, and resilience.

	ΔR^2	Adj R^2	Pearson's r	β	95% CIs	
					Lower	Higher
Model 1						
Length	.000	-.017	.002	.056	-3.098	3.139
Model 2						
Last contact	.000	-.034	.015	.002	-3.020	3.390
Model 3						
Resilience	.000	-.052	.017	.016	-.783	.882
Model 4						
PTSD	.122**	.060	.332**	.367**	.117	.709
Model 5						
Positive emot	.065*	.114*	-.172	-.390*	-12.046	-.276

n = 61

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

Note. Length = relationship length in months and years, Last contact = time since last contact with the abuser in months and years. Positive emot = positive emotional experiences.

Hypothesis Two was partially supported: symptoms of PTSD and anxiety were significantly associated with the level of ascribed psychopathic traits. Positive emotional experiences were not associated with psychopathic traits in abusers, $r = -.172, p = .09$. Further, only PTSD and positive emotional experiences were retained in the model as

being significantly predictive of a unique portion of the abusers' ascribed level of psychopathic traits, when controlling for relationship length, time since last contact with the abuser, and participants' level of resilience.

Research Question Three: Do survivors' abuse experiences and current mental health impairments affect their ratings of specific psychopathic traits (e.g., Factor 1, lifestyle facet, etc.; Study 1a)?

Due to the non-significant findings of resilience, time since last contact, and length of relationship from the Hypothesis 1a and Two analyses, these variables were not controlled for in the multiple regression analyses for Hypothesis 3a and 3b.

The first analysis revealed that the degree of physical harm sustained from abuse was the strongest predictor of ascribed Factor 1 psychopathy scores, when compared to the versatility of abuse, frequency of abuse, and symptoms of depression, PTSD, and anxiety, $F(1, 60) = 12.41, p < .001, R^2 = .171$. The degree of physical harm accounted for 17% of the variance in participants' ratings of Factor 1 psychopathy of their abusers. The positive beta weights reveal that participants who experienced a greater degree of physical harm tended to rate their abuser higher on Factor 1 psychopathy (Table 10).

The frequency of abuse was retained in model two, as it significantly increased the predictive power by 9%, $F(1, 59) = 7.33, p < .01, \Delta R^2 = .092$. Thus, the frequency of abuse and degree of physical harm significantly predicted participants' ratings of Factor 1 psychopathy, accounting for 26% of the variability, $F(2, 59) = 10.52, p < .001, R^2 = .263$. Participants who experienced abuse that was more frequent and physically harmful ascribed their abuser as possessing more traits associated with Factor 1 psychopathy.

The only mental health variable that was retained in the model was anxiety, which significantly increased the predictive power by 8%, $F(1,58) = 6.68, p < .01, \Delta R^2 = .076$. The final model that explained the variability in Factor 1 scores in abusers found the frequency and physical harm caused by the abuse and participants' anxiety to account for 34% of the variance, $F(3, 58) = 9.92, p < .001, R^2 = .339$. Overall, model three revealed nearly equal weighting of the beta weights for the predictors, where participants who had experienced abuse that was more physically harmful and frequent, and who were currently experiencing higher levels of anxiety rated their abuser as exhibiting more traits that are associated with Factor 1 psychopathy.

Versatility of abuse and symptoms of PTSD and depression were not included in the model as these variables did not significantly account for a unique portion of the variance in determining Factor 1 psychopathy scores in abusers. However, significant bivariate correlations were found for symptoms of PTSD, $r = .305, p < .01$, and versatility of abuse, $r = .400, p < .001$. Participants who had a greater degree of PTSD symptomology and those participants who experienced more types of abuse tended to report higher ascribed Factor 1 psychopathy scores in their abusers.

Table 10

Mental health impairments and abuse experiences variables retained in the multiple regression model in predicting the level of ascribed Factor 1 psychopathy in abusers.

	ΔR^2	Adj R ²	Pearson's r	β	95% Cis		
					Lower	Higher	
Model 1 Harm	.171***	.158***		.414***	.414***	1.881	6.826
Model 2 Frequency	.092**	.238***		.372***	.359**	1.357	9.049
Model 3 Anxiety	.076**	.305***		.387***	.296**	.064	.505

n = 62

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

Note. Harm = degree of physical harm. Frequency = frequency of abuse.

Similar to the Factor 1 psychopathy findings, multiple regression analyses revealed that the degree of physical harm sustained from abuse to be the strongest predictor of ascribed Factor 2 psychopathy scores when compared to the versatility of abuse, frequency of abuse, and symptoms of depression, PTSD, and anxiety, $F(1, 60) = 7.07, p < .01, R^2 = .160$. The degree of physical harm accounted for 16% of the variance in participants' ratings of Factor 2 psychopathy of their abusers. The positive beta weights reveal that participants who experienced a greater degree of physical harm tended to rate their abuser higher on Factor 2 psychopathy (Table 11).

The frequency of abuse was retained in model two as it significantly increased the predictive power by 6%, $F(1, 59) = 4.32, p < .05, \Delta R^2 = .061$. The versatility of abuse was significantly associated with Factor 2 psychopathy, but was not retained in the model as a unique predictor, $r = .306, p < .01$. Thus, the frequency of abuse and degree of physical harm significantly predicted participants' ratings of Factor 2 psychopathy, accounting for 17% of the variability, $F(2, 59) = 5.89, p < .01, R^2 = .170$. Participants who experienced

abuse that was more frequent and physically harmful ascribed their abuser as possessing more traits associated with Factor 2 psychopathy.

No mental health variables were retained in the model as being predictive of ascribed Factor 2 psychopathy scores in abusers. However significant bivariate correlations were found for symptoms of PTSD, $r = .287, p < .01$, and anxiety, $r = .205, p < .05$. In terms of bivariate correlation findings, participants who had a greater degree of PTSD symptomology, higher levels of anxiety, and those participants who experienced more types of abuse were associated with higher ascribed Factor 2 psychopathy in abusers.

Table 11

Mental health impairments and abuse experiences variables retained in the multiple regression model in predicting the level of ascribed Factor 2 psychopathy in abusers.

		ΔR^2	Adj R ²	Pearson's r	β	95% CI	
						Lower	Higher
Model 1	Harm	.105**	.100**	.330**	.330**	1.028	7.237
Model 2	Frequency	.060*	.138**	.301**	.251*	.191	10.134

n = 62

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

Note. Harm = degree of physical harm.

The bivariate correlation matrix in Table 12 indicates that all the facet scores except lifestyle were significantly associated with the versatility of abuse and the degree of physical harm. Participants who reported experiencing more types of abuse and a greater degree of harm from these abusive experiences also reported their abuser as possessing a greater degree of traits associated with the affective, interpersonal, and antisocial facet.

The versatility of abuse had the strongest association with the antisocial facet, whereas the degree of harm had the strongest association with the affective facet.

The lifestyle facet had a marginally significant relationship with the frequency of abuse, $r = .207, p = .007$. Frequency of abuse was also had a marginally association with the affective facet, $r = .300, p = .008$, and the interpersonal facet, $r = .240, p = .03$.

The only aspect of participants' recovery that had a strong association with a facet score was anxiety. However, anxiety was found to only approach significance with the interpersonal facet, $r = .323, p = .006$, and PTSD was only found to approach significance with the interpersonal facet, $r = .311, p = .01$.

Table 12

Bivariate correlations of facet scores of psychopathy, abuse experiences, and recovery outcomes in survivors.

	1	2	3	4	5	6	7	8	9
1.Affective	-								
2.Interpersonal	.624**	-							
3.Lifestyle	.466**	.560**	-						
4.Antisocial	.540**	.474**	.512**	-					
5.Frequency	.300	.240	.304	.280	-				
6.Versatility	.376**	.347*	.207	.376**	.357**	-			
7.Harm	.371**	.327*	.165	.346*	.143	.516**	-		
8.PTSD	.234	.311	.292	.222	.070	.131	.336	-	
9.Anxiety	.202	.323	.175	.170	.113	.252	.199	.700**	-
10.Depression	-.005	.062	-.044	-.102	-.102	.047	.208	.523**	.752**

n = 62

p* < .005, *p* < .001

Note. Harm = degree of physical harm.

The analyses found partial support for hypotheses for Research Question Three. Surprisingly, both ascribed levels of Factor 1 and Factor 2 psychopathic traits were predicted by abuse frequency and the degree of physical harm caused by the abuse (Hypothesis 3a and 3b). Also, contrary to the prediction, these variables had a stronger effect in predicting ascribed Factor 1 than ascribed Factor 2 psychopathy scores (Hypothesis 3b). In addition, mental health was found to be predictive of ascribed Factor 1 psychopathy scores (in line with Hypothesis 3a). However, this was only true for anxiety. Anxiety and PTSD were significantly associated with both factors, but the association was stronger for ascribed Factor 1 psychopathy scores, which is in line with Hypothesis 3a predictions.

Contrary to the predictions: 1) the affective factor was not associated with mental health variables and only approached significance with PTSD (Hypothesis 3c), and 2) the interpersonal facet was not associated with the frequency of abuse, and only approached significance with anxiety (Hypothesis 3c and 3d). The lifestyle facet had a marginally significant association with the frequency of abuse, but was not associated with the versatility of abuse (Hypothesis 3e). However, the antisocial facet was, as predicted by Hypothesis 3f, significantly associated with the degree of physical harm and versatility of abuse.

Discussion- Study 1a

The findings for Study 1a provided baseline data to support that domestic abusers' psychopathic traits are associated with survivors' experiences during the relationship and their recovery after the relationship ended. This baseline data corroborates the research on the relation between psychopathy and specific patterns of abuse during romantic

relationships (e.g., Holtzworth-Munroe et al., 2000; Petersson et al., 2016), as well as the emerging research (e.g., Kirkman, 2005; Pagliaro, 2009) on the detrimental effects that psychopathic individuals can have on their romantic partners.

Psychopathic Traits and Abuse Experiences

The findings from Study 1a provide partial support for Hypothesis 1a and 1b. The degree of physical harm from abuse, versatility of abuse, and frequency of abuse were significantly associated with the ascribed level of psychopathic traits in abusers. However, only the versatility and the frequency of abuse uniquely predicted the abusers' ascribed level of psychopathic traits, when controlling for the length of the relationship.

The degree of physical harm from abuse did not provide a unique prediction of ascribed psychopathic traits in abusers. This may be because, when examining the full construct of psychopathy (e.g., antisocial characteristics and emotion deficits), the frequency and versatility of abuse capture a more holistic pattern of abuse behaviours throughout a romantic relationship that encompasses physical forms of abuse and its associated harm.

This finding is not in conflict with research that highlights the association between psychopathic traits, and the severe forms of violence and harm during romantic relationships (Huss & Langhinrichsen-Rohling, 2000; Petersson et al., 2016). Rather, the current findings highlight the trend that psychopathic traits during romantic relationships contribute to frequent abusive behaviours (Huss & Ralston, 2008), severe forms of abuse, including emotional abuse (Cunha & Goncalves, 2013; Graña et al., 2014; Petersson et al., 2016), and engagement in versatile forms of abuse, which includes psychological

(including deception), sexual, and physical forms (Kirkman, 2005; Pagliaro, 2009; Petersson et al., 2016; Williams et al., 2005).

In the current sample, versatility of abuse was associated with the degree of physical harm (see Table 37 in Appendix I). In turn, the degree of physical harm was also associated with experiences of abuse that was sexual, financial, property, and physical in nature (Appendix I). Thus, physical harm is not specific to experiences of physical abuse. However, further analysis is needed to examine the range of severity of different types of abuse in survivors who identify as experiencing a psychopathic abuse, and how these types of abuse may interact to produce more severe outcomes for survivors.

Similar to the current findings, Pagliaro (2009)'s sample of psychopath survivors reported minimal levels physical harm sustained from abuse. The lack of predictive power of physical harm in the Study 1a findings, despite prior research that suggests psychopathy is associated with severe forms of physical violence (Petersson et al., 2016), may be because the current sample, and that of Pagliaro's, was recruited from the community and reflect the survivors' perspective. The majority of research on psychopathic abusers examines the abusers themselves and examines samples who have been in contact with the criminal justice system for crimes relating to domestic abuse (i.e., court referred, charged with domestic abuse, incarcerated offenders; e.g., Cunha & Goncalves, 2013; Graña et al., 2014; Petersson et al., 2016). Domestic abusers who have been charged with a criminal offence connected with domestic abuse are likely engaging in physically severe forms of domestic abuse, and are likely being prosecuted because there is physical evidence that can be provided to law enforcement and used in court.

Survivors from the community may experience physical forms of abuse that may not result in visible and/or severe physical injuries (e.g., being blocked, chased, pushed, and non-fatal strangulation; Glass et al., 2008). Abusers commonly engage in these types of physical abuse to conceal the existence of abuse within the relationship from the victim's social network and/or legal authorities. It may be difficult for victims to obtain physical evidence for forms of abuse, such as threats of violence, theft, or forms of physical abuse that are less physically severe and/or do not leave visible injuries.

In line with prior research (e.g., Kirkman, 2005; Pagliaro, 2009; Petersson et al., 2016; Williams et al., 2005), psychopathic traits were also associated with physical, property, and financial forms of abuse. Economic forms of abuse (i.e., property, financial) can result in physical harm (e.g., reckless driving, can co-occur with physical abuse), but are consistently associated with survivors' severe psychological impairments (Sanders, 2015; Swanberg, Logan, & Macke, 2005).

Contrary to prior research (e.g., Pagliaro, 2009; Petersson et al., 2016), sexual abuse was not found to be associated with abusers' levels of ascribed psychopathic traits. However, it is important to note that nearly half of participants experienced sexual abuse, and the recruitment targeted those who identify as being victimized by a psychopathic abuser. Beaudette (2012), who conducted her studies of survivors of co-workers and bosses with psychopathic features, portrayed her sample as survivors of psychopaths. She reported an average MSRP-S score of 87.2 after the removal of low scores. Beaudette's average MSRP-S score was lower than the MSRP-S score in the current sample ($M = 102.4$). It could be argued that the findings of the current sample represent psychopath survivors, despite including low scorers and having a normal distribution of scores (i.e.,

range from 49 – 142), and thus, sexual abuse appears to be an important factor in experiences of psychopathic abuse during a romantic relationship.

Due to the limited variability in participants' reported experiences of deception and emotional abuse, no significant relationships with abusers' ascribed level of psychopathic traits were found (with the Bonferroni correction, deception approached statistical significance). However, because the study specifically recruited participants who had experienced an abusive relationship with a partner who displayed psychopathic characteristics, and almost all participants reported experiencing emotional abuse and deception (100% experiencing emotional abuse and 84.8% experiencing deception), it is evident that experiences of these types of abuse are likely reflective of psychopathic abuse during romantic relationships. This assertion is in line with Kirkman (2005) and Pagliaro (2009)'s sample of psychopath survivors, who also reported high rates of deception and emotional abuse. Overall, psychopathic individuals appear to exploit and exert control over their victims in a variety of domains, notably in emotional, physical, property, sexual, and financial forms.

Emotional Functioning During Recovery from a Psychopathic Abuser

Hypothesis Two was partially supported. Participants' declines in emotional functioning contributed to the level of psychopathic traits they ascribed to their abusers, after controlling for the amount of time since last contact with their abuser, length of the relationship, and their level of resilience. Specifically, elevated levels of anxiety and PTSD symptomology were predictive of participants ascribing their abusers as more psychopathic. However, decreased experiences of positive emotions and PTSD symptomology were the only variables retained as unique predictors for the degree of

psychopathic traits that participants ascribed to their abusers. This may be because anxiety did not contribute a significantly unique enough portion of the variability in participants' MSRP-S ratings, which may be due to the conceptual overlap between PTSD symptoms and anxiety. PTSD has previously been classified as a type of anxiety disorder (American Psychiatric Association, 1994), which is likely because the hyperarousal symptoms of PTSD include characteristics found in anxiety (e.g., elevated physiological symptoms, suspiciousness; Etkin & Wager, 2007).

Evidence from the current findings are in line with prior research (Pagliaro, 2009), which suggests that a romantic relationship with a psychopathic individual is a traumatic event that contributes to elevated symptoms of PTSD. Further, the current sample displayed high rates of PTSD symptomology, which suggests that participants may meet the clinical diagnosis for PTSD, as expressed by Creamer and colleagues' (2003) interpretation of scores on the IES-R. Psychological abuse (e.g., emotional abuse, deception), which was highly prevalent in the current sample, has been found to be the strongest predictor of PTSD in survivors of domestic abuse (Pico-Alfonso, 2005). Further, the experience of versatile and frequent forms of abuse, both of which were highly prevalent in the current sample, has been previously found to predict elevated PTSD symptomology (Basile et al., 2004; Sullivan et al., 2009). The current findings support the notion that a close relationship with a psychopathic individual who may not meet the clinical criteria for psychopathy can cause detrimental effects to survivors (Brown, 2008; Leedom & Anderson, 2011).

While research has found trauma reactions to victimization by a psychopathic individual to be associated with intense negative emotional experiences (Beaudette &

Forth, 2011), PTSD is consistently associated with emotional avoidance and physiologically deactivating emotional states (Felmingham et al., 2014; Simmons et al., 2008). This has been theorized to be associated with attempts by the individual to cope with negative emotional reactions associated with intrusive memories and flashbacks (i.e., hyperarousal symptoms). However, this fluctuation between hyperarousal and freeze responses (i.e., numbing) also impairs individuals' ability to experience and process positive emotional experiences (Nawijn et al., 2015; Steuwe et al., 2014).

The Factors and Facets of Psychopathy

Factor 1 psychopathy is the categorization of traits that encompasses psychopathic individuals' "selfish and remorseless use of others" (Hare, 1991, p. 76), and is associated with characteristics of pathologically lying, superficial charm, manipulation, lack of remorse, guilt, and empathy, failure to take responsibility, and grandiose sense of self-worth. Factor 2 psychopathy represents the categorization of traits that is associated with "chronically unstable and antisocial/socially deviant lifestyle" (Hare, 1991, p.76). These characteristics include a need for stimulation, parasitic lifestyle, impulsivity, poor behavioural control, and early behavioural problems.

In line with prior research that investigated psychopathic traits in domestic abusers (e.g., Magger et al., 2014; Swogger et al., 2007), the ascribed level of Factor 1 psychopathy was found to be higher, than Factor 2 psychopathy in domestic abusers. This finding for domestic abusers who live, for the most part, in the community, corroborates the view that Factor 1 characteristics (i.e., affective and interpersonal traits) may be more integral to the construct of psychopathy than their criminal features (Book et al., 2013; Polythress & Hall, 2011; Skeem & Cooke, 2007).

Partial support was found for Hypothesis 3a. Participants' level of PTSD symptomology and anxiety, along with their experiences of abuse that was frequent, versatile, and physically harmful was associated with ascribed Factor 1 psychopathy. The degree of physical harm, frequency of abuse, and participants' levels of anxiety were found to each predict a unique portion of the variance in Factor 1 psychopathy scores.

Research has not previously examined the effect of victimization by a psychopathic individual specifically related to Factor 1 psychopathy. Anxiety has previously been associated with psychopath victimization (Beaudette & Forth, 2011; Brown, 2008; Pagliaro, 2009) and general reactions to domestic abuse (Trevilliion et al., 2012). Lawrence and colleagues (2009) found that while physical abuse was predictive of current domestic abuse victims' anxiety, these effects were stronger when examining the co-occurrence of emotional abuse.

Due to the high rates of deception in the current sample, and frequent forms of abuse, anxiety may be associated with the anticipation of: 1) abuse episodes, and/or 2) the discovery of deception, including infidelities or aliases. Factor 1 psychoaphy characteristics include pathological lying, lack of empathy, guilt, and remorse, and manipulative tactics. Post-hoc analyses revealed that the interpersonal facet had the strongest association of the facets with deception, $r = .316, p < .01$, which was experienced by 84.8% of the current sample. Feelings of anxiety associated with these aspects of the relationship may persist during recovery from a romantic relationship with a psychopathic individual.

Brown (2008) found that feelings of anxiety from psychopathic victimization transferred to subsequent relationships, specifically during dating relationships. Increased

anxiety levels can hinder the establishment of close relationships that may provide support during recovery. Beaudette and Forth (2011) also found that survivors of psychopathic abusers experience fear of betrayal, a lack of distrust in themselves and others, as well as a tendency to question others' motives. These findings align with the trends in anxiety research that find anxiety contributes to the anticipation of threat cues, suspiciousness, and a negative bias in processing social information (Anderson et al., 2013; Machado-de-Sousa et al., 2010).

The findings lend partial support for Hypothesis 3b. All the abuse experience variables, as well as levels of PTSD and anxiety, were associated with participants' ratings of Factor 2 psychopathy traits in their abusers. However, only the degree of physical harm sustained from abuse and the frequency of abuse were found to predict a unique portion of the variance in participants' ratings of ascribed Factor 2 psychopathy. These predictors for Factor 2 psychopathy were weaker than that of Factor 1 psychopathy.

While the finding that the frequency of abuse and the degree of physical harm were strongly predictive of Factor 1 psychopathy, this was not in line with the predictions of Hypothesis 3a. However, this may be related to elements in Blair's (1995) VIM. Psychopathic individuals' ability to emotionally disconnect (e.g., shallow emotions, lack of empathy) is thought to impair their ability to respond to distress cues in their romantic partners with aversive feelings, where these aversive feeling would normally be used to cease behaviours that distress others (Marshall & Holtzworth-Munroe, 2010; Swogger et al., 2007).

Factor 1 psychopathy characteristics may also permit psychopathic individuals' ability to frequently and effectively manipulate their partners to exploit them, while ensuring their partners remain in a committed relationship. Examples of strategies permitted by Factor 1 psychopathy characteristics include: 1) engaging in superficial charm and pathologically lying without being constrained with aversive feelings, such as guilt (de Almeida Brites, 2016), and 2) an ability to identify mental states in others (e.g., intent, desires, etc; Richell et al., 2003), recognize the emotional significance of stimuli (Endres, 2004; Sandvik et al., 2014), and detect cues of vulnerability (Book et al., 2013; Wheeler et al., 2009).

Similar to Beaudette's (2012) study of survivors of workplace psychopaths, participants tended to ascribe their abuser as exhibiting more characteristics associated with the interpersonal facet when compared to the other facets. However, contrary to Hypothesis 3c and 3d, the affective and interpersonal facets (associated with Factor 1 psychopathy) were not associated with participants' mental health, nor was the interpersonal facet associated with abuse frequency. This may be due to the Bonferroni correction being too conservative, as the interpersonal facet only approached significance with anxiety and the frequency of abuse.

Minimal support was found for Hypothesis 3e, the lifestyle facet was not significantly associated with the versatility of abuse and, due to the Bonferroni correction, had a marginally significant association with the frequency of abuse. The findings lent support to Hypothesis 3f, in that the degree of physical harm and the versatility of abuse were significantly associated with the antisocial facet. In terms of the

strength of the relationship, the versatility of abuse was equally related to the affective facet and the antisocial facet.

Previous research has found that elevated levels of Factor 1 psychopathy can enhance the detection of cues of retaliation that may thwart the abusers' efforts in maintaining control over their victims (Babcock et al., 2008; Wheeler et al., 2009). Researchers have argued that elevated levels of Factor 1 psychopathy, particularly the characteristic of shallow emotional experiences, is associated with the ability to engage in aggressive behaviours without being withheld by their emotional experiences (e.g., guilt; Babcock, Green, & Webb, 2008; Marshall & Holtzworth-Munroe, 2010). Research has also found an association between the interpersonal facet and instrumental forms of aggression, where psychopathic abusers engage in aggression as part of their goal-directed behaviours, whereas the Factor 2 psychopathy facets are associated with reactive forms of aggression (Blais et al., 2014). Thus, the overlap between physical harm and versatile forms suggest that psychopathic individuals may use both physical and verbal forms of aggression as part of their calculating and predatory nature during romantic relationships (Swogger et al., 2007). As noted previously, the degree of physical harm was associated with a variety of abuse experiences.

The current findings appear in line with Swogger and colleagues (2007) assertion that emotional lability and a lack of behavioural control are not characteristics that contribute to psychopathic individuals' engagement in domestic abuse. Further evidence for this notion is that the lifestyle facet (associated with impulsiveness, irresponsibility, and need for stimulation) had the lowest scores of all the facets and the weakest relationships with participants' abuse experiences and mental health impairments.

However, Swogger and colleagues reached their conclusion because they found a negative relationship between domestic abuse and the lifestyle facet, a positive relationship with the interpersonal facet, and no relationship with the affective facet. Further analysis is needed to provide insight into the relationship between the facets of psychopathy and the experiences of physical harm in survivors of domestic abuse.

An alternative avenue for additional research is to assess the significant associations between Factor 1 psychopathy and engagement in economic forms of abuse (post-hoc analyses confirm that Factor 1 psychopathy is associated with property, $r = .305, p < .01$, and financial abuse, $r = .317, p < .01$), and its underlying facets (weaker but significant associations for economic forms of abuse were also found between Factor 2 psychopathy and the underlying facets). While research is emerging in the area of emotional abuse, there is a significant gap in research on the pattern of behaviours associated with economic forms of abuse, particularly in relation to abusers' levels of psychopathic traits. This is important because psychopathy in romantic relationships is associated with exploiting others, a parasitic lifestyle, and need for power/material items (Kirkman, 2005). One possible avenue of investigation is the relation between the degree of physical harm that can occur with economic forms of abuse. Currently, potential risk factors (e.g., increased absenteeism at place of employment) for the emotional and physical harm from economic forms of abuse, and their potential severity in relation to abusers' psychopathic traits, are unknown.

Theoretical and Practical Implications

The findings from Study 1a support the view that, in a sample of psychopath survivors who experienced subclinical levels of psychopathy in their abusers, the

interpersonal and affective traits are a core feature (Book et al., 2013; Poythress & Hall, 2011; Skeem & Cooke, 2007). However, further research is needed to understand how to best conceptualize and assess the manifestation of psychopathy in the community, particular in those psychopathic individuals who perpetrate domestic abuse.

The current study notes specific patterns of abuse throughout romantic relationships, particularly that psychopathic traits are associated with frequent and versatile forms of abuse that include physical (i.e., physical) and non-physical forms (i.e., deception, economic forms, and emotional abuse).

While the current sample reported little severe effects of physical harm from the abuse, the experiences of domestic abuse can contribute to severe effects on physical health both indirectly (e.g., chronic stress, sexually transmitted diseases), and directly, such as from abuse that has high risk factors for injury and mortality (e.g., strangulation and reckless driving; Canady & Babcock, 2009; Glass et al., 2008). Further, the degree of physical harm variable may not capture the long-term and detrimental effects that trauma has on physical health, such as from mental illnesses. The current sample exhibited high rates of PTSD symptomology, which increases their susceptibility for physical illnesses (Kernic et al., 2000), and elevates risk for physically harmful coping behaviours, such as self-harm, eating disorders, substance abuse, and suicide attempts (Anderson, 2010; Gutner et al., 2006; Hanson et al., 2010).

Future attention should be geared to developing an assessment tool for measuring psychopathic traits in the context of romantic relationships. The MSRP-S in the current study has not been validated in a domestic abuse sample, and is based on a reliable and valid tool that was designed for self-assessment of psychopathic traits. The development

of an assessment tool of successful psychopaths (who commit more immoral acts and live relatively undetected in the community), particularly one that is specific to domestic abusers, may provide insight into the role of psychopathic traits (e.g., affective traits, Factor 1 psychopathy) in the complex forms of abuse, including economic and emotional forms of abuse, that are understudied. This could include items that assess trends found in Study 1a, including engagement in specific types of abuse (e.g., financial, cyber), severity of abuse, if the abuse escalates over the course of the relationship, and the degree of physical harm from the abuse, in relation to the facets of psychopathy. It is important to acknowledge that the psychopathy construct itself is still assessed with this assessment tool. However, it is important to note that psychopathic features may manifest differently for domestic abusers than those individuals who are in correctional facilities [as argued by Swogger et al., 2007)].

There is a need to understand the complexities of more implicit and complex forms of abuse (e.g., emotional, economic), as they can be difficult to define, are associated with physical and emotional harm, and are less episodic as they often immersed in the dynamics of the relationship. This is in comparison to physical forms of abuse that have, arguably, a clear start and end point. These factors associated with implicit/non-physical forms of abuse impair victims' ability to build physical evidence that could be used to report the abuse to legal authorities, and to receive legal protection that could assist in safely exiting the relationship.

Overall, the findings from Study 1a will be useful to educate counsellors, support workers, and for those who may be able to: 1) tailor treatment programs to assist victims who have been victimized by a psychopathic abuser, and 2) assist those who are currently

victimized by a potential psychopathic abuser in assessing the degree of risk in their current situation, how to best create a safety plan, and for securing legal proceedings to ensure safety of victims and their family, both during and after the relationship has ended. This may include long-term peace bonds or restraining orders, as psychopathy has been associated with a stable engagement in aggression and abusive behaviours across the lifespan that has the potential to escalate into more severe forms (Fowler & Westen, 2011; Holtzworth-Munroe & Stewart, 1994; Petersson et al., 2016). Further research on psychopathic domestic abusers may put pressure on law enforcement and the criminal justice system to recognize the need to ensure victims' safety during the court process, which includes protection when the abuser is notified of charges, and if/when the offender is released from incarceration.

The findings of abuse patterns reported by survivors of a psychopathic romantic partner supplements previous research that focused on psychopathic domestic abusers, specifically Petersson and colleagues (2016) and Huss and Ralston (2008). These researchers highlight the association between psychopathic traits and frequent, escalating, and severe forms of abuse, particularly in relation to emotional forms of abuse.

The current research findings, and that of previous research, highlight the need for societal and legal recognition of the harms of emotional abuse, such as the effects of chronic stress on health, contribution to mental illness, and in escalating into more severe and physically harmful forms of abuse. This recognition may include addressing the weak laws surrounding domestic abuse, particularly, the narrow definition of what constitutes credible evidence of emotional abuse, which appears specific to criminal

harassment associated with stalking that is contingent on specific threats of violence and physical evidence of surveillance behaviours (Lalonde, 2015).

There remains a low rate of reporting domestic abuse and extensive difficulties for those victims seeking legal protection. These factors, and the lack of social and legal acknowledgement of the severity of the issue contributes to the stigma surrounding domestic abuse and impairs victims' ability to seek help from their social network (Meyer, 2016; Statistics Canada, 2016). This may be remedied by enhancing public awareness of warnings signs of emotionally abusive behaviours/psychopathic behaviours and promotion of bystander intervention for assisting those who are struggling with an abusive individual. Bystander intervention may be especially applicable for detecting domestic abuse, especially due to the high rates of financial abuse (e.g., workplace harassment, increased absenteeism) associated with psychopathic abusers, at places of employment or education.

Overall the findings from the current study provide a platform for future research and the development of assessment tools to better assess both subclinical and clinical levels of psychopathy in the context of domestic abuse that may be used to assist survivors in their recovery and prevent such experiences from occurring in the future.

Study 1b

Descriptive Statistics

Each participant in Study 1b was given an altered pseudo name, in order to further protect their identity. Table 13 indicates the demographic information of each participant. Participants were educated, middle class, female, and had a mean age of 35.6. All participants but one (who was a student) had full-time employment.

Table 13

Demographic information across participants.

Participant	Age	Gender	Ethnicity	Education	Employment
Genni	19	Female	Caucasian	High School	Student
Holly	53	Female	Caucasian	College	Full-time
Judy	38	Female	Caucasian	University	Full-time
Samantha	25	Female	Caucasian	College	Full-time
Melinda	46	Female	Caucasian	College	Full-time
Rosie	41	Female	Caucasian	Graduate school	Full-time
Jill	27	Female	Hispanic	College	Full-time

N = 7

Table 14 provides the descriptive information for participants' ratings of emotional functioning. However, Samantha and Jill did not provide responses to the close-ended survey items that examined levels of emotional functioning. Participants in Study 1b displayed above average levels of resilience ($M = 45.8$, $SD = 4.3$), and higher rates of resilience than ERS ratings in Study 1a. Participants' generally experienced higher rates of negative emotions ($M = 3.9$, $SD = 0.8$), than positive emotions ($M = 3.6$, $SD = 1.5$), and experienced lower levels of negative emotions and higher levels of positive emotions than participants in Study 1a.

Overall participants in Study 1b displayed significantly lower levels of mental health impairments than those in Study 1a. Participants in Study 1b reported low levels of anxiety ($M = 8.4$, $SD = 8.9$), and depression ($M = 22.0$, $SD = 19.2$), and moderately high levels of PTSD ($M = 43.2$, $SD = 26.2$).

Table 14

Descriptives of levels of emotional functioning for participants in Study 1b.

Participant	Resilience	Depression	Anxiety	PTSD	Positive emotion	Negative emotion
Genni	51	4	1	56	4.3	3.5
Holly	46	5	1	14	4.6	3.2
Judy	39	17	4	24	1.8	3.4
Melinda	46	46	17	42	5.1	4.7
Rosie	47	38	19	80	2.3	4.9

N = 5

Note. Positive emotion = positive emotional experiences, Negative emotion = negative emotional experiences.

Table 15 details the characteristics of the abusive relationship for each participant.

Psychopathic traits in the abuser were moderate, ranging from 44 to 125, with a mean rating of 90.6 ($SD = 27.7$), which is slightly lower than the average MSRP-S score obtained for Study 1a ($M = 102.4$). In comparison to the normative psychopath survivor data from Beaudette (2012; $M = 87.2$), the sample for Study 1b experienced abusers who were slightly more psychopathic. While survivors did self-identify as experiencing an abuser who was psychopathic, the results from Study 1b should be interpreted with caution the extent the participants in Study 1b do represent a subset of survivors of psychopathic abusers (due to the high variation of MSRP-S scores), or more general experiences of domestic abuse.

The types of relationship ranged from boyfriend, common-law, to spouse. The estimated average length of the abusive relationships was 10 years. Three participants stated that they were current contact with their abuser (i.e., citing custody of children). Six of the seven participants indicated that the abuse was very frequent and the remaining stated the abuse was frequent. One participant cited experiencing moderate levels of

physical harm (seeking outpatient treatment), while the remaining participants reported either mild to no physical harm.

Table 15

Characteristics of abusive relationship across participants.

Participant	Type	Length (years)	Frequency	Harm	MSRP-S
Genni	Boyfriend	1 - 2	Very	None	44
Holly	Spouse	10 - 20	Very	Mild	104
Judy	Spouse	5 - 10	Very	None	99
Samantha	Boyfriend	2 - 5	Very	Mild	125
Melinda	Spouse	20+	Very	None	64
Rosie	Boyfriend	2 - 5	Very	Mild	108
Jill	C.L.	10 - 20	Frequently	Moderate	90

N = 7

Note. Type = relationship type, Length = relationship length, Frequency = frequency of abuse, Harm = degree of physical harm, MSRP-S = Score on the Modified Self Report Psychopathy Scale- Short form, Very = Very frequently.

C.L. = common law

Mild degree of physical harm was defined as no medical treatment needed but moderate was defined as outpatient treatment.

The abusers were versatile in their types of victimization behaviours. All participants indicated experiencing more than one type of abuse (See Table 16). All participants cited experiencing emotional abuse and six participants experienced deceit.

Table 16

Types of abuse experienced across participants.

Participant	Physica	Sexual	Deceit	Spiritual	Financial	Substance	Emotiona	Property
Genni		X					X	
Holly	X		X	X	X		X	
Judy		X	X				X	X
Samantha	X	X	X		X	X	X	X
Melinda		X	X		X		X	
Rosie	X	X	X	X			X	X
Jill	X		X	X	X		X	

N = 7

Note. Physica = physical abuse, Emotiona = emotional abuse.

Word frequency during gaslighting experiences. All participants experienced gaslighting, which was evident from their abusers' reported use of language and the participants' reactions. Participants varied in the type of examples they provided in their open-ended survey responses. Three participants provided recalled dialogue of conversations with themselves and their abuser during a gaslighting episode. The remaining participants provided quotes from their abusers and brief summaries of what the abuser uttered during gaslighting episodes. The results from the word frequency counts should be taken with caution as they are based on written responses of varying length and from mixed types of data (e.g., summaries, dialogue, quotes). However, the general trends found in the data will be sufficient for the purposes of this descriptive portion of Study 1b.

Abusers' language included the frequent use of words pertaining to the participant being "crazy", that there is something "wrong" with the participant, and that any issues in the relationship were the participant's "fault". These words were counted verbatim from participants' open-ended survey responses.

Semantic coding was used for the frequency of the words, such as "girl" and "brat" that were semantically coded with the word "child". Sentences in participant responses where the abuser stated that there is something wrong with the participant (i.e., not loving the abuser enough, that they are a liar) or that the participant has problems were semantically coded with the word "wrong". Table 17 displays the frequency of word choices and semantic coding of abusers' language during gaslighting.

Table 17

Word frequency count and semantic coding of abusers' language associated with gaslighting episodes.

Participant	“Crazy”	“Paranoid”	“Insecure”	“Child”	“Wrong”	“Fault”
Genni				2	8	12
Holly	2				5	
Judy	2	1	5		2	1
Samantha						1
Melinda				1	11	7
Rosie					4	
Jill	2		3	2	10	1

N = 7

Generally, terms such as “crazy” and “paranoid” are commonly associated with gaslighting tactics (Abramson, 2014; Brown, 2008). These terms are evident in participants’ responses, as displayed in Table 17. Table 17 also indicates that the majority of abusers told the participant that there is something “wrong” with them (that did not fall under the term “paranoid” or “crazy”). These ranged from stating they were a “liar”, “controller”, “stalker”, are “jealous”, or that they did not “love” the abuser enough. The next most frequent word usage revolved around the abuser uttering to the participant that they are at “fault” (e.g., for issues in the relationship).

Common reactions of the participants include feeling “crazy”, “frustrated”, “confused”, and that there is something “wrong” with them, such as they are “fat”, “ugly”, “don’t deserve to be loved”, and were “asking for too much out of the relationship”.

The frequency of the words “annoyed” and “irritated” were semantically coded with the word “frustrated”. The frequencies of the words “insane” or “losing my mind” were semantically coded with the word “crazy”. Sentences in participants’ responses where they stated that there is something wrong with them (e.g., they do not love enough, they lie, etc.), or where the participant stated that they have problems were semantically coded with the word “wrong”.

The remaining words were counted verbatim from participant responses (e.g., “worthless”, “confused”). Table 18 displays participants’ reactions to gaslighting through their word usage in their open-ended survey responses.

Table 18

Word frequency count and semantic coding of participants' reactions to gaslighting episodes.

Participant	“Crazy”	“Frustrated”	“Paranoid”	“Insecure”	“Worthless”	“Confused”	“Wrong”
Genni		3				1	1
Holly				1		2	1
Judy	1		1	1			2
Samantha	1			1	1		4
Melinda	22	7			2	3	6
Rosie						4	
Jill					1		3

N = 7

Table 17 indicates that abusers' language during gaslighting was associated with participants doubting themselves (e.g., stability of their mental state). Abusers' frequent word usage that there was something "wrong" with the participant, as seen in Table 17, suggests that participants internalized what their abuser uttered to them. This is because in Table 18, the majority of participants' responses included word usage associated with the feeling that there was something "wrong" with them. Across participants, feelings of confusion, worthlessness, and insecurity were also common in the word usage that described participants' reactions to gaslighting.

General examples of gaslighting experiences. The following quotes from Jill and Melinda describe how their abusers would distract them from the original topic of conversation by instilling confusion. The abuser accomplished this by using sentences that contradicted previous sentences in the conversation:

He would say something that contradicted his previous lie, I would question him, and he would then swear I am hearing things.

He often says opposite things in the same conversation. So I ended up feeling like what just happened here?

While Melinda and Jill would question their abuser for clarifications they would also began to question themselves about whether their perception of the conversation was accurate.

Judy described how her abuser would "pick a fight" with her and use her reactions against her as a means to attack her emotional and mental stability:

...he would pick a fight with me, pushing me to lose my cool and then very calmly say '- ----, why are you yelling? Look at me - I'm trying to be calm and rational, and you're acting crazy. You have problems... Maybe you should get help' (in a very concerned voice). This, of course, would infuriate me further, but at the same time, I would realize I really WAS the only one acting crazy. After enough of those interactions, I also started doubting myself, thinking I had anger problems.

Judy's abuser prompted her to think that there was something wrong with her (i.e., she had "anger problems"). She no longer felt that she could use her feelings and perceptions to verify the situation. Instead, due to the frequency of these episodes and her emotional reactions that followed, she became drained and susceptible to believing what her abuser uttered to her.

A similar case is evident in Genni's gaslighting experience. She stated "...everything is my fault". Her abuser would constantly turn problems in the relationship and problems in the abuser's life as being Genni's fault. Genni's abuser would make it apparent that she was responsible for providing a solution to these problems by changing her behaviours.

A similar feeling of responsibility was evident during the gaslighting experiences of Samantha and Rosie. Both of these participants felt they were responsible for stopping the abuse:

I was trying to make him happy so he would stop acting the way he was.

It was always turned back on me. I was accused of not being trusting enough or in love with him enough.

Samantha and Rosie were made to feel that conflict in the relationship was solely because of how they conducted themselves. Their abusers made them feel that they had to act a certain way (e.g., make the abuser happy or prove their love) to manage their partners' abusive behaviours.

The final example of gaslighting was more overt compared to the other participant's experiences. Holly was called derogatory names in front of her children as part of an episode of emotional (gaslighting) and spiritual abuse. The following is an

excerpt from Holly's recalled dialogue with her abuser. Holly begins to cry when her abuser accuses her of thinking that she is better than him because she went to church (for full recalled dialogue see Appendix J):

You always have to ruin everything don't ya? Ya gotta pull out the tears to try and make everyone look like an ass. You love making me look like shit don't you?

Holly's abuser verbally attacks a part of her identity (commitment to religious beliefs). He harshly accuses Holly of going to church because she was better than he was and disregards her religious commitment. As noted in Appendix J, Holly cries in response to what her abuser is uttering to her. Instead of validating her emotions, he plays the victim and accuses her of "ruining" everything and making him look bad. Holly's reality is not acknowledged and is undermined. In her response to her abuser, she feels she must conceal her reactions and cannot freely defend herself. This is because she takes the responsibility of making sure the abuse does not escalate in front of her children.

Participant reactions. All participants reported that their abuser was successful in causing them to doubt their own reality. This resulted in profound declines in mental health over an extended period of time, both during the relationship and after the relationship ended. The reactions of Melinda and Holly shed light on the severe effects these experiences have on participants' well-being:

I took my shower and cried and cried and cried. I felt absolutely insane. I felt crazy. I felt like I should be hauled off and locked up. I prayed and prayed, asking God, please don't let me be crazy.

It has been the most debilitating and evil experience of my life and almost did me in.

Melinda's reaction encompasses a successful gaslighting experience as she began to doubt her mental status, which caused her significant emotional distress (i.e., crying). Holly's reactions also acknowledged the severe effects of gaslighting. She hints at the effects the relationship had on her everyday functioning ("debilitating") to the extent of having suicidal ideation ("...almost did me in"; "I need to slash up cause this is just so effed up and I see no way out alive").

All participants cited seeking help from a mental health professional for mental health problems relating to depression, anxiety, PTSD, substance abuse, and/or suicide ideation. Genni, Judy, and Rosie describe their mental health problems:

I still have panic attacks and those escalated to hallucinations.

I look over my shoulder for him all the time... To cope with these effects I have been seeing a psychologist weekly.

I had suicidal thoughts at one point. I coped by drinking. Self-medicating with alcohol.

Genni stated that when she started a new relationship a year after her abusive relationship ended she would experience panic attacks and hallucinations. She also reported seeking help from a mental health professional for issues relating to PTSD. Judy also sought professional help after the relationship ended because she kept thinking about her abuser and was worried that he could be stalking her. Both Samantha and Rosie cited self-medicating with alcohol as a means to cope with their declines in mental health following the end of the abusive relationship. In summary, the effects of gaslighting experiences in the relationship had severe effects on the well-being of participants.

In order to unpack the above examples of gaslighting, three main themes that developed from the analysis that are contextualized in participants' relationships will now

be discussed. The themes reflect similarities across participants in relation to: 1) prior research on psychopathy and emotional abuse, 2) theoretical models of psychopathy [i.e., Blair's (1995) VIM and Glass and Newman's (2009) RMH], 3) distinct features of language use (i.e., pronoun use), and 4) how abusers use language to remain salient in the victim's mind. The term saliency will be used to refer to how the victim's reality is continually fixated on the abuser, and is continually updated to take into account information the abuser utters to them.

The themes also reflect differences across each participant's stage of their relationship (i.e., the progression over time). This will be used to reflect the process of the victim's reality becoming altered. Although these themes are presented as a sequential process they are not mutually exclusive and can co-occur (e.g., aspects of the first theme are present in the later themes). These themes outline how abusers utilize language in the process of altering their victims' reality and each participants' narrative outlined experiences associated with each theme to ensure the data is representative of the dataset.

Research Question four: How do psychopathic traits enhance abusers' ability to gaslight their victims (Study 1b)?

Themes and Discussion

1) Establishment of Power. In order to alter the reality of their victims, abusers initiated the relationship by establishing power and persuading their victims to be in a committed romantic relationship. The power differential between the victim and the abuser was established at the beginning of the relationship, which was necessary for the abuser to maintain control over their victim throughout the relationship.

Genni explained that after the relationship had ended she was able to see that her relationship was founded on her abuser's desire for control: "he wanted absolute control over my life and he figured he owned me..." Samantha learned that "there is a dominate person [sic] in every relationship and if I don't take the dominant role I am leaving myself to be victimized again". Holly explains the relation between power and abuse, and that her abuser's need for control caused the abuse to "just ramp up over the years and particularly when he could not control me any longer..." Abusers initiated the relationship by establishing power through specific tactics that are associated with psychopathic behaviours during romantic relationships. These tactics will be explained in the following subthemes of Persistent Communication and Love Bomb.

Persistent Communication. Over-the-top and constant attention is a tactic used by psychopathic individuals to initiate romantic relationships (Anderson, 2012; Brown, 2008). This is carried out with excessive phone calls, text messages, and emails, which cause the abuser (and what he utters to the victim) to be salient in the victim's mind. Judy and Rosie describe how their abusers ignored their rejections and continued to persuade them into a romantic relationship with Persistent Communication²²:

He was very persistent in talking and dancing with me. He seemed to be more driven when I politely turned him down.

He kept insisting that I take him out...I did not trust him. Something made me cringe. Too flirtatious? Too forward? Too complimentary? He kept calling after the first night. He kind of grew on me. But I did not want to commit. I kept finding excuses...Nothing worked.

²² Quotes are used to represent a theme/subtheme that was developed through participants' narrative and not to indicate that only these two quotes are evidence of the theme, or that only two participants had experiences that were representative of the theme/subtheme.

In the case of Rosie, it is evident that the abuser's saliency in Rosie's mind was increasing with his persistent phone calls and because she was unable to avoid thinking about him ("he kind of grew on me").

Anderson (2012) found persistence to be the second (following love bombing, which will be discussed in the next subtheme) most common tactic psychopathic individuals use to initiate their victim into a romantic relationship. On the surface, Persistent Communication appears flattering as it is generous for someone to intensely focus their energy on another person. It is common for people to confuse the persistent attention from someone who cannot stop communication with them with affection and love (Anderson, 2012). For psychopathic individuals, Persistent Communication is a superficial form of manipulation. It is associated with their desire to achieve power and attain their goal of initiating a romantic relationship (Anderson, 2012; Brown, 2008).

In line with the attention deficits associated with the RMH, the goal of the psychopathic abuser is to achieve a romantic relationship with the victim by remaining salient in the victims' mind. Psychopathic abusers continually ignore contextual cues (i.e., rejection) that may disrupt their goal-directed behaviours. There are also elements of Blair's (1995) VIM, where psychopathic abusers' emotional deficits (i.e., short-lived and low intensity emotional experiences) may also cause them to be disabused (e.g., feel sadness) by their prospective victims' rejections. Overall, psychopathic abusers' attentional and emotional deficits provide them an advantage in the initiation of a romantic relationship, despite their future partners' early lack of interest.

Love Bomb. Love bombing is reported to be the most common tactic that psychopathic individuals use in romantic relationships (Anderson, 2012; Brown, 2008).

This subtheme is based on the inVivo code of “love bombing” found in Holly’s narrative. Love bombing includes verbal reassurance, excessive flattery, expressions of love, and extreme overtures (Anderson, 2012; Brown 2008). Psychopathic individuals appear to use their deceitful nature, superficial charm, and grandiose sense of self (e.g., exhibit confidence and assertiveness) in love bombing to achieve their goal of securing their victim’s trust and attachment in the new romantic relationship.

Holly describes how her abuser “started love bombing me right away. I was 18 with no vision and figured I’d attach my wagon to him because he sure seemed to know what he was doing.” Jill described how during the beginning of the relationship her abuser was “so charming and handsome. He immediately made me feel like he loved me and made me feel protected by the whole world”. Similarly, Judy stated in the beginning of the relationship that her abuser “was very charming and confident” and that he “pursued me with extreme overtures, promises, and attempts at romance”.

Anderson (2012) found: 1) the usage of the word “whirlwind” to be the most frequently used word by survivors in describing the beginning of their romantic relationship with a psychopathic individual, and 2) that 41% of responders in her sample cited that their abuser made an extravagant gesture to demonstrate their love. Anderson’s (2012) findings are corroborated by Rosie’s experience of extravagant gestures during love bombing. Rosie’s abuser engaged in mate poaching when she was married. Rosie stated she had an affair on her husband with her future abuser who “proposed two weeks after I left my husband and pressured me to move in with him.”

Psychopathic individuals do not experience deep emotions (e.g., love), and are aware of the semantic associations of words and the significance of these words to other

people (Blair et al., 2006; Blair & Mitchell, 2009; Endres, 2004). This skill can be used to help psychopathic individuals obtain trust, admiration, and love from romantic partners, as well as lie without being withheld by negative emotional experiences (e.g., guilt; De Almeida Brites, 2016; Endres, 2004; Sneiderman, 2006). Specifically, psychopathic individuals know that verbal expressions of love and engaging in deep personal conversations are perceived by their victim to reflect the abusers' feelings of and desire for trust and connection with their victim (Anderson, 2012). Over the course of the love bombing phase, the victim's feelings of love, connection, and attachment to the abuser increase, while the abuser's feelings remain stagnant (Anderson, 2012).

In summary, abusers use Persistent Communication to become salient in their victim's mind. Abusers take advantage of: 1) their ability to block out rejection and their inability to experience deep emotions, and 2) the positive emotions that they evoke in their victims by using specific words/statements, in order to achieve their goal of establishing power over a victim through a romantic relationship. Genni describes how looking back on the relationship she could see the dichotomy between verbal expressions of love and her abuser's manipulative tactic to establish power. Genni encompasses the theme Establishment of Power when she states:

I don't like romance because I think romance is a type of control. My ex used to have pet names and if you didn't use pet names something was wrong, or if you don't tell each other you love them every effing 5 minutes then that means there's something wrong, and you have to always say it back...I never really liked doing that but then I really started not liking it because it just felt like control.

In supportive and healthy relationships, expressions of love and pet names are given freely to partners as a reflection of admiration, love, and mutual worth. However, in abusive relationships there is a disconnect between what the abuser expresses to the

victim (i.e., love and equality) and the abusers' intentions with the statements they utter to their victims (i.e., the intent of establishing power). Genni was only able to see the true meaning of her abuser's expressions of love when the relationship ended. The following themes reflect how abusers maintains their power by remaining salient in the victim's mind, and exploiting their victims' trust, attachment, and commitment to the romantic relationship.

2) “They Know the Words but not the Music”.²³ The quote that provides the title for this theme is from Blair and colleagues (2006), and reflects psychopathic individuals' ability to “lexically apply the meaning of emotional words but not experience the affective value attached to them” (p.114). This means that psychopathic individuals can learn when words semantically apply to conversational contexts, but do not experience the affective value of these words in a comparable intensity to their conversational (non-psychopathic) partner. As stated in the previous theme, psychopathic individuals can express feelings of love to their romantic partner to evoke their partners' feelings of trust and connection, even if the psychopathic individual does not feel this emotion.

The theme “They Know the Words but not the Music” captures abusers' ability to exploit victims' perception of a shared reality of mutual worth, trust, love, compromise, and commitment in the relationship. Abusers are confident of their victim's commitment and investment in the relationship, and that the early stage of the relationship (in the Establishment of Power) set the foundation for the remainder of the relationship and the victim's commitment to the abuser.

²³ Themes or subthemes that are in quotations reflect that they are taken as a direct quote, either from prior research, or from one of the participants' narratives.

There appears to be a shift in the word choice of abusers. In the theme Establishment of Power, abusers' language use evoked positive emotions in their victims. However, as victims began to trust and feel connected to their abuser, abusers also learned which words could evoke distress in their victims. Abusers attempt to remain salient in their victims' mind through constant utterances of words that distress, subsequently drain, and ensures victims' feelings of powerlessness. Abusers do not become drained from the repetitive utterances of their own words or sentences. The abuser also does not become distressed, or emotionally drained when they witness the victims' reactions of distress, or to what the victim utters to the abuser to defend themselves. Melinda encompasses the disconnection between her and her abuser:

I get very frustrated with my conversations with him. I end up feeling crazy! He doesn't seem to hear what I am trying to say.

In fact there was nothing at all I could have said about anything. It wouldn't have mattered to him. He has no empathy.

Melinda acknowledges that her abuser does not grasp what she is trying to communicate to him and does not fully grasp all the information she is conveying to him. She states that she ends up getting more frustrated (i.e., distressed, emotionally drained) when having conversations with him to the point that she feels "crazy". Melinda also makes the connection between the inability of her abuser to care about what she is saying to him (i.e., to empathize with her, including her frustration).

Participants explicitly stated that the type of language used by abusers (i.e., frequent use of distressing words) was, in the words of Holly, "constant". Genni states further evidence of the "constant" type of language her abuser uses, which will further be

supported in the following subthemes of the Frequent use of Trigger Words and “Draining”:

It got to the point that he got upset [anger outbursts] every day and literally every morning I would have to ask what's wrong.

Frequent Use of Trigger Words. Trigger words were reported as repetitive in the abusers' dialogue to participants. These words were reported to either implicitly state to the victims they were powerless, or directly through the use of anger-driven name calling or harsh language.

Holly would describe how “with anger” her abuser would call her names and use harsh language. Samantha described how her abuser would “belittle” her. She states he would “slowly make me feel inferior to him”. She also described that she was “scared he could get violent”. The fear that this type of dialogue would lead to violence was a reality for participants who identified as being victims of physical abuse. This was evident in the case of Jill, whose abuser was physically abusive to her, and engaged in anger-driven and belittling language:

He informed me that I was garbage, and a waste of his time, and an ungrateful little girl who is insecure and jealous and that we were never together and that he is sorry that I fell off (meaning that I didn't look as good as I used to).

A similar case is evident with Genni's experience. However, there was the threat of physical abuse (“he would punch walls when I was there”) with no physical assaults being carried out:

His insult was calling me a child and oh my god that was the most hurtful thing I could ever hear. It was so traumatizing. He would call me it out of spite.

Both Jill and Genni's experiences highlight the complex array of emotions victims experience during conversations with abusers who are gaslighting them. The power differential is evident; the abuser projects the notion to the victim that there is something wrong with them: they are an inferior defenceless "child" or "girl", are worthless (i.e., "garbage"), and that they pity them (i.e., "felt sorry"). It is also evident, especially in the response of Genni ("He would call me it out of spite"), that abusers are aware that the words they utter are distressing for the victim.

Despite the possible risk of relationship dissolution for this form of emotional abuse, psychopathic individuals appear to have little fear of, or feel guilt for, frequently using emotionally triggering words to their romantic partners. This may be characteristic of their callousness and need for stimulation. Psychopathic individuals' lack of emotional disconnection with their conversational partner may also be associated with their tendency to extract less emotional information from words (Williamson et al., 1991), and deficit in recognising emotion in vocal affect (Bagley et al., 2009; Mackenzie & Logan, 2014).

The VIM (Blair, 1995) also provides support for the elements of this subtheme. An impaired VIM may underlie psychopathic abusers' lack of empathy and guilt, diminished emotional experiences, and lack of responsiveness to victims' distress cues (e.g., body language, facial expression), including the words victims utter to defend themselves. De Almeida Brites (2016) argues that it is psychopathic individuals' ability to emotionally disconnect from their conversational partner that permits them to readily and effectively lie, manipulate, and exploit others. Psychopathic individuals can use language to manipulate their romantic partners by learning semantic associations of words

(Blair et al., 2006), and have been found to recognize the mental states of others (i.e., theory of mind), and use this information to exploit their romantic partners (Richell et al., 2003; Sandvik et al., 2014). For example, in the following subtheme “Draining”, words that signify to the partner that they are inferior (e.g., “girl”) will cause the victim distress, which drains them of their energy, thus allowing the psychopathic individual to exert further control over their partner.

“Draining”. The subtheme of “Draining” is based on an inVivo code which was expressed across all participants’ narratives. Abusers intentionally frequently used triggering words to elicit negative emotional reactions (e.g., fear, distress) in their victims. This was done to drain victims’ physical and emotional strength, and for the abuser to maintain the power position in the relationship. This is evident in the responses of Holly and Melinda, who felt physical effects after conversations with their abusers:

To me it wasn’t even an argument. It was more like a beating, like being abused, cut down, berated. I didn’t say anything else to him the rest of the evening. I just couldn’t. I felt like the breath had been knocked out of me.

I would cry for days, not eat or sleep well, and become so emotionally and physically exhausted I was almost ill.

Holly and Melinda were both left physically weakened after conversations with their abusers. Melinda felt like she had been physically beaten and could not continue to speak to her abuser due to how drained she felt. Holly was so emotionally drained it left her unable to function and take care of basic needs (i.e., eating, sleeping) to the point of feeling physically ill.

The feeling of being drained of emotional and physical energy left victims susceptible to submit to the reality their abusers projected to them, which is expressed by Genni and Judy's experiences:

If I fought back he'd fight back even harder, and that was just draining, and I got to the point where I didn't even care anymore.

He would keep me up until 4 or 5am arguing with me....I would be so tired....I would just say whatever he wanted to hear so I could sleep.

Genni describes the stamina her abuser had during her attempts at defending herself. She stated she got to the point where she gave up and could not defend herself anymore. Similarly, Judy reached a point in her conversations with her abuser where she gave in and told him what he wanted to hear. She was drained and could no longer defend herself against his emotionally triggering words.

It is evident that participants felt that in order for their abusers to stop uttering distressful words to them, participants had to admit defeat during these conversations. To do this, participants expressed submitting, on some level, to the reality the abuser was projecting to them (i.e., they are powerless and are flawed in a way that corresponds to what the abuser is saying to them). Holly, Melinda and Genni explicitly describe surrendering to their abuser with the word "win" during their conversations: "I know I'm not going to win this", "He could win this one", and "It would get to the point where I would just stop. I'd say fine you win. And that's how it would end. Like no that's it, you win, it's my fault. Like I'm done." The evidence provided by Holly, Melinda, and Genni indicate the power differential in the relationship. The abuser maintains their power by trying to "win" the conversation by having the information they utter be accepted in their

victim's reality. This is accomplished by draining the victim of their energy until they succumb to what is being uttered to them.

Elements of the RMH continue into the second theme "They Know the Words but not the Music": the abuser is focused on having power over the victim and wishes to maintain the power differential in the romantic relationship that was achieved during the theme Establishment of Power. To do this, psychopathic abusers frequently utter sentences and particular words to their victims in order to trigger emotional distress. The reason for this is to evoke distress, which drains victims, both physically and emotionally. Abusers do not attend to contextual cues of victims' emotional distress, or what victims utter in response to the abuser's triggering words or statements, as abusers are fixated on maintaining their power in the relationship. In victims' weakened state they are unable to defend themselves and are prompted to update their reality to what the abuser imposes on them (e.g., that they are powerless). It is evident that through gaslighting episodes that involve the Frequent use of Trigger Words and "Draining" of the victim's energy psychopathic abusers are able to maintain their power in the relationship.

3) "Playing the Victim". The third theme, "Playing the Victim" is based on the inVivo code from Samantha's narrative. The theme provides another example in which abusers remain salient in victims' minds and become drained. Abusers prompt the victim to become focused on the abuser, by expressing how the victim's behaviours have, according to the abuser, wronged them.

The victim's reality is subtly adjusted when the abuser utters a sentence, which imposes a particular requirement on the context of the conversation (Von Fintel, 2008). This use of language is termed presupposition accommodation, where, without

establishing an argument where the victim has an opportunity to defend themselves (as was seen in “They Know the Words but not the Music”), the abuser makes a conclusion about the victim. The conclusion about the victim is centered on the notion that the victim has wronged the abuser, and it is the abuser who is the actual victim in the situation. Evidence of this concept has been hinted at previously, such as when the abuser uses triggering words that accuse the victim of being a “liar”, “cheater”, or is “selfish”. The third theme of “Playing the Victim” has two subthemes that will now be discussed, which are Personal Pronoun Use and Presupposition Accommodation.

Personal Pronoun Use. The subtheme of Personal Pronoun Use reflects that for abusers the focus of the relationship is not on a partnership of mutual worth and connection (as seen in healthy relationships), but on the abusers’ pursuit of power and control over the victim.

In terms of psychopathic traits, this subtheme emphasizes the narcissistic aspect of the abusers’ personality (i.e., egocentricity, grandiose sense of self-worth), desire to evade responsibility, and an inability to relate to others (e.g., lack of empathy; Cleckley, 1972). Melinda describes how her abuser was “self- serving” and that “all he talks about is himself”. She stated “he didn’t seem interested in me and what matters to me” and that “he NEVER admits he could be at fault”.

Morrow (2008) found psychopathic individuals’ self-focus, callousness, and lack of empathy is reflected in their increased personal first-person singular pronoun use (“I”). However, the present data did not exactly replicate Morrow’s (2008) findings. During conversations with their victims, it appears that abusers reverse roles: the abuser projects their behaviours onto the actual victim through the repeated use of second-person

personal pronoun use (“You”). The abuser wishes to maintain power and control over their victim by remaining salient in their mind. To do this, the abuser focuses on themselves and causes the victim to as well by “Playing the Victim” and accusing the actual victim about a wrong doing that only the abuser perceives. Judy states “situations were always turned around to make me look like the guilty party” as her abuser “always presented himself as the victim”.

Through repeated uses of “You”, the abuser attempts to update the victim’s reality with new information regarding the victim’s wrong doing. The abuser’s needs and feelings are the focus of the conversation. Rosie provides an example of her abuser “Playing the Victim”. Rosie calls her abuser to discuss when she could begin volunteering at a local non-profit organization (for full dialogue highlighting personal pronoun use see Appendix J)²⁴:

Don’t tell me I’m stupid! Don’t lie to me now. **You** are such a liar! **You** are so selfish!
How could **you** do this to me? I love **you** so much and **you** choose to waste **your**
evening helping THOSE people!?

Rosie resigns her volunteer position after this conversation. Holly, Rosie, and Melinda were the only participants to provide recalled dialogue between themselves and their abuser (see Appendix J for full recalled dialogue and personal pronoun usage). Table 19 displays a frequency count of personal pronoun use by each of these three participants’ abusers’ dialogue.

²⁴ Second-person personal pronoun use of “You” is bolded for emphasis.

Table 19

Personal pronoun use of participants' dialogue with abusers.

Participant	“I”/ “Me”	“You”/ “Your”	“We” / “Us”	“They”/ “Those”
Holly	4	15	0	0
Rosie	11	19	1	5
Melinda	4	17	0	0

n = 3

Table 19 indicates that all abusers had an increased use of second-person singular pronoun (“You”) when compared to first-person singular pronouns (“I”) and first person plural pronoun (“We” or “Us”). Although prior research found narcissism and psychopathy to be associated with increased use of “I” (see Morrow, 2008, and Raskin & Shaw, 1985), it is evident that in the context of a conversation with their romantic partner, the findings in Table 19 support the observation that abusers are self-oriented and unable to identify with their partner. In healthy relationships, conversations with a romantic partner would be expected to involve increased first-person plural pronoun of “We” or “Us”, which acknowledges the partnership and identification with the conversational partner. The use of “You” by the abuser is centered on the abuser in relation to how the victim has wronged the abuser. Thus, the frequent use of personal pronouns “You” and “I” compared to first-person plural pronouns (“We” or “Us”) reflects the attempt of abusers to increase their saliency in their victim’s mind.

Elements of the RMH remain present in the third theme: the abuser wishes to exert control by forcing their romantic partner to have the abuser on the forefront of their mind. This is similar to the “Draining” subtheme of theme two, where the victim becomes drained from the accusations of harming the abuser and the associated negative feelings (e.g., guilt) when entertaining what the abuser utters as plausible.

Presupposition Accommodation. In general, every conversation has a common ground, which is a set of propositions that is assumed by the conversational partners to be true and not a subject for further discussion. The common ground reflects the shared reality of what propositions in the common ground are taken as truth (Von Fintel, 2000). Thus, when sentences are uttered these propositions are added to the context set (which is a set of propositions) and the common ground is updated with the new propositions.

As stated in the introduction of the third theme “Playing the Victim”, the process of Presupposition Accommodation reflects how the context set (a set of propositions) is quietly adjusted to accept the utterance of a sentence, which imposes a certain requirement on the common ground (Von Fintel, 2008). The victim is in a weakened state from “They Know the Words but not the Music” and is susceptible to having their reality (e.g., their perception of a situation) altered. The difference between the current theme “Playing the Victim” and the previous theme “They Know the Words but not the Music” is that in the latter theme the victim entertains what the abuser is uttering, as evident when the victim tries to defend themselves. In the former the victim accepts their abuser’s utterances as valid. At a subconscious level the victim accepts the context the abuser imposes on the conversation, and becomes distressed and further drained.

Assumption of a shared reality. In an abusive relationship, the abuser’s reality is based on power and control, and the victim’s reality is based on the view that both partners in the relationship have a shared reality of mutual worth and connection (Evans, 2010). The victim is blind to the abuser approaching the relationship from a different reality (Evans, 2010). The victim holds onto the belief that the love, attachment, and connection that they thought was formed in the first theme Establishment of Power was

genuine. However, this was a superficial and a manipulative tactic by the abuser to be in control. Samantha explained how when the abuse escalated over the course of the relationship she was “still searching for the person he pretended to be in the beginning [of the relationship]”. Another example of victims holding onto the belief of a shared reality based on aspects, such as genuine love, is when the abuser plays the role of the victim, utters how the actual victim has wronged them, and how the abuser loves them: “All I want to do is love you and you treat me like trash!” In this instance, the victim perceives the information that the abuser is uttering to them as if the abuser is speaking from a shared reality.

Further evidence that causes the victims to believe her and the abuser are in a shared reality is from the impression that the abuser creates regarding the amount of effort and care that the abuser invests in the relationship. Holly stated her abuser would be “contrite and share such love” between abusive incidents, Melinda’s abuser “always had a plausible, noble reason for his behaviour”, and Genni described how her abuser’s continual surveillance and possessiveness of her time was to “save the relationship”.

The abuser’s goal is to maintain the position of power in the relationship. This is accomplished when the abuser imposes that they have a more accurate perception of the relationship and how the victim treats them, than the victim does (e.g., the abuser’s judgments and perceptions are more valid than the victim’s). Genni explained how her abuser’s accusations (of her wrong doing) were done for a “purpose” and that he did not wish to speak to her that way “because he knew it hurt me so much but there was something I needed to realize about myself”. She stated, “he was always right and everything is my fault.” Genni’s abuser implies that she is inferior to him because he

knows what is “right”. Overall, the abuser exploits their victim’s assumption of a shared reality, in order to manipulate them into thinking they do not perceive situations accurately and that they have wronged the abuser. The victim experiences distress from the accusations, feels drained, and internalizes what their abuser utters to them as plausible.

Stalnaker’s (1978) version of presupposition accommodation. I will now turn to Stalnaker’s (1978) perspective of Presupposition Accommodation to examine the realities of victims and abusers. Stalnaker states that a proposition is presupposed if the speaker is disposed to believe that the proposition is true, and assumes the audience will believe it is true as well (Von Fintel, 2000). Thus, the presupposed proposition is not taken to be part of the common ground between the conversational partners, but the speaker is acting as though it is common ground.

The gaslighting experiences of Melinda can be interpreted as providing an example of Stalnaker’s (1978) Presupposition Accommodation. The abuser believes certain propositions that relate to his maintenance of power are true. He assumes that his audience (in this case, Melinda) will, at some point in the relationship, also believe these propositions to be true. In the following example, Melinda’s abuser cancelled her credit card because he felt the marriage was unstable and she was required to ask him for money to buy groceries for the family. Melinda’s abuser is also upset because Melinda had received a massage but is, for the sake of the relationship, being “noble” and moving past her wrongdoing that hurt him and the relationship:

I forgive you for going to get that massage and I won’t bring it up again. It’s in the past and the relationship is more important than holding a grudge. And here’s some cash for groceries.

Melinda's abuser is acting like it is common ground for one to need to be forgiven for getting a massage, that Melinda committed a wrong doing, and that he is helping the relationship by moving past her wrong doing with his forgiveness. The actual wrongdoing in what Melinda's abuser utters is being overlooked, which is his control of finances (i.e., financial abuse). In interpreting this quote in the context of Stalnaker's presupposition accommodation, the abuser assumes Melinda (the audience) believes these propositions are true (i.e., it is appropriate for one to ask their husband for grocery money and wrong to have a massage). Melinda stated "I took the money and put it in my purse. I didn't say anything. Nothing at all." Her silence appears to reflect that she also accepts the propositions uttered by the abuser to be true, part of the common ground, and are not needed to be discussed further.

Melinda described the situation as "just more punishment" and that it makes her feel "manipulated and control....it made me feel like worthless scum". There appears to be an acceptance of the power differential in the relationship as part of the common ground in the conversation. It is evident that Presupposition Accommodation is a tactic used by abusers to subtly adjust the reality of the victim to accepting the abuser's power in the relationship. In the case of Melinda, her abuser controls their finances and decides what behaviors are appropriate for the relationship (i.e., not receiving a massage). Melinda describes how, when she behaves in a way that the abuser feels wronged, she is punished by the abuser who is in the power position and that it makes her feel inferior ("worthless scum").

Samantha's experience provides a second example of Stalnaker's (1976) Presupposition Accommodation. She summarizes a conversation she had with her abuser

when she asked him if he had seen a necklace she had lost, which was given to her as a gift. Samantha's abuser stated to here that:

...if I ever really did have it [the necklace] that I must not have cared about it if I could lose it. He also told me not to ever imply again that he stole something from me. He completely flipped me being upset over the necklace into how I betrayed him by not trusting him, and by caring more about the necklace than his own feelings.

Samantha's abuser is making the conclusion (without providing Samantha an argument that is supported with evidence) that Samantha may not have ever had the necklace ("if I ever really did have it") and that asking her abuser about its whereabouts is because she does not trust or care about him ("I betrayed him by not trusting him, and by caring more about the necklace than his own feelings").

One interpretation of Samantha's experience is that the abuser is forcing himself to be salient in her mind. The common ground of the conversation about the necklace is presupposed by the abuser to be centered on himself. The abuser is self-oriented and increases saliency in the Samantha's mind by "Playing the Victim" and accusing the actual victim of a wrong doing (e.g., betrayal). The focus on the conversation shifts from the necklace to the abuser, and how Samantha has wronged him by not caring for him, trusting him, or considering his feelings. It also seems to be common ground in the conversation that there is something wrong with Samantha. Specifically, that she is a liar and that the abuser is the victim because she has, according to the abuser, lied to him and betrayed his feelings.

In summary, the victim is drained from the frequent use of trigger words (from theme two "They Know the Words but not the Music") and accusations of wrong doings by their abuser (from theme three "Playing the Victim"). The victim is focused on the

abuser, in terms of how the victim has wronged the abuser, the distress the victim caused them, and how the victim is flawed (as seen in theme two and three). In the transition through theme two and theme three, it is evident that the reality of the victim is being further adjusted. The common ground between the conversations the victim is having with their abuser is being updated with what the abuser has uttered to them. At the end of the third theme “Playing the Victim”, it is evident that the victim accepts the abuser’s use of Presupposition Accommodation. Victims doubt their own reality due to feeling drained (from theme two and three), the saliency of the abuser in their mind (from theme one to three), and frequency of utterances by the abuser regarding how they are flawed (from theme two and three, e.g., inferior, that they have wronged the abuser).

4) Erosion of Identity. Through the process of gaslighting the abuser remains salient in the victim’s mind, and maintains power through the utterances of words and statements that distress the victim. Gaslighting contributes to victims becoming socially isolated. The victim is fixated on the abuser (from the abuser’s continued effort at remaining salient in the victim’s mind) and is too drained from her relationship with the abuser to maintain social ties. The fourth theme Erosion of Identity marks the success of gaslighting in altering the victim’s reality, including how they view themselves.

Identity is shaped by how we, along with how individuals in our social network view us (Nelson & Lindemann, 2001). Further, Beaudette and Forth’s (2011) qualitative analysis of survivors of psychopathic individuals found that the majority of participants focused on ‘having lost a part of themselves’ as a result of their relationship with a psychopathic individual, and were described as “unable to forge an identity beyond being a victim”.

In the current data, Rosie states that over the course of her abusive relationship she “slowly lost my identity and my values. I didn’t recognize myself.” The victim lacks reminders of who they were prior to the relationship (e.g., friends to maintain their sense of identity, support self-expression) and feel confused (Lynch, 2013). They begin to doubt themselves. The subthemes of Isolation, Need for Validation, and Altered Standard of Truth will summarize the final reactions to the process of gaslighting in accepting the abuser’s projected reality (e.g., their opinion of the victim) as true.

Isolation. Participants expressed problems with social isolation that was grounded in trust issues (“I don’t trust people, it’s hard to trust people”; “I find it hard to trust myself”) that rooted from their abusive relationship. Jill stated that due to her abuse she felt like “people are out to get me” and purposely cut off contact with her social network, including her best friend: “due to my trust issue I told her to never contact me again.”

Victims become isolated because they become increasingly fixated on their abuser, which is due to the abusers’ efforts (over the previous three themes) to be salient in their mind. Genni stated: “I lost my friends because I stopped talking to them and I didn’t even realize I stopped talking to them.” Samantha also described how she “stopped communicating” and “distanced myself from my friends” because she did not “want to be a burden or even hear the truth (that I should run as far as I can [from her abuser])”.

Participants described that as their relationship with their abuser progressed over time it became apparent that the abuse was a secret and victims did not have any other witnesses to validate their experiences. Judy states: “it was only at home behind closed doors that he showed his other side.” It appeared that the more isolated the victim became

from their social network the more power the abuser had over the victim and their reality.

Samantha and Jill describe their experiences:

.... [her abuser was] trying to distance me from my family and not trust them after he accomplished that all bets were off.

When we moved in together I basically handed over myself...and now I was under his thumb which gave him more confidence.

Victims did not have their social network to aid them in maintaining their sense of identity. Jill described that without her social network she “didn’t know how to express” herself and because she “didn’t have people to go to” she would be “angry”. The Erosion of Identity from gaslighting that contributed to isolation caused the victim to feel trapped and dependant on their abuser (“I see no way out alive”). The following subthemes will further discuss the tunnel vision that occurred from Isolation and Erosion of Identity when victims become dependent on the abuser to validate their experiences.

Need for Validation. Throughout the gaslighting process (e.g., the accusations, frequent trigger words) victims becomes distressed, drained, and finally confused (“It left me so confused...”) because there is a conflict between what victims perceive of situations, and what abusers communicate to them about what situations are. Victims’ confusion from this discrepancy signifies that the gaslighting experience has been successful in altering victims’ reality and causing them to doubt themselves, including their perceptions of situations.

Victims begin to “second guess” themselves as their sense of self is eroded and they appear to be unable to validate their own feelings. Holly describes a disconnect between how she viewed herself and what her abuser uttered to her when he accused her of engaging in infidelities. She began to question herself:

What was I doing to deserve this? Was I crazy? Was I flirting? (I have a sunny open personality and love people and have lots of friends).

Melinda describes a conversation with her abuser. Melinda is looking for a source of validation, as she can no longer use her own feelings as a standard of truth to verify her own reality:

Was I mean? Did I say the wrong thing? Was I too harsh? Should I have said something different? Should I have said something more? I don't know...I feel crazy so I don't even know if I say the right things.

When Melinda's abuser invalidates her reality, she questions herself (instead of the abuser) as her sense of self is eroded. She doubts herself (i.e., mental status, perception of the conversation) and does not use her feelings to validate her experiences. Because Melinda is isolated, she does not have the support from her social network, who knew her prior to her abusive relationship, and could help her to validate her experiences and maintain her sense of self (Lynch, 2013).

Altered Standard of Truth. Victims mitigate their confusion over their inability to validate their reality by accepting the abuser's utterances as valid, and projections of their reality (e.g., that the victim is inferior) as their new standard of truth. The victim, in a sense, is now sharing a reality with their abuser. The victims see themselves as the abuser sees them: powerless, inherently flawed, and dependant on the abuser to continue to validate their reality (i.e., experiences, feelings, perception, etc.). Melinda describes the acceptances of her abuser's utterances:

I don't deserve to be loved. I would think that I was crazy, that I was losing my mind. I would think I wanted too much out of the relationship. I would think I wasn't loveable, that somehow it was my fault that I was doing something wrong. I would think if I just did the right things then he would love me.

Melinda's acceptance of her abuser's standard of truth to validate her feelings marks the successful process of gaslighting. Melinda appears to accept that her abuser's perceptions of her are accurate. These include her flaws (i.e., "wanting too much", "wasn't loveable", "my fault" "doing something wrong"), believing she was "crazy", and acceptance of wrongdoings to her abuser ("...if I did the right things then he would love me"), and for being the root cause for strain in the relationship. As seen previously in "They Know the Words but not the Music", Melinda's sense of self was still intact and she was not as isolated. She was still able to defend her perception of herself, which conflicted with her abuser's projection. This is in contrast to the current theme, as her reality was not yet altered.

Another case is Jill, who describes her acceptance of her abuser's reality and her dependency on him for a sense of self-worth:

He would tell me I was insecure and I started to believe it. I started believing I wasn't good enough, that I was fat, ugly, and no one would want me. Although I could've had anyone, but if he didn't want me then I felt worthless.

Jill's identity is eroded and her sense of identity is dependent on her abuser (i.e., self-worth). While she accepts her flaws (i.e., "fat", "ugly", unwanted) she obtains validation for her self-worth by being in a relationship with her abuser ("...if he didn't want me then I felt worthless").

Due to the isolation and eroded sense of identity, the abuser's saliency in the victim's mind and their sense of power in the relationship is at its strongest (in comparison to the other themes). Genni describes how she "sort of resolved myself to this is how life was...it never occurred to me to break up with him" because with the relationship she stated: "I didn't think I deserved anything else." Genni's identity is

eroded, she cannot look outside the relationship to see that the relationship is abusive, and what aspects of a supportive relationship are missing from her current situation. Genni stated that even when she went on a school trip nearing the end of her abusive relationship she would:

...force myself to think about it and think about him because shit he's going to ask me if I thought about him here so I owe it to him to think about him, but I didn't care!

At this point in the relationship, Genni knew she was unhappy and drained. Although she felt dependent on her relationship with the abuser it is evident she did not genuinely care about him. Despite this, her abuser retained his saliency in her mind and she would “force” herself to think about him because she felt that she “owed” him that because she was physically distant from him.

Judy provides another example of abusers’ ability to be highly salient in their victims’ mind. Judy’s abuser’s gaslighting caused her to doubt her perceptions of situations:

I heard tapes of his criticism and put downs when he was not around. I could hear his lectures in my head at all times. I began to believe some of what he said to me, such as I was crazy for thinking he was being unfaithful, that I had my own issues to deal with, but that he was fine.

Judy could not shut off from her mind what her abuser had uttered to her, such as she is “crazy”. She internalized his utterances as true and her reality was altered to be constantly fixated on her abuser and his projections. Judy’s experience of saliency of her abuser was not only present with the constant “tapes” of his utterances in her mind, but also in the changes to her behaviours. Her abuser would project his infidelities onto her,

stating that she was flirting with other people even though she was faithful to him. She stated:

I started thinking maybe I was looking at guys and not realizing it. I began walking around campus with my head down for fear that I may make eye contact with some guy and my boyfriend would see me.

Judy appears powerless to her abuser's accusations that control her behaviour. She accepts her abuser's perception of her (i.e., as a cheater/flirt) as the truth. As a result, she alters her behaviour because she is constantly fixated on her abuser even when he is not physically near her.

The subtheme Altered Standard of Truth reflects that the saliency of the abuser in victims' mind and the effect of gaslighting on victims' energy and identity causes them to accept the abusers' projections as their source to verify their feelings, memories, perceptions, and view of themselves. As Graham and Rawlings (1999) explain, the victim's identity "comes to be experienced through the eyes of the abuser" (p. 122). They point out that the victims' ability to recognize their own needs, maintain their own perspective, and behave in an assertive and effective manner is diminished. As evident in the current data, throughout the gaslighting process survivors experience confusion about the validity of their own perceptions, subsume their knowledge of themselves, their own values and beliefs, in order to shift their focus from themselves, to that of the wants, demands, and needs of their abuser.

The subthemes present in the final theme of Erosion of Identity corroborate the limited research that posits domestic abuse contributes to the victim's loss of identity (Lynch, 2013). Identity is created and maintained through close relationships, and becomes altered in response to threatening situations, such as domestic abuse (Hormuth,

1990; Lynch, 2013). Lynch (2013) found that narratives of domestic abuse survivors often referenced their abusers' need for control over them when they discussed their Erosion of Identity during the relationship. Survivors in Lynch's (2013) sample expressed doubting themselves in conversations with their partner and their uncertainty regarding the validity of their perceptions.

Summary of Study 1b Findings

Overall, based on the experiences of seven participants who self-identified as surviving a romantic relationship with a psychopathic abuser, there appears to be an association between abusers' affective deficits (e.g., shallow emotions, lack of guilt and empathy), and an enhanced ability to persevere in their abusive behaviours and maintain control over their victim during a romantic relationship.

It is unclear from the current dataset if it is psychopathic traits in abusers that account for survivors' experiences, or the more general experience of domestic abuse. This is because the majority of participants reported lower MSRP-S than that of the average MSRP-S score for Study 1a ($M = 102.4$).

The analysis does provide some correlational evidence to suggest that psychopathic characteristics in abusers reflect the mechanisms underlying the attentional and emotional deficits associated with Glass and Newman's (2009) RMH, and Blair's (1995) VIM theoretical models. For example, the affective deficits in psychopathic individuals are proposed by Blair's (1995) VIM model to be rooted in abnormal development of the amygdala, which impairs the ability to experience emotion with the appropriate duration and intensity, and prevents the development of moral emotions (e.g., empathy), both of which are needed to cease antagonistic behaviours that harm others.

Psychopathic traits also appear related to abusers' hindered ability to be deterred from their victim's rejection (i.e., during the Establishment of Power), or distress in their victims (i.e., during the theme "They Know the Words but Not the Music").

The psychopathic characteristic of shallow emotional experiences may undermine abusers' ability to build associations between emotional experiences and semantic information. This characteristic may cause abusers to produce less cohesive narratives and more contradictory statements (e.g., Jill and Melinda's description of gaslighting on p. 158), and have a poor ability to extract meaningful information about vocal affect from their conversational partners (e.g., Melinda's description of gaslighting, p. 168; Blair et al., 2006; Mackenzie & Logan, 2014; Williamson et al., 1991). However, psychopathic individuals, similar to abusers in the current dataset, are aware of the emotional significance of certain words or phrases to others (i.e., as seen in the theme Frequent Use of Trigger Words and the subtheme Love Bomb), and learn to build associations between these words to instill a specific reaction, feeling, or behaviour in their conversational partner (e.g., distress, trust; Blair & Mitchell, 2009; Endres, 2004). Further, elevated rates of second-person personal pronoun use in participants' narratives reflect their abusers' self-focus, inability to empathize, and difficulties identifying with their conversational partners. For example, the theme "Playing the Victim" encompasses abusers' ability to evade responsibility, callousness, and emotional distance from reactions of distress in their romantic partner.

Based on the correlational evidence from Study 1b, abusers appear to display psychopathic characteristics during romantic relationships in their ability to engage in strategic and elevated rates of impression management to ensure they remain in control

and salient in the minds of their victims. Their linguistic characteristics reflect psychopathic traits that include an inability to empathize with others, lack of guilt and remorse (i.e., during theme “They Know the Words but not the Music”), lack of relational bonds, shallow emotions, evasion of responsibility (i.e., during the theme “Playing the Victim”), and self-focus (i.e., increased second-person pronoun use).

On the other hand, it is evident throughout the latter themes (i.e., “They Know the Words but not the Music” and “Playing the Victim”), that victims are susceptible to abusers’ purported distress, their reactions, and the saliency of their abuser in their mind.

Victims approach the romantic relationship from a reality of mutual worth, respect, and connection (Evans, 2010). The current findings indicate that participants internalized the words and statements their abusers utter to them, which intensifies feelings of self-blame (e.g., from the theme “Playing the Victim) and inferiority (i.e., the theme “They Know the Words but not the Music”). Prior research acknowledges that it is common for victims over the course of an abusive romantic relationship to alter their identity. This has been argued to be due to: 1) a response to threats, 2) an attempt to reconnect with their partner (and perhaps rekindle the early phase of the relationship, such as in the subtheme Love Bomb), 3) to mitigate distress, 4) diminished physical and emotional energy, and 5) emotional investment in the relationship (Hormouth, 1990; Lynch, 2013; Miller, 1994).

The saliency of the abuser in victims’ mind was also evident in the current findings as it prompted a shift in victims’ attention away from their own needs to that of their abusers’ needs and wants. The themes from the current findings are summarized in

Table 20. Participants indicated that the feelings they experienced in the theme Erosion of Identity continued even after the relationship ended.

Table 20

Summary of themes of gas lighting experiences by psychopathic abusers.

Theme	Summary
Establishment of Power	<ul style="list-style-type: none"> Abusers persuade victims to be in a committed relationship by causing victims to constantly think about them (e.g., from positive emotions elicited from flattery of their Persistent Communication and love bombing) Abuser creates a sense of power
“They Know the Words not not the Music”	<ul style="list-style-type: none"> Victims view the relationship from a reality of mutual worth and reconciliation Abusers frequently utter distressing words/statements to victims Victims attempt to defend themselves and reconcile for the sake of the relationship Abusers are non-responsive to victims’ distress (e.g., facial expressions, utterances) Victims become drained and begin to doubt themselves
“Playing the Victim”	<ul style="list-style-type: none"> Abusers take advantage of their victim’s drained and self-doubtful state to maintain power Abusers increase their saliency in the victim’s mind via linguistic techniques (e.g., Presupposition Accommodation) to begin subtly adjusting victims’ reality Confusion and distress from these conversations further drains victims as their reality is adjusted
Erosion of Identity	<ul style="list-style-type: none"> Saliency of the abuser in the victims’ mind and their drained state contributes to victims’ isolation Victims’ question themselves, they experience conflict between what they feel/perceive and what abusers tell them they feel/perceive Abusers’ projected reality is accepted by victims’ as the new standard of truth to validate their experiences Victims are unable to recognize themselves, and feel little self-worth, or mental stability

Note. Themes are not mutually exclusive and can co-occur, where aspects of earlier themes can be present in later themes

The findings also lend support to the view that victims' social network can influence the victim's perceptions of not only themselves, but how they view situations, experiences, memories, and their own feelings. Thus, it is important for those who experience abusive relationships to have access to a support system that can validate their experiences from an objective standpoint. Research has found that while abusive relationships can diminish survivors' self-perception (e.g., ability to recognize their own needs and behave accordingly), experiences in supportive relationships can facilitate victims' sense of identity (Lynch, 2013). However, the current findings highlight that victims' ability to maintain a support system is difficult, due to the high rates of isolation from exhaustion and the abusers' dominance. Further, the isolation, exhaustion, and self-doubt make it difficult for victims to: 1) define their experiences as abusive, 2) define the severity of the abuse, and 3) take the steps needed to successfully terminate the relationship prior to it contributing to severe declines in their well-being. Research also indicates that, often due to these reasons, leaving an abusive relationship is a process that often takes victims multiple attempts to achieve (Khaw & Hardesty, 2015; Anderson & Saunders, 2003).

Anderson (2012) and Evans (2010) advise that the optimal defence for individuals who come up against warning signs of behaviours (i.e., in the subthemes Persistent Communication and Love Bomb) in the early phases of a relationship is to not give the abuser a platform for further contact (e.g., do not reply to phone messages). Further, public awareness of the warning signs of abusive relationships is needed. This may help mobilize the victims' social network to provide both tangible and emotional forms of support. This would be useful both to cope with the early warning signs of an abusive

relationship and events occurring during an abusive relationship. These forms of support may include the social network reaching out to the victim, reiterating the warnings signs of abusive relationships, and assisting the victim in establishing “no contact” (e.g., advising not to return phone messages, or not to see the abuser in-person).

Limitations. The findings of Study 1b are limited as it is unclear if theoretical saturation was met as the sample size was small. Due to the high attrition rate from Study 1a to Study 1b, the participants who completed the open-ended questions may not be representative of the Study 1a sample, or of the experiences of psychopathic victimization during romantic relationships in the general population. The Study 1b sample reported lower scores on the MSRP-S (e.g., almost half the sample was under the Study 1a average score), and displayed higher rates of emotional functioning (e.g., lower levels of anxiety, depression, etc) than the Study 1a sample. A greater variability of scores, and perhaps a greater sample size could have been collected if: 1) the open-ended questions were counterbalanced with the close-ended questionnaires, and 2) participants were provided a progress bar during the study so the length of the study was more transparent.

The analysis is limited for making causal associations between the degree of psychopathic traits in the abusers and the processes associated with gaslighting. Although the participants identified as being previously abused by a psychopathic abuser and the average MSRP-S score was higher than that of normative data [i.e., Beaudette (2012) had an average of 87.2 after removal of lower scorers], the degree of psychopathic traits in relation to each of the themes was limited to the theme Establishment of Power (i.e., abusers with higher levels of psychopathy tended to engage in more Persistent

Communication and love bombing than those abusers of participants who ascribed lower levels of psychopathic traits). Thus, the analysis was primarily a thematic analysis, as opposed to a full mixed-methods approach that drew evenly from both quantitative (e.g., MSRP-S scores) and qualitative (i.e., open-ended responses) analyses.

The type of qualitative data that was used was also limited. The written responses did not provide an opportunity for a well-formed narrative to be generated, which would normally come from the analysis of responses from semi-structured interviews that would allow for probing. However, due to constraints from Carleton University ethics compliance, in-person interviews were not possible and participants' responses were restricted to open-ended questions on the data collection website. The participants' responses were also mixed. Some participants provided brief overviews of their experiences and specific examples of abuse. The remaining participants provided quotes from their abusers and recalled dialogue between them and their abuser.

While dialogue between the participant and abuser would be valuable to examine conversational patterns, in the current study the dialogue was recalled, rather than being recorded verbatim, and thus should be interpreted with caution. Traumatic experiences can lead to memory problems (e.g., Qureshi et al., 2011), including fragmented memory of traumatic events, such as episodes of domestic abuse (Hardy, Young, & Holmes, 2009). Further, regardless of trauma status, people generally have a tendency to recall the meaning of conversations, rather than the verbatim dialogue (Bruck, Ceci, & Francoeur, 1999). The differences between verbatim and gist recall made it difficult to compare across participants and responses to open-ended questions to understand the role that the abusers' style of language had during gaslighting.

Directions for Future Research. Future research can build on the findings of Study 1b by adhering to a more mixed-methods approach that can synthesize ascribed psychopathy scores with theme development. One means to perform this would be, with a larger sample size, to split survivors into groups who experienced abusers who are ascribed as low versus high on psychopathic traits. This may provide stronger correlational evidence that the themes that developed in the current study are attributable to psychopathic abusers, as opposed to the more general experiences of gaslighting during abusive romantic relationships.

It would also be useful to gather narratives from semi-structured interviews from a wider array of survivors (i.e., not just those who identify as victims of a psychopathic abuser), who may experience a broader range of experiences. A valuable avenue to pursue would be to interview current couples on specific incidents that are reflective of gaslighting to gain both perspectives. This may allow for gathering recalled dialogue of each partner to assess differences and similarities between conversational patterns, and to assess the ascribed and self-reported levels psychopathic traits, similar to Uzieblo et al. (2011).

Another avenue would be to interview survivors, as well as members of their social support network in order to identify warning signs of abusive relationship and strategies to intervene. Further to assess how victims were able to terminate the relationship, despite the effects of gaslighting and how they navigated recovery from the relationship. This would be of valuable interest if either the abuser or victim remained in contact with their prior partner (e.g., through stalking, custody of children). Research in this area may be used to develop safe and effective means for ensuring safety of both the

victim and their support network. Bystander intervention is an emerging area for assisting survivors of domestic violence, particularly because it can be difficult for victims/survivors to recognize warning signs of abuse and its ongoing severity (Queen, 2007; Walker, 2009).

Concluding Remarks. The current findings provide a foundation for a more concrete understanding of the role of emotional abuse (i.e., gaslighting more specifically) in the context of an abusive relationship with those who identify as surviving a psychopathic partner. The present qualitative assessment also highlights avenues for prevention and early intervention of abusive relationships by determining warning signs (e.g., social isolation, gaslighting tactics) and indicators of psychopathic characteristics (e.g., love bombing, whirlwind romance). Due to the detrimental effects that gaslighting can have on survivors' mental stability, energy, and identity, the present research highlights the need for bystander intervention, particularly from a social support network, as opposed to placing the onus on the victim to identify the abuse, seek resources, and establish a safety plan. Further research is needed to best determine safe and effective avenues for bystander intervention when a potential psychopathic abuser is involved, that may assist in successful termination of the relationship before the abuse escalates.

Study 2

Study 1 provided baseline data for the effect that the factors and facets underlying the construct of psychopathy, have on patterns of abuse experienced by survivors, and their effects on survivors' emotional functioning. Study 2 shifted away from the characteristics of the abuser (e.g., facet scores, manipulative traits) to focus on the experiences of survivors who identified as being abused by a psychopathic partner.

Study 2 was an empirical investigation of the psychological underpinnings of Whiffen and MacIntosh's (2005) feedback pathway between emotional functioning and interpersonal relations. Emotional functioning was assessed via the IGT and self-report questionnaires measuring resilience, post-traumatic growth, and levels of mental health impairments (i.e., PTSD, anxiety, and depression). Interpersonal relations were assessed by responses on a facial recognition task and self-report assessments of perceived and received levels of social support.

Performance on the IGT and facial recognition tasks are associated with the functioning of brain areas associated with the somatic marker system, where functioning of these brain areas are theorized to underlie everyday functioning, such as social decision-making (Damasio, 1994; Rolls, 2008). Although populations with impairments to emotional functioning generally have poor IGT performance (e.g., anxiety, depression; Cella et al., 2010; Must et al., 2010), the task has yet to be used to objectively measure emotional functioning in survivor populations, and relate these findings to survivors' social functioning. Likewise, mental health impairments that are commonly present in domestic abuse survivors are associated with a reduced ability to accurately categorize facial affect (e.g., Bistricky et al., 2011; Poljac et al., 2011), whereas levels of resilience have been associated with an enhanced ability to categorize facial expressions (Arce et al., 2009). The perception and reception of social support has also been consistently associated with elevated levels of resilience and post-traumatic growth, and lower levels of mental health impairments (Holliman et al., 2006; Prati & Pietrantoni, 2009; Tedeschi & Calhoun, 2006).

Limitations in Study 1 Addressed in Study 2

The measures for Study 2 overlap with those used in Study 1. However, Study 1 had several limitations that were addressed in Study 2, via alterations to specific measures.

A post-traumatic growth measure was included in Study 2. Post-traumatic growth is an outcome that is specific to a traumatic situation (e.g., psychopath victimization), whereas resilience is a stable, yet dynamic characteristic that is associated with individuals' ability to cope with adversity (Luthar, 2006). The ERS was used to measure resilience in Study 1, but it was not specific to victimization experiences and had low variability of scores. Thus, the assessment of post-traumatic growth was intended to provide a supplementary measure to the ERS to measure survivors' positive functioning following the relationship.

Two additional items were included in the VSS, which were previously used in Pagliaro's (2009) study on psychopath survivors. These items assessed the self-perceived impact that the abusive relationship had on participants' mental and physical health. These additional variables are important because often the physical health impairments from domestic abuse are not the direct result of physical forms of abuse, but the effects of chronic stress (Canady & Babcock, 2009; Coker et al., 2002). These variables provided a way to measure more directly the link between domestic abuse and mental health, and to supplement the measures of more general mental health impairments (e.g., depressive symptoms).

In Study 1, a counterintuitive trend that was not associated with a specific hypothesis was found: shorter relationships were associated with higher levels of PTSD

symptoms and intense negative emotional experiences. In order to shed light on this finding, Study 2 assessed when the abuse began in the relationship. Participants in shorter-term relationships may have exited the relationship once the abusive behaviours began, and/or those participants in longer-term relationships may have developed coping strategies as they became habituated to the abusive behaviours.

Walker (2009) describes abusive relationships as beginning with a courtship period, in which the abuser takes a large interest in the victim's life (similar to the theme Establishment of Power phase in Study 1b). Psychopathic abusers are skilled at using various tactics to distract the victim from any warning signs of future abuse during the courtship period (e.g., love bombing; Anderson, 2012; Brown, 2008). The length of the courtship period is not specified in Walker's research. Abusive behaviours may begin in some relationships later than others (e.g., they may begin after marriage or the birth of children, when it becomes harder for the victim to leave due to more financial and emotional investment in the relationship).

Some participants may experience a longer courtship period, which may interfere with the recognition of early signs of abuse. Victims may be fixated on the courtship period as the baseline of the relationship and view any strains in the relationship as temporary problems that can be fixed. One example described by Walker (2009) is when the abusive partner starts to engage in surveillance of the victim's behaviour, which causes the victim to feel that their partner is insecure in the relationship. The victim may feel that providing their partner with a sense of commitment, such as marriage, will make their partner feel more secure in the relationship and the relationship will return to

baseline line levels (i.e., the courtship period). However, it is when the victim is more committed to the relationship that the abuse often escalates (Walker, 2009).

Another possibly discrepancy that may confound the relationship between PTSD and relationship length is whether the victim was still in contact with their abuser. The item that assessed this in Study 1 was, in hindsight, unclear: it included an N/A option instead of an “in current contact” option. The inclusion criteria for the study specified that participants must have exited the relationship. If the relationship had ended, then there may be reduced contact with the abuser over time. However, some participants may have regular contact with their abuser, such as in situations involving custody of children. Thus Study 2 included a more explicit measure of the in current contact item.

Research Question One: Do the findings for the association between survivors' experiences of abuse, current level of mental health impairments, and their ascribed ratings of psychopathic traits in their abuser replicate that of Study 1a?

The findings from Study 1a provided evidence that psychopathic traits in domestic abusers contributes to specific patterns of abuse, and declines in the mental health of their romantic partners. Specifically, the level of psychopathic traits that survivors ascribed to their abusers was predicted by their levels of PTSD symptomology and anxiety. When examining participants' emotional functioning (e.g., depressive symptoms), PTSD symptomology (and positive emotional experiences) uniquely predicted abusers' ascribed level of psychopathic traits when controlling for participants' level of resilience, the length of the relationship, and the duration of time since the participant was last in contact with their abuser.

In terms of abuse patterns, the degree of physical harm sustained from abuse, the frequency of abuse, and the versatility of abuse were associated with the level of ascribed psychopathic traits in abusers. However, the versatility and frequency of abuse predicted the level of ascribed psychopathic traits in abusers. This was over and above that of the degree of physical harm participants experienced, and irrespective of the length of the relationship. Overall, in Study 1a the control variables (e.g., relationship length) did not influence participants' ratings of ascribed psychopathic traits in their abusers, in relation to their current mental health status or experiences of abuse.

The sample in Study 1 indicated high levels of emotional abuse (100%), deception (84.8%), and sexual abuse (47.6%), although these types of abuse were not significantly related to the ascribed level of psychopathic traits in abusers. This may be due to the lack of variability in participants' responses due to a small sample size ($N = 78$). However, the ascribed level of psychopathic traits was related to experiences of financial, property, and physical abuse.

The findings from Study 1a corroborate prior research in that psychopathic traits are associated with domestic abuse that is: 1) physically harmful (Holtzworth-Munroe et al., 2000; Petersson et al., 2016), 2) frequent (Huss & Ralston, 2008), 3) versatile (i.e., deception, emotional abuse, sexual, and physical abuse; Kirkman, 2005; Pagliaro, 2009; Petersson et al., 2016), and 4) contributes to mental health impairments in the abuse recipient (Brown, 2008; Pagliaro, 2009).

To establish that the trends for Study 2 are in line with that on the baseline data from Study 1a on survivors of a romantic relationship with a psychopathic abuser, it was anticipated that:

- The ascribed level of psychopathic traits were expected to be predicted by survivors' elevated levels of PTSD symptomology, and experiences of abuse that were more physically harmful, versatile, and frequent [Hypothesis 1a].
- The ascribed level of psychopathic traits were anticipated to be associated with both physical (i.e., sexual, physical) and non-physical forms of abuse (i.e., financial, property, deception, emotional) [Hypothesis 1b].

Research Question Two: Do survivors' perception of the impact that the abusive relationship had on their mental and physical health, along with their access to social support contribute to their current level of mental health impairments, when controlling for the amount of time since last contact with the abuser, relationship length, and when the abuse began?

Preliminary research on victimization by a psychopathic abuser showed significant impairments to survivors' mental health (Brown, 2008; Pagliaro, 2009; Uzieblo et al., 2011). Physical and emotional forms of abuse in a romantic relationship have been consistently linked declines in mental health, including clinical levels of depression, PTSD, and anxiety in the abuse recipient (Devries et al., 2013; Foa et al., 2000; Trevillion et al., 2012). These detrimental effects of abuse are exacerbated if the abuse occurs over an extended period of time and is perceived by the abuse recipient to be severe (Cobb et al., 2006; Humphrey et al., 2012). However, as the amount of time that has elapsed since trauma increases, the negative effects that trauma has on well-being

decreases (Hayes et al., 2012; Kleim & Ehlers, 2009). Thus, when examining mental health outcomes in domestic abuse survivors it is important to consider, not only the length of the abusive relationship, but when the abuse began in the relationship. More previously noted, abusive behaviours in relationships may occur later in some relationships than others (Walker, 2009). Further, survivors who have been in contact with their abuser recently, or are in current contact with their abuser, may experience more recent occurrences of being negatively emotionally triggered and be vulnerable to declines in their mental health.

Research has consistently established that survivors' perception of available support, and reception of social support can mitigate the negative effects of an abusive relationship, and improve their mental health (Canady & Babcock, 2009; Coker et al., 2002; Madsen & Abell, 2010). However, domestic abuse survivors, particularly those who are abused by a psychopathic partner, are vulnerable to lower levels of social support. Research has found psychopath victimization during romantic relationships to be associated with the abusers' forced isolation of the victim, deceiving and charming the victim's social network to conceal signs of abuse, and feelings by the survivors that others in their social network no longer trusted or respected them (Brown, 2008; Kirkman, 2005; Pagliaro, 2009).

Domestic abuse survivors are also vulnerable to lower perceptions of social support and help-seeking behaviours due to self-induced social isolation, feelings of shame and embarrassment, fear of the negative reactions of others, and a lack of trust for others (Gutner et al., 2006; Hanson et al., 2010; Williams & Mickelson, 2004). For example, evidence finds that psychopath survivors may not trust others or themselves to

make accurate judgments during social relationships (Pagliaro, 2009). These feelings may be exacerbated if the survivor is also suffering from mental health impairments, which have been found to diminish perceptions of social support (e.g., negative processing bias of social information; Nietlisbach & Maercker, 2009a).

I hypothesized that, when controlling for time since the participant has last been in contact with their abuser, the length of the relationship, and time the abuse began in the relationship, that higher levels of mental health impairments would be predicted by a lower access to, and perception of social support, and a greater perceived impact of the abusive relationship on physical and mental health.

Research Question Three: When controlling for the length of the relationship, the time that abuse began, and time since last contact with the abuser, are survivors' levels of resilience predicted by their current level of mental health impairments, and social support following their abusive relationship with a psychopathic partner?

Resilience is a stable, yet dynamic characteristic that has been consistently associated with elevated levels of social support (Canady & Babcock, 2009; Madsen & Abell, 2010) and lower levels of mental health impairments (Ai & Park, 2005; Dutton & Greene, 2010; Madsen & Abell, 2010). While research on survivors of psychopaths has examined social support (Beaudette & Forth, 2011; Pagliaro, 2009), mental health outcomes (Beaudette, 2012; Pagliaro, 2009; Uzieblo, 2011), and established that survivors can experience positive functioning (Beaudette & Forth, 2011), an investigation of the factors that contribute to survivors' level of resilience has yet to be examined.

There are a number of relationship factors that may provide insight into survivors' levels of resilience. Survivors who had remained in their abusive relationship for longer

period may be more resilient (or have opportunities to foster resiliency) if they learn to adapt and navigate episodes of abuse (e.g., learn their abuser's triggers for engaging in abuse; Hayes, 2013; Walker, 2009). Further, more resilient survivors may feel it is safer for themselves and/or their family to remain in the relationship. This may be due to the threats of harm that commonly occur when a victim attempts to leave or has left an abusive relationship (Sinha, 2010). On the other hand, survivors who are more resilient may have the resources (e.g., social, emotional) to terminate the relationship at the early signs of the abuse in the relationship. Also, due to the relatively stable nature of resilience, survivors' level of social support and mental health may be predictive of their resilience, irrespective of relationship factors (i.e., abuse duration, time since last contact with abuser).

Thus, I hypothesized that resilience will be predicted by lower levels of mental health impairments and higher levels of perceived and received social support, when controlling for the length of the relationship, time that the abuse began in the relationship, and the amount of time since last contact with the abuser.

Research Question Four: Are survivors' levels of post-traumatic growth predicted by their mental health impairments, social support, duration of abuse, amount of time since last contact with their abuser, and levels of resilience?

Post-traumatic growth has been argued to be the result of experiencing a traumatic experience that is perceived to be severe enough to invalidate the survivors' assumptive world view, and prompt engagement in cognitive processes, such as "meaning making", to reconstruct cognitive schemes (Tedeschi & Calhoun, 2006). Tedeschi and Calhoun (2006) argue that post-traumatic growth is a process that occurs over a period of time as

survivors engage in cognitive processes to understand the trauma and positively reframe their experiences by making changes in their life, such as by finding new meaning and direction. Meta-analytic work by Helgeson and colleagues (2006) has found a longer duration of time since the trauma to be associated with elevated levels of post-traumatic growth.

Preliminary research has found that experiences of domestic abuse and psychopath victimization to be a traumatic enough experience to not only contribute to symptoms of mental illness, but also facilitate post-traumatic growth (Beaudette, 2012; Cobb et al., 2006). Beaudette and Forth (2011) highlight that a subset of psychopath survivors fall under Hunter's (2010) Narrative of Transformation. However, there is little detail of the processes underlying these survivors' positive transformation following trauma. Further, research has not specifically examined post-traumatic growth in the context of a romantic relationship with a psychopathic partner.

It may be that survivors who experienced more severe forms of abuse, but those who have not been in contact with their abuser for a longer duration of time, may have a greater opportunity (e.g., time to process the trauma, seek social support) to engage in meaning making of their experience and achieve elevated levels of post-traumatic growth. In contrast, survivors who have been in a shorter relationship who may have less of a need for growth. Further, those who have recently ended contact with their abuser and are currently reacting with elevated levels of distress may have little resources for post-traumatic growth.

Prior research on the predictors of post-traumatic growth has been inconclusive. Research has found that experiences of distress is needed to maintain post-traumatic

growth (Tedeschi & Calhoun, 2004), whereas other research has found that experiences of distress to be a precursor to post-traumatic growth (Tedeschi & Calhoun, 2006).

Research has also found that a longer duration of time since the trauma can diminish the initial negative reactions (e.g., post-traumatic stress symptomology) on survivors' well-being (Hayes et al., 2012).

Post-traumatic growth is associated with an appreciation and improvement of social relationships and elevated levels of social support (Calhoun & Tedeschi, 2001). However, it is unclear whether social support enhances survivors' levels of post-traumatic growth, or if post-traumatic growth permits survivors to engage more effectively with their social network (Linley & Joseph, 2004; Prati & Pietrantoni, 2009). It is important to consider both survivors' reception of support from their social network, and their perception of social support when examining post-traumatic growth. It may be that both factors of social support (i.e., perception and reception) are a necessary factor in survivors' recovery from psychopath victimization.

It has also been argued that survivors who are more resilient will have little need or opportunity for post-traumatic growth. This is because resilience is thought to be a protective factor from the negative effects of trauma that permits survivors to emerge relatively unchanged (Bonnano, 2004; Levine et al., 2009). However, post-traumatic growth and resilience are associated with number of similar outcomes (e.g., adaptive coping, positive affect) that may make it difficult to empirically assess (and confirm) that they are distinct concepts. Two studies have empirically assessed the relationship between resilience and post-traumatic growth with inconsistent results (Bensimon, 2012;

Levine et al., 2009). There may be additional factors that contribute to, or diminish the contribution of resilience to post-traumatic growth.

I hypothesized that post-traumatic growth will be predicted by lower levels of mental health impairments, higher levels of perceived and received social support, a longer duration of abuse (e.g., longer relationship, abuse beginning earlier in the relationship), longer duration since last contact with their abuser, and elevated rates of resilience.

Research Question Five: Do survivors' somatic markers permit them to decide advantageously in the IGT? Is their decision making impacted by their symptoms of mental illness, or their levels of resilience or post-traumatic growth?

Brain areas associated with the somatic marker system have been found to function abnormally in those who exhibit elevated symptoms of anxiety (Davidson, 2002; Stein et al., 2007), depression (Dannlowski et al., 2007; Suslow et al., 2010), and PTSD (Ozer et al., 2008; Hayes et al., 2009). Research suggests that traumatic events can leave a lasting impact of the neural circuitry on the brain irrespective of whether the survivor exhibits clinical levels of mental illness (Stark et al., 2015; Stein et al., 2002).

Impairments to the somatic marker system are theorized to underlie poor IGT performance in populations that display anxiety (Miu et al., 2008; Mueller et al., 2010) and depression (Cella et al., 2010; Must et al., 2006). However, populations with PTSD and/or domestic abuse survivors have yet to be examined with the IGT. The ability to adapt to changes in contingencies and process uncertain emotional information are processes that are necessary for optimal IGT performance. However, domestic abuse

survivors who exhibit elevated levels of PTSD symptomology show impairments in these processes (DePierro et al., 2013; Moser et al., 2015; Twamley et al., 2009).

Domestic abuse survivors have also been shown to: 1) exhibit dysfunction in the brain areas associated with the somatic marker system (Fonzo et al., 2010; Brown et al., 2016), and 2) commonly experience elevated symptoms of anxiety, depression, and PTSD (Devries et al., 2013; Foa et al., 2000; Trevillion et al., 2012). Preliminary research finds evidence that victimization by a psychopathic abuser contributes to significant impairments in survivors' emotional functioning (e.g., inability to control negative emotions, symptoms of PTSD; Beaudette & Forth, 2011; Pagliaro, 2009; Uzieblo et al., 2011).

In terms of positive outcomes, little experimental research has been conducted to examine the cognitive and emotional functioning of those with elevated rates of resilience or post-traumatic growth. Evidence from self-report questionnaires and conceptual analysis (from critical review papers) has found elevated rates of resilience and post-traumatic growth to be associated with a greater ability to process, utilize, and regulate emotional information that aids in decision making, problem solving, and interpersonal relationships (Fredrickson & Branigan, 2012; Linely & Joseph, 2004; Tedeschi & Calhoun, 2004). Further, resilience has been associated with an improved ability to process emotion in uncertain situations (Arce et al., 2009), and is consistently associated with lower levels of mental illness (Dutton & Greene, 2010; Levine et al., 2009)

I hypothesized that survivors would demonstrate a slower rate of learning to select from the advantageous decks in the IGT when compared to normative IGT data (healthy controls learn to avoid disadvantageous decks around the midpoint of the task) [H5a]. I

also expected that survivors who are elevated in symptoms of depression, anxiety, and PTSD would display a slower learning rate than those with lower levels of these mental health impairments [H5b]. As part of an exploratory analysis, I expected that those survivors who demonstrated elevated of post-traumatic growth or resilience would have a better rate of learning (i.e., learn to select advantageously around the midpoint of the task), than those with lower levels of these positive outcomes [H5c].

Research Question Six: Are survivors' who display more positive outcomes (e.g., more resilience, lower levels of PTSD symptoms) better able to categorize facial affect, than those who display more negative outcomes (e.g., higher levels of anxiety, lower levels of post-traumatic growth)?

The ability to accurately decode facial affect contributes to interpersonal functioning, including social competence (Leppänen & Hietanen, 2001), engagement in prosocial behaviours (Marsh & Ambady, 2007), the ability to empathize (Besel, 2002), and maintain supportive relationships (Yoon et al., 2011). The brain areas associated with the somatic marker system have been found to underlie the ability to judge the affective content of uncertain situations during social interactions, including the ability to accurately categorize facial affect (Hornak et al., 2003); Rolls, 2008; Zald & Kim, 2001).

Individuals who exhibit elevated symptoms of anxiety, depression, and PTSD have dysfunction in the brain areas associated with the somatic marker system (Stein et al., 2007; Suslow et al., 2010; Hayes et al., 2009), and also exhibit impairments in facial affect recognition (Heuer et al., 2010; Poljac et al., 2011; Yoon et al., 2009). Specifically, these mental health impairments are consistently associated with a negative bias when

interpreting facial affect (Bell et al., 2011; Duque & Vazquez, 2015; Gollan et al., 2008; Heuer et al., 2010; Kemp et al., 2008).

However, these results tend to vary both within, and between the types of mental health impairments (e.g., anxiety versus depression). Despite the high rates of mental health impairments in domestic abuse survivors (Devries et al., 2013; Foa et al., 2000; Trevillion et al., 2012), and implications facial affect research may have for understanding outcomes during survivors' recovery (e.g., high rates of revictimization, low perceptions of social support), there has been minimal studies that focus on domestic abuse survivors and facial affect recognition in terms of examining different types of mental health impairments (e.g., anxiety, PTSD) in one study.

Preliminary research on domestic abuse survivors with PTSD suggests dysfunction in the brain areas associated with somatic marker system when viewing facial affect (Fonzo et al., 2016; Mozer et al., 2015). However, these studies did not examine general accuracy in facial affect recognition, or other types of mental health impairments. Nor have these studies taken into account participants' level of resilience, post-traumatic growth, or the abusers' level of psychopathology.

A romantic relationship with a psychopathic abuser may profoundly impact survivors' interpersonal functioning, due to abusers' perpetration of manipulation, deceit, and severe and frequent forms of psychological and physical abuse (Huss & Ralston, 2008; Petersson et al., 2016). The preliminary research on psychopath survivors suggests elevated symptoms of PTSD, anxiety, and depression, and interpersonal impairments, which include isolation and trust issues (Beaudette & Forth, 2011; Bergstrom & Forth, 2011; Kirkman, 2006; Pagliaro, 2009).

Resilience is associated with lower levels of mental illness, higher levels of social support, and experiences of positive affect (Arce et al., 2009; Bonnano, 2008; Madsen & Abell, 2010). There has been one study to date that has found resilience in a sample of healthy controls to contribute to greater accuracy in facial affect recognition and a positive bias of categorizing facial affect (Arce et al., 2009). Facial affect recognition has not been examined in the context of post-traumatic growth.

Post-traumatic growth is associated with improved social relationships, empathy, positive emotional experiences, and the ability to accurately process and utilize emotional information (Carver & Antoni, 2004; Linley & Joseph, 2004; Tedeschi & Calhoun, 2004). Due to the similar outcomes associated with post-traumatic growth and resilience, such as social support and positive emotional experience, survivors with elevated levels of post-traumatic growth may be more adept at navigating their social interactions (e.g., accurately categorizing facial affect), than those with lower levels.

It is hypothesized that survivors with elevated levels of resilience and post-traumatic growth, and lower levels of PTSD symptoms, depressive symptoms, and anxiety, will have a greater accuracy in categorizing facial expressions, than those survivors who experience more negative outcomes (e.g., lower resilience, more mental health impairments).

Method

Participants

Following Ethics approval from Carleton University, adult participants (over the age of 18), who self-identified as having a past experience of being in a heterosexual abusive relationship with an abuser who display psychopathic or narcissistic

characteristics were voluntarily recruited from the community. Recruitment announcements were posted on domestic abuse survivor support websites for five months (following permission from the website administrator; see Appendix K for recruitment announcement and Appendix L for a template of the letter that was sent to website administrators).

Participants included 392 adult survivors of a heterosexual abusive relationship. The majority of participants identified as female ($n = 364$; 92.9%), Caucasian ($n = 349$; 89.0%) and reported an average age of 46.11 ($n = 392$; $SD = 10.25$). Participants were mainly located in the United States ($n = 258$; 66.2%), followed by the United Kingdom ($n = 38$; 9.7%), and Canada ($n = 37$; 9.4%).

Participants were well-educated, with the highest level of education achieved ranging from 18.9% with a graduate degree ($n = 74$), 33.9% who completed university ($n = 133$), and 20.7% who completed college ($n = 81$). Approximately, 18.4% of participants were not employed [8.4% were not looking for work ($n = 33$), and 9.9% were looking for work ($n = 39$)], 42.2% worked full-time ($n = 165$), 10.2% worked part-time ($n = 40$), 9.2% were on long-term disability or medical leave ($n = 36$), 4.3% were a student ($n = 17$), and 5.9% were self-employed ($n = 23$). The majority of participants (40.1%) worked in an area that did not map onto the options provided on the demographics survey ($n = 157$), which was followed by 26.5% who worked in the service/support industry ($n = 104$) and 19.9% who worked in medical/government ($n = 78$).

The majority of participants were single (64.0%; $n = 251$), with 41.3% not looking to date ($n = 162$) and 22.7% looking to date ($n = 89$). Approximately 12.0% were either in a relationship ($n = 47$), or expressed (via the open-ended option for the Other

category on the item) that they were married ($n = 48$) and 6.6% were separated or divorced ($n = 26$). Relationship status that was classed as Other ($n = 3$) included a participant stating: 1) she was scared to date but wanted a good father for her children, 2) living with a man, and 3) being in a dysfunctional marriage.

Procedure

The procedure for Study 2 was analogous to Study 1. The study was completed online, through a secure website (www.cuaftermath.com) and took approximately one and a half hours to complete. Participants were required to make an account. Following this they were provided with the How are you feeling? Webpage²⁵ (Appendix M). The webpage includes a description of normal reactions (without diagnostic labeling) to abusive experiences. The webpage states that some survivors may experience more reactions than others. Participants were asked to take some time to reflect on how they are feeling and whether they are in a safe place to participate. Once participants indicated that they have read the webpage (by indicating yes or no on the option bubble provided), they provided their consent (See Appendix N for Informed Consent).

In contrast to Study 1, Study 2 consisted of two parts in a fixed-order: a) a battery of self-report questionnaires, and b) two tasks. As suggested by prior research (e.g., Peer et al., 2014), attention checker questions (i.e., “what colour is the sky?”) were inserted throughout the series of self-report questionnaires. The first task was the IGT, which assessed somatic marker functioning by examining the extent that participants utilize emotional experiences to aid in decision making. The second task was a facial affect

²⁵ The Warnings and Precautions for Victim populations webpage was modified for Study 2 based on recommendations from the Carleton University ethics committee for a webpage that was less on a clinical perspective.

recognition task, which assessed participants' ability to process emotional information from their social environment (primarily to interpersonal functioning). Following completion of the questionnaires and tasks, participants were provided a debriefing from (Appendix O). It was estimated that the entire study would take an hour and a half to complete.

Measures

1) Demographics. The nine item demographics measure from Study 1 was used, with additional items that assessed location (e.g., Canada, United Kingdom), area of employment (e.g., medical/government), and current relationship status (e.g., single and not looking to date, in a relationship; Appendix P).

2) Victimization Screening Survey (VSS). The 14-item questionnaire from Study 1 was used, and included four additional items. It included an open-ended question, which asked participants to indicate when in the relationship the abuse began, and two items taken from Pagliaro (2009). These two items assessed the self-perceived impact the relationship had on physical health and on mental health on a five point Likert range from 0 (N/A), 1 (None) to 4 (Extreme). The item that assessed the amount of time since the participant was last contact with the abuser was also used to explicitly assess those participants were still in contact with their abuser (Appendix Q).

3) Modified Self-Report Psychopathy Scale-Short (MSRP-S; Beaudette, 2012).

4) Impact of Events Scale-Revised (IES-R; Weiss & Marmar, 1997).

5) Ego Resilience Scale (ERS; Block & Kreman, 1996).

6) Beck Depression Inventory II (BDI-II; Beck et al., 1996). The BDI-II is a 21-item measure that has been used to assess depressive symptoms in both clinical and non-

clinical populations (Beck et al., 1996). The items reflect the DSM-5 criteria for depression, which includes changes in appetite, difficulties concentrating, pessimism, and suicide ideation (American Psychiatric Association, 2013). Participants were asked to rate the items that correspond to a symptom on a degree of severity on a four-point scale from 0, which corresponds to least symptomatic, to 3, which is more symptomatic of clinical levels of depression. Items were summed, with a highest possible score of 63. A score between 11- 16 suggests some mood disturbances, 21-30 suggests moderate depressive symptoms, and above 31 suggests a severe level of depressive symptoms (Beck, Steer, & Brown, 1996).

The BDI-II demonstrates good reliability and validity. Beck and colleagues (1996) found the measure to have high internal consistency in an undergraduate sample ($\alpha = .93$) and psychiatric population ($\alpha = .92$). The BDI-II also correlates with an earlier version of the measure (i.e., the BDI), $r = .93$, (Beck et al., 1961), along with other measures of depression, such as the Depression subscale of the SCL-90, $r = .89$ (Dozois, Dobson, & Ahnberg, 1998; Steer, Ball, Ranieri, & Beck, 1997).

Normative data from a sample of domestic abuse survivors found BDI-II scores to average 27.2 ($SD = 12.84$), and to be a highly reliable assessment of clinical depression, when compared against assessment by clinical interviews (Cody et al., 2015).

7) Anxiety Sensitivity Index-Revised (ASI-R; Taylor & Cox, 1998). The ASI-R is a 36-item measure that assessed participants' sensitivity to experience anxiety, which is defined as the fear of anxiety-related sensations and their associated harmful consequences (Deacon et al., 2003). Anxiety sensitivity is associated with the risk for developing anxiety-related disorders, such as generalized anxiety disorder (Taylor, 1999).

Items are presented on a Likert-range from 0 (Very Little) to 4 (Very Much). Total scores are summed and can range from 0 – 144, where higher scores indicate a higher sensitivity to experiencing anxiety.

The ASI-R was expanded upon from the original 16-item Anxiety Sensitivity Index (Reiss, Peterson, Gursky, & McNally, 1986) with improved psychometric properties, which includes a more comprehensive assessment of social concerns (Blais et al., 2001; Deacon et al., 2003; Deacon & Valentiner, 2001). The ASI-R assesses somatic (e.g., respiratory, gastrointestinal), cognitive (e.g., dissociative, fear of cognitive dyscontrol), and social domains (e.g., publicly observable symptoms like nervousness; Deacon et al., 2003).

In a sample of 558 undergraduate students the ASI-R ($M = 25.7$; $SD = 19.6$) displayed excellent internal consistency ($\alpha = .95$), and good criterion validity with significant correlations with the Fear of Negative Evaluations scale (Watson & Friend, 1969) and the Agoraphobic Cognitions Questionnaire (Chambless et al., 1984; Deacon et al., 2003). In terms of mental health outcomes, Arnau and colleagues (2009) found that in a sample of undergraduate students, the ASI-R correlated with assessments of PTSD, generalized anxiety disorder, panic disorder, social phobia, and obsessive-compulsive disorder.

8) Post-Traumatic Growth Inventory (PTGI; Tedeschi & Calhoun, 1996). The 21-item PTGI was used to assess the degree to which survivors experienced growth as a result of their relationship with a psychopathic abuser. The scale assessed post-traumatic growth outcomes associated with domains of new possibilities, relating to others, personal strength, spiritual change, and appreciation of life, on a six-point Likert range

from 0 (I did not experience this change) to 5 (I experienced this change to a great degree). Scores were summed with a total possible score of 105. A higher score is indicative of a greater degree of positive growth following trauma.

Across the domains, Beaudette's (2012) assessment of survivors of workplace psychopaths found adequate levels of internal consistency, ranging from $\alpha = .64$ to $.92$. As a single latent factor, the PTGI has excellent internal consistency with an $\alpha = .90$, and test-retest reliability over a period of two months, $r = .71$ (Tedeschi & Calhoun, 1996). The scale has been widely used to assess post traumatic growth in areas ranging from romantic relationship dissolution (Tashiro & Frazier, 2003), sexual assault (Frazier, Conlon, & Glaser, 2001), domestic abuse (Cobb et al., 2006), and violence (Connor et al., 2003).

The PTGI demonstrates good convergent validity with measures associated with optimism, as assessed by the Life Orientation Scale (Schier & Carver, 1985), $r = .23$, and the big five personality traits as assessed by the NEO Personality Inventory (Costa & McCrae, 1985): openness, $r = .21$, agreeableness, $r = .18$, conscientiousness, $r = .16$, and extraversion, $r = .29$. Optimism and these big five traits have previously been associated with adaptive coping following trauma (Carver et al., 2009; Kaiseler, Polmanm, & Nicholls, 2012). Normative data from Beaudette's (2012) study of individuals affected by workplace psychopaths found higher levels of post traumatic growth ($M = 70.5$, $SD = 26.43$) than that of normative data from domestic abuse survivors ($M = 68.08$, $SD = 24.95$; Cobb et al., 2006).

9) Perceived Social Support Scale (PSS; Kaniasty, 1988). The 12-item PSS scale was used to assess the degree to which survivors perceive support from their social

network. The scale assesses the perception of forms of social support that are emotional (e.g., "There is no one that I feel comfortable talking to about intimate personal problems"), tangible (e.g., "If I were sick and needed someone to take me to the doctor, I would have trouble finding someone"), and informational (e.g., "There is someone I can turn to for advice about handling problems with my family") on a four-point Likert range from 1 (definitely false) to 4 (definitely true). Scores are summed for a total possible score of 48, where a higher score indicates a greater degree of perceived social support.

In a sample of psychopath survivors (not specific to romantic relationships), Pagliaro (2009) found the PSS to demonstrate excellent internal consistency, $\alpha = .90$. Survivors in her sample reported a moderately high degree of perceived social support ($M = 36.77; SD = 8.49$). In terms of convergent validity, Pagliaro found the emotional support subscale of the PSS correlated with the emotional support subscale of the Received Social Support Scale (RSS; Kaniasty, 1988), $r = .62$, and the Brief COPE-seeking emotional support subscale (Carver, 1997), $r = .47$. The Brief COPE-seeking emotional support subscale also found to correlate with the tangible support subscale of the PSS, $r = .24$. The PSS demonstrates good divergent validity, as the emotional support subscale correlated with the Brief COPE- avoidance subscale, $r = -.27$, and the IES-R avoidance subscale (Weiss & Marmar, 1997), $r = -.20$. Likewise, Pagliaro found the tangible support subscale of the PSS to correlate with the Brief COPE-avoidance subscale, $r = -.21$.

10) Received Social Support Scale (RSS; Kaniasty, 1988). The 12-item RSS scale was used to assess the degree to which survivors received support from members of their social network that was emotional (e.g., "did anyone comfort you by showing you

some physical affection?"'), tangible (e.g., "did anyone give, loan, or offer you some money?"), or informational (e.g., "did anyone give you some information to help you understand a situation you were in?"). Items were assessed on a four-point Likert range from 1 (never) to 4 (many times). Scores were summed for a total possible score of 48, with a higher score indicating survivors receiving more supportive behaviour from their social network.

Pagliaro's (2009) sample of psychopath survivors (not specific to romantic relationships) found the RSS to demonstrate excellent internal consistency, $\alpha = .90$. Paligaro's sample reported a moderate degree of received social support ($M = 30.03$; $SD = 8.71$). In terms of convergent validity, the emotional support subscale of the RSS correlated with the emotional support subscale of the PSS (Kaniasty, 1988), $r = .62$, tangible support PSS subscale (Kaniasty, 1988), $r = .55$, and the Brief COPE- seeking emotional support subscale (Carver, 1997), $r = .49$. The Brief COPE- seeking emotional support subscale also correlated with the tangible support subscale of the RSS, $r = .27$. The RSS demonstrates good divergent validity, as the emotional support subscale correlates with the Brief COPE- avoidance subscale, $r = -.11$.

Tasks

Iowa Gambling Task (IGT; Damasio, 1994). The IGT was used to assess somatic marker functioning. The task consists of 100 trials. Participants were told to gain as many points as possible by making selections from four decks of cards (Deck A, B, C, D). Each deck consists of 40 reward and punishment cards, which are in the form of points gained or lost. There are two disadvantageous decks A, and B, which yield large rewards (100 points) but also large punishments (-1250 points). There are also two

advantageous decks C, and D, with smaller rewards (50 points) and punishments (-250 points) that provide small but consistent gains over time. When the participant selects a deck on the website, a screen will appear telling them the number of points they have won or lost, which will depend on the deck they have chosen. Appendix R provides the task instructions. Table 21 displays the earning schedule across the decks for the task. The psychometric characteristics of the IGT were described in detail in the introduction.

Table 21

Earning schedule across the decks in the IGT.

Deck	Type	Wins (%)	Losses (%)
A	Disadvantageous	100 (50%)	-250 (50%)
B	Disadvantageous	100 (90%)	-1250 (10%)
C	Advantageous	50 (50%)	-50 (50%)
D	Advantageous	50 (90%)	-250 (10%)

Facial affect recognition task. A 60-trial facial affect recognition task (separated into 5 blocks of 12 stimuli) was used to measure emotion processing of one's social environment to gauge interpersonal functioning. Stimuli were drawn from the Montreal Set of Facial Expressions (Beaupré, Cheung, & Hess, 2000) stimuli set with five image sets of varying emotional intensity (20%, 60%, 80%, and 100%). Facial expressions consist of black and white images of Caucasian males and include depictions of shame, joy, anger, sadness, fear, and disgust. Participants were given a break of one minute between each block. Images were displayed for three seconds, with an inter stimulus duration of two seconds. Participants were given two and a half seconds to classify the facial expression according to an emotion type (e.g., fear). A greater number of images correctly classified by participants reflected a greater ability to process emotion. See

Appendix S for an example of the facial stimuli, task instructions, and counterbalancing of the stimuli.

Data analysis

Descriptive statistics. Cronbach's alpha was used to check all the questionnaires and subscales that were used for in the analysis for internal consistency.

Descriptive statistics were tabulated for participants' demographic information (e.g., age, gender, ethnicity, education level), relationship characteristics (i.e., relationship length and type, time since last contact with their abuser, and the time the abuse began in the relationship), and abuse experiences (i.e., abuse frequency, versatility of abuse,²⁶ types of abuse experienced, degree of physical harm, and self-perceived impact of the relationship on physical and mental health). Descriptive statistics were tabulated for participants' perceived level of social support, received level of social support, post-traumatic growth, resilience, as well as their symptoms of PTSD, anxiety, and depression.

Descriptive statistics were also tabulated for the abusers' demographics (e.g., age, gender, and ethnicity), and the ascribed level of psychopathic traits in abusers, including the factors and underlying facets (e.g., lifestyle, Factor 1 psychopathy). Factor 1 psychopathy scores were compiled by summing scores on the affective and interpersonal subscales. Factor 2 psychopathy scores were compiled by summing scores on the antisocial and lifestyle subscales.

Exploratory factor analysis. An exploratory factor analysis was used as a data reduction technique as part of the analyses for Hypothesis Two. While, PTSD, anxiety,

²⁶ Versatility of abuse refers to the number of different types of abuse experienced, such as deception or physical abuse.

and depression are distinct types of mental health impairments, they do share similarities. The underlying structure of these mental health variables is unclear. PTSD, depression, and anxiety were entered as variables into the exploratory factor analysis to examine whether there was a shared variance among the variables. The Varimax rotation was used to extract factors (that were saved as variables for further analysis) that were uncorrelated with each other (Field, 2005).

Regression analyses. A hierarchical multiple regression analysis using the Enter procedure was used to investigate Hypothesis 1a. The model investigated if abuse experiences and mental health impairments were predictive of ratings of ascribed psychopathic traits in abusers.

Due to the lack of significant findings for the control variables (e.g., relationship length) in Study 1, and the number of possible control variables that could be used in the present model, preliminary analyses were carried out to examine associations of relationship length, time since last contact with the abuser, and the time abuse began in the relationship. For the variable of time when the abuse began in the relationship, select cases was used in SPSS to select only those participants who provided a numeric time point in time, and excluded those participants who could not provide a point in time (i.e., stated after marriage, engagement, or after the relationship ended). Three separate linear regression analyses were performed with ascribed psychopathic traits as the dependent variable and each of the control variables as the outcome. None were significant. The bivariate correlations of the control variables and ascribed level of psychopathic traits were also not significant. Thus, in order to utilize as many participants' responses as possible (if the control variables were included the number of response would be reduced

from 392 to 306), the use of control variables in the model for Hypothesis 1a was not deemed appropriate.

In the hierarchical regression model, the dependent variable was the ascribed level of psychopathic traits. In following the data analysis procedures of Study 1, the mental health variables of PTSD, depression, and anxiety were entered into block one as predictor variables using the Forward procedure. The enter procedure was used for block two that contained the variables versatility of abuse, frequency of abuse, and the degree of physical harm.

The mental health status factor obtained from the exploratory factor analysis were used as the outcome variable in the hierarchical regression analysis for Hypothesis Two. The predictor variables were introduced into the regression model using the Enter procedure as follows: time since last contact with the abuser (block one), relationship length (block two), time abuse began in the relationship (block 3; select cases was used in SPSS to select only those participants who provided a numeric time point in time, such as within the first one to four months). Block four contained the self-perceived impact that the abusive relationship had on physical health and the impact that it had on mental health (block 4). Block five contained the social support variables (level of perceived social support and level of received social support) via the Forward procedure as these variables displayed significant and moderate inter-level correlations.

To investigate Hypothesis Three, a hierarchical multiple regression was used to assess the impact that mental health status (the mental health factor from the exploratory factor analysis), social support, and post-traumatic growth had on participants' levels of resilience, when controlling for the amount of time since last contact with the abuser,

relationship length, and the time when the abuse began in the relationship. Select cases was used in SPSS for the time abuse began variable, in order to select only those participants who provided a numeric time point in time. Resilience was entered as the outcome variable. Predictors for blocks one to three each included one of the control variables as predictors using the Enter procedure. The mental health status factor was entered into block four as a predictor with the Enter procedure. The social support variables of perceived social support and received social support were entered as predictors in block five using the Forward procedure.

Hypothesis Four had an analogous procedure, except that post-traumatic growth was the outcome variable in the model and an additional predictor variable of resilience was entered into block six.

Correlational analyses. Bivariate correlational analyses were used for Hypothesis 1b to examine the relationships between the level of ascribed psychopathy and participants' experiences of specific types of abuse (e.g., physical) with a Bonferroni correction at $p < .006$. For information purposes, bivariate correlations were used to examine the relationships between Factor 1 psychopathy and Factor 2 psychopathy and participants' experiences of abuse (i.e., degree of harm, and frequency and versatility of abuse), and mental health impairments (i.e., symptoms of PTSD, depression, and anxiety).

Bivariate correlational analyses were used to assess the relationship between predictor variables and the outcome variables in the sets of regression analyses for Hypothesis 1a, Two, Three, and Four.

Bivariate correlational analyses were utilized for Hypothesis Five. Relationships between the number of disadvantageous decks selections by block for the task were examined with the mental health variables (PTSD, anxiety, depression), post-traumatic growth, and resilience.

Analysis of Variance (ANOVA). A one-way, repeated measures 1×5 ANOVA was used to investigate Hypothesis Five. A within-subjects main effect of Block was used to assess whether participants learned to avoid disadvantage deck selections across the five blocks of twenty trials in the IGT. Sidak Post-hoc tests were used to determine the direction of learning (whether disadvantageous deck selection decreased over time) and at what block changes in decision making occurred.

Significant bivariate correlations were used to determine whether it is appropriate to assess mental health variables, resilience, or post-traumatic growth in the model. If such relationships were found, each recovery outcome variable would be categorized into two groups. To categorize participants into high and low groups, the top and bottom 33% of scores were used to assign participants into high or low groups on each of the variables. The middle 20% of scores that surrounded the median score were not included. These scores have potential to obscure results as these scores may represent individuals who are similar on the particular variable and are arbitrarily assigned to a given group.

A mixed ANOVA with a 2×5 design (Group \times Block) was used to assess the between-subjects main effect of group on disadvantageous deck selections. Of primary interest would be the Block \times Group interaction, which would indicate that participants who scored higher or lower on the selected variable had significant changes in their rate of learning over the course of the trials on the IGT (from Block 1 to 5).

A 5×6 (Intensity \times Emotion) repeated measures ANOVA was used to assess whether participants' accuracy in categorizing facial affect changes depending on the level of intensity of emotion in the facial expressions in each block of the 12 trials (i.e., main effect of Intensity). Each block ranged from 20%, 40%, 60%, 80%, and 100% levels of intensity. The ANOVA was also used to investigate if accuracy ratings change depending on the type of emotion expressed the faces (disgust, anger, shame, joy, fear, and joy). The ANOVA would also be used to examine if there is an interaction between emotion types and the level of intensity of facial affect in accuracy ratings. For any significant effects, Sidak post-hoc tests were used to determine whether accuracy ratings changed as the level of intensity of facial affect increased across the blocks, and if specific emotion types had higher accuracy ratings than others.

Participants' recovery outcomes (i.e., their level of resilience, post-traumatic growth and symptoms of anxiety, PTSD, and depression) may influence their ability to accurately rate facial affect depending on the emotion type and level of intensity of facial affect. In order to examine whether participants' recovery outcomes influenced their ability to accurately rate facial affect, a series of mixed ANOVAs were performed with a $2 \times 5 \times 6$ design (Group \times Intensity \times Emotion). Of particular interest was the between-subjects effect of group on facial affect accuracy ratings on the level of intensity (i.e., Group \times Intensity), a between-subjects effect of facial affect accuracy ratings by emotion type (i.e., Group \times Emotion), and the three-way interaction between emotion type, level of intensity, and group on each of the recovery outcome variables (i.e., Group \times Intensity \times Emotion).

Similar to the IGT analysis of group, scores on the recovery variables were categorized into high and low groups. The top and bottom 33% of scores were used to assign participants into high or low groups on each of the variables. The middle 20% of scores that surrounded the median score were not included. Table 22 summarizes the analyses to answer each research question.

Table 22

Summary of the types of analyses to investigate each research question for Study 2.

Research Question	Analyses
1. Replication of trends in Study 1 related to the ascribe level of psychopathic traits	<ul style="list-style-type: none"> • Hierarchical multiple regression • Correlational analyses
2. Mental health status and social support	<ul style="list-style-type: none"> • Exploratory factor analysis • Hierarchical multiple regression
3. Mental health status, post-traumatic growth, and social support in resilience	<ul style="list-style-type: none"> • Hierarchical multiple regression
4. Mental health status, resilience, and social support in post-traumatic growth	<ul style="list-style-type: none"> • Hierarchical multiple regression
5. Mental health impairments, resilience, and post-traumatic growth in the IGT	<ul style="list-style-type: none"> • Correlational analyses • Mixed ANOVA
6. Mental health impairments, resilience, and post-traumatic growth in facial affect recognition	<ul style="list-style-type: none"> • Mixed ANOVA

Note. Mental health status = mental health factor obtained from the exploratory factor analysis. Mental health impairments = individual variables of PTSD symptomology, anxiety, and depressive symptoms.

Results

Data Treatment

All participants who provided their consent to participate in the study but who did not proceed with the remainder of the study were removed. After these participants were deleted ($n = 12$), 396 participants remained who had either fully completed or partially

completed the self-report questionnaires and tasks. Of these participants, four were discarded as they identified as being victimized by someone other than a romantic partner (i.e., their parent, son-in-law). Three hundred and ninety-two participants remained for further analyses.

Data Cleaning

Data was checked for data entry errors and for appropriate scoring procedures. For the Demographics measure, due to the high volume of participants who selected the "other" option for employment status and relationship status, additional variables were created. For employment status, additional variables were coded for being retired, self-employed, and homemaker/caregiver. For relationship status, additional variables were coded for being separated/divorced and being widowed. Additional codes were created for relationship type (item number three of the VSS). The following coding scheme was used: 0 = friend, 1 = boyfriend/girlfriend, 2 = common-law, 3 = engaged, 4 = spouse. An additional code of 5 = other was also used.

In terms of the open-ended items examining types of abuse experienced during the relationship (items 8a to 9f of the VSS), a dichotomous coding scheme was used where responses were coded as 0 for no experience of that type of abuse, and 1 for having experienced that type of abuse (e.g., examples of physical abuse included hitting). Indecipherable statements were coded as 999.

The majority of responses clearly mapped onto the types of abuse. However, when coding the responses, I noted some discrepancies and created a coding scheme for participants' responses. Participants noted if their children were physically or sexually abused, which provides an example of the abuser perpetrating physical or sexual abuse.

However, these examples were categorized as emotional abuse, as the participant was not the direct target of these types of abuse. Also for physical abuse, threats of physical harm were not included under this category but were coded under emotional abuse. Physical abuse did include participants who provided examples of being blocked or chased and sleep disturbances (e.g., yelling in participants' ear), and physical injury from being poisoned/drugged (the aspect of being poisoned/ drugged was coded substance abuse).

Cyber abuse was not included in the current study as an abuse type category during the coding stage. Examples of cyber abuse include such behaviours as hacking online accounts, surveillance of online activity, excessive communication through social media, controlling posts/friends on social media, and public shaming/venting on social media (Borrajo et al., 2015). The majority of participants who cited cyber abuse categorized this as emotional abuse, although some participants categorized this as property abuse.

Sexual abuse and substance abuse appeared challenging for participants to define. Many participants noted their abuser did abuse substances and/or how their abusers' substance use increased the degree of harm to the participant either directly or indirectly, to them and/or their children, such as driving while impaired. These participants had their answers coded as 999. Many participants did not understand what was meant by sexual abuse, as participants would sometimes state they did not experience this type of abuse but then explained how their abuser coerced them into performing sexual acts. Because of these issues, I created a coding criterion, as seen in Table 23, for labelling sexual and substance abuse. Similar to Study 1, a new continuous variable was tabulated for the versatility of abuse.

Table 23

Coding scheme for categorizing participants' experiences of substance and sexual abuse.

Abuse type	Inclusion criteria
Substance abuse	<ul style="list-style-type: none"> • Withholding/stealing medication • Forced/coerced use of substances • Enabling a pre-existing substance abuse issue • Poisoning/drugging
Sexual abuse	<ul style="list-style-type: none"> • Psychological coercion into carrying out sexual acts • Abuser engaging in sex while the participant sleeps • Infidelities that resulted in participants contracting sexually transmitted diseases or infections • Withholding sex/affection

A coding scheme was created for the open-ended question (number 11 of the VSS) that examined when in the relationship the abusive behaviours again. Answers were coded as follows: 1 = immediately, 2 = within weeks, 3 = one to four months, 4 = four to six months, 5 = six to twelve months, 6 = one to two years, 7 = two to five years, 8 = five to ten years, 9 = 10 to 15 years, 10 = 15 years or more. Responses that could not be coded were coded as 999. Participants who did not state a time that the abuse began, and instead stated the abuse began when they were engaged or after they were married were coded as 12 and 11. Participants who did not notice when the abuse began (and only realized it was abusive when the relationship ended) were coded as 13. Participants who noted that the relationship was abusive when it ended were also coded as 13 (it was unclear from the way participants wrote the response if the abuse began at this point, or if this was when participants realized it was abusive).

Similar to Study 1, responses to items on the MSRP-S that were missing ($n = 1468$) were scored with a rating of zero. Low scorers on the MSRP-S were *not* removed.

In terms of the tasks, in following the scoring procedures for the IGT in prior research (e.g., Franken, Strien, et al., 2008; Werner, Duschek et al., 2009), the trials were categorized into five blocks of 20 trials and net scores were calculated $[(C+D) - (A+B)]$ for each of the five blocks. Net scores more than zero reflects advantageous deck selections and less than zero reflect disadvantageous deck selections. For the facial recognition task, the percentage of accurate responses for each emotion type was calculated for each of the five blocks of 12 trials in the task.

Missing data. For each participant, the amount of missing data for the self-report questionnaires ranged from 0% to 0.3% (0 to 1), with all participants completing the majority of each survey. On the variable level, two items on the demographics survey, location ($n = 2$) and employment status ($n = 1$) contained missing data. Little's MCAR test concluded that there was no pattern to the missing data with a nonsignificant result, $\chi^2 = 21.31$, $df = 14$, $p = .10$. The VSS contained five missing items for sexual abuse ($n = 2$), spiritual abuse ($n = 6$), financial abuse ($n = 3$), substance abuse ($n = 3$), and deception ($n = 1$). Little's MCAR was also insignificant for the VSS, $\chi^2 = 65.71$, $df = 85$, $p = .94$.

For each participant, the amount of data for the IGT ranged from 0% to 100% (0 to 100 trials). Three hundred and forty participants started the IGT (i.e., selecting the first card) and 246 participants completed the task. Due to the nature of the analysis (i.e., examining learning rates over time) only participants who provided complete task data were included in the analysis for Hypothesis Five.

In terms of the facial recognition task, the amount of missing data range from 0% to 11.7% (0 to 282 trials). Two hundred and one participants started the facial recognition task and completed the first block. By the fifth block, 193 participants had completed the

overall task. Table 24 summarizes the frequencies and percentages of data from the self-report questionnaires and tasks.

Table 24

Frequencies and percentage of data completed by participants according to the self-report questionnaires and tasks.

Study portion	Completed [N (%)]
Self-report questionnaires	392 (100)
IGT	247 (63.0)
Facial recognition task:	
Block One	201 (51.3)
Block Two	196 (50)
Block Three	196 (50)
Block Four	196 (50)
Block Five	193 (49.2)

Normality, multicollinearity, and regression diagnostics. The data cleaning procedures for Study 2 followed that of Study 1 and will be briefly overviewed. Each variable used for the analysis was manually assessed for statistical significance of skewness and kurtosis. The distribution of the interpersonal facet of the MSRP-S was negatively skewed and leptokurtic due to the high frequency of scores that were 34 ($n = 34$) or 35 ($n = 74$). The interpersonal facet scores ranged from six to 35 and had an average of 28.59 ($SD = 6.24$). The remaining variables were within normal range and those that slightly deviated were not deemed an issue (due to the large sample size).

The variables were plotted to visually inspect linearity and the existence of outliers. Variables were also transformed into z-scores to examine those values that were ± 3.29 standard deviations away from the mean (Field, 2013). Transforming variables into z-scores standardizes the variables so that the $M = 0$ and $SD = 1$, irrespective of the original distribution (Field, 2013). There were a few extreme values apparent in the data.

Outliers were adjusted, which assisted in improving the normality of the distributions for the variables, particularly for the Interpersonal facet MSRP-S subscale, which had extreme z-scores of -3.79, -3.46, and -3.31. These extreme z-scores translated to a score of five, seven, and eight. The extreme values were transformed to the next closest value in the range, and had minimal impact on the average of the Interpersonal facet MSRP-S subscale ($M = 28.60$; $SD = 6.22$).

The Factor 1 subscale of the MSRP-S had an extreme z-score of -3.81, which translates to a score of 14. The average score on the subscale is 54.3 ($SD = 10.57$). The extreme value was transformed to a 19, which is the next closest value in the range, and had minimal impact on the average ($M = 54.3$, $SD = 10.51$).

The ERS had extreme z-scores of -4.27, -4.16, and -4.04, which translated to scores of two, three, and four. The average score on the ERS was 39.22 ($SD = 8.70$). The extreme values were transformed into 15, 16, and 17, which were below the next highest value in the range, and had minimal impact on the average score ($M = 39.48$; $SD = 7.75$).

The IES-R had an extreme z-score of -3.84 and -3.36, which translates to a score of six and 13. The average score on the IES-R is 61.99 ($SD = 14.57$). These values were transformed 15 and 16 to be below the next highest score in the range, which was 17. This transformation had minimal impact on the mean ($M = 62.03$; $SD = 14.46$).

Multicollinearity and homoscedasticity were not problematic. Further, standardized residuals were within the limit of standard deviations and were deemed appropriate for the regression model. No issues were found regarding high leverage or influential points as assessed by Cook's distance. No Durbin-Watson values were found that were below 1.0 or above 3.0.

To assess whether the variances between the combinations of all groups was equal for the ANOVA models, Mauchley's Test of Sphericity was carried out and if sphericity was violated (variances were not equal), then the Greenhouse-Geisser correction was used to interpret the model (Field, 2013).

Exploratory factor analysis assumptions. The sample size was deemed appropriate for conducting an exploratory factor analysis; Field (2005) describes that a sample above 300 is ideal and below 200 is not ideal. The factor analysis variables were found to have a linear relationship and did not pose issues for singularity (significant r -values at 1.00). Determinant values above .0001 demonstrated that multicollinearity was not an issue for the variables. In terms of sampling adequacy, Barlett's test of sphericity was significant, $\chi^2(3) = 178.94, p < .05$, and the Kaiser-Meyer-Olkin measure of sampling adequacy was sufficient with a value of .66, which indicates that there is a common variance among the variables and that the variables are correlated highly enough to be deemed appropriate for a factor analysis (Field, 2005). The communality values were used to assess the relation between the variables in creating a latent variable. The eigenvalues were used to infer the total amount of variance that was accounted for by the factor (Field, 2012).

Reliability Checks

In terms of reliability, the MSRP-S demonstrated excellent internal consistency ($\alpha = .85$). The subscales Factor 1 ($\alpha = .78$) and the interpersonal facet ($\alpha = .75$) also demonstrated good internal consistency. Fair internal consistency was found for Factor 2 psychopathy ($\alpha = .73$), and the lifestyle facet ($\alpha = .67$). The antisocial facet and affective facet demonstrated lower levels of internal consistency ($\alpha = .60$). The IES-R ($\alpha = .89$),

ERS ($\alpha = .81$), PTGI ($\alpha = .95$), BDI-II ($\alpha = .94$), and the ASI-R ($\alpha = .96$) showed excellent internal consistency.

While the RSS demonstrated excellent internal consistency ($\alpha = .90$), the PSS was not internally consistent ($\alpha = -.36$). An exploratory factor analysis with a Varimax rotation was carried out to determine the underlying structure of the 12-item PSS. Table 25 displays the correlations between the individual items, which were all statistically significant and at moderate levels (all r -values were below .80).

Table 25

Bivariate correlations between items on the Perceived Social Support Scale.

	1	2	3	4	5	6	7	8	9	10	11	12
1.Trust to help	-											
2.Feel comfortable talking	-.514	-										
3. Being taken to doctor	-.414	.290	-									
4.Sharing private worries	-.479	.646	.439	-								
5.Advice for family problems	.483	-.498	-.378	-.554	-							
6.Suggestions for problems	.562	-.581	-.427	-.631	.718	-						
7.Look after house	-.431	.320	.592	.414	-.367	-.408	-					
8. Lend their car	-.328	.276	.545	.300	-.268	-.341	.544	-				
9.Lack intimacy	-.320	.293	.290	.397	-.309	-.322	.320	.310	-			
10.Emotional security	.550	-.519	-.458	-.574	.496	.636	-.463	-.468	-.431	-		
11.Emergency loan	.366	-.339	-.421	-.371	.311	.375	-.447	-.546	-.346	.435	-	
12.Objective view	-.390	.415	.392	.497	-.521	-.521	.412	.332	.393	-.483	-.338	-

N = 392

Note. All variables significant at $p < .001$.

Multicollinearity was not deemed an issue with a determinant value of .003. Barlett's test of sphericity was significant, $\chi^2(66) = 2216.03, p < .05$, and the Kaiser-Meyer-Olkin measure of sampling adequacy was sufficient with a value of .92. After rotation, two latent factors were extracted with loadings less than .40 omitted (See Table 26 for factor loadings and communalities). The first factor of Emotional PSS accounted for 21.55% of the variance and the second factor of Tangible PSS accounted for 16.6% of the variance. Adequate internal consistency was found for the Emotional PSS factor ($\alpha = .77$), and Tangible PSS factor ($\alpha = .79$). Variables were saved from the exploratory factor analysis to be used for further analyses.

Table 26

Factor loadings and communalities of the two extracted factors from the Perceived Social Support Scale.

	Factor loading		Communality
	Emotional	Tangible	
2. Feel comfortable talking	.779		.625
3. Being taken to doctor		.780	.612
4. Sharing private worries	.779		.672
7. Look after house		.746	.634
8. Lend their car		.840	.721
12. Objective view	.595		.472

Descriptive Statistics

The majority of abusers were male ($n = 359$; 91.6%) and Caucasian ($n = 333$; 84.9%). Approximately four percent of participants identified their abuser as either African ($n = 19$) and 4.3% were identified as Other (e.g., mixed race, West Indian; $n = 17$). In terms of the type of relationship participants had with their abuser, the majority of participants reported that their abuser was their spouse (53.6%; $n = 210$), followed by 31.9% who reported a dating relationship

($n = 125$), and 10.5% who reported common-law ($n = 41$). The Other category was selected for 1.8% ($n = 7$), where participants referred to the relationship as a roommate, a lover, an affair, or a “BDSM relationship”.

The majority of participants reported that they were in a long-term (defined here as more than two years) romantic relationship with their abuser (for frequencies and percentages of relationship length, see Table 27).

Table 27

Frequency and percentage of participants for each category of relationship length for Study 2.

Relationship length	Frequency	Percentage
Less than 6 months	7	1.8
6 - 12 months	23	5.9
1 - 2 years	38	9.7
2 - 5 years	87	22.2
5 - 10 years	89	22.7
10 - 20 years	95	24.2
More than 20 years	53	13.5

$N = 392$

The majority of participants had recently ended contact with their abuser, with 26.3% reporting that their last contact with their abuser was less than six months prior to participation in the study ($n = 193$). Approximately 14% had last contact with their abuser six to twelve months prior ($n = 54$), and approximately 15% did not have contact with their abuser in the last one to two ($n = 60$), or two to five years ($n = 61$; see Table 28 for frequencies and percentages). Approximately seventeen percent of participants stated they are currently in contact with their abuser ($n = 69$).

Table 28

Frequency and percentage of participants' length of time since last contact with their abuser for Study 2.

Last contact	Frequency	Percentage
In current contact	69	17.6
Less than 6 months	193	26.3
6 - 12 months	54	13.8
1 - 2 years	60	15.3
2 - 5 years	61	15.6
5 - 10 years	26	6.6
10 - 20 years	17	4.3
More than 20 years	2	0.5

N = 392

Participants indicated that the abuse began early in the relationship, with the majority of participants reporting the abuse beginning either within the first few weeks ($n = 38$, 12.4%), months ($n = 99$, 32.4%), and within the first year (i.e., 6 to 12 months; $n = 59$, 19.3%). Table 29 provides information about the time in the relationship when the abuse began, in terms of weeks, months, and years. It is important to note that 12% of participants could not categorize when the abuse began in the relationship ($n = 48$). Further, some participants did not provide a time point in terms of weeks, months, or years. Rather, 1.3% of participants expressed that abuse began after engagement ($n = 5$), and 8.4% stated it began after marriage ($n = 33$).

Table 29

Frequency and percentage of time when abuse began in the relationship.

Last contact	Frequency	Percentage
Immediately	18	5.9
Within weeks	38	12.4
1 – 4 months	99	32.4
4 – 6 months	20	6.5
6 - 12 months	59	19.3
1 - 2 years	23	7.5
2 - 5 years	25	8.2
5 - 10 years	16	5.2
10 - 15 years	6	1.6
More than 20 years	3	0.9

n = 306

In terms of experiences in their romantic relationship, most participants reported that the abuse was either very frequent (59.2%; *n* = 232) or frequent (37.7%; *n* = 128). On average, participants reported experiencing 5.44 types of abuse (*SD* = 1.56), with the greatest reported types of abuse being emotional abuse (100%; *N* = 392), deception (99.8%; *n* = 391), and financial abuse (83.7%; *n* = 328).

Despite the high degree of non-physical forms of abuse that were experienced, 60.9% of participants were abused physically (*n* = 239) and 60.7% were abused sexually (*n* = 238). While some participants did not experience any physical harm from the abuse (39.5%; *n* = 155), 36.7% experienced a mild degree of physical harm (36.7%; *n* = 144), 19.4% a moderate degree (*n* = 76), and 4.3% required hospitalization from an extreme degree of physical harm (*n* = 17). See Figure 3 for frequencies and percentages of the reported types of abuse.

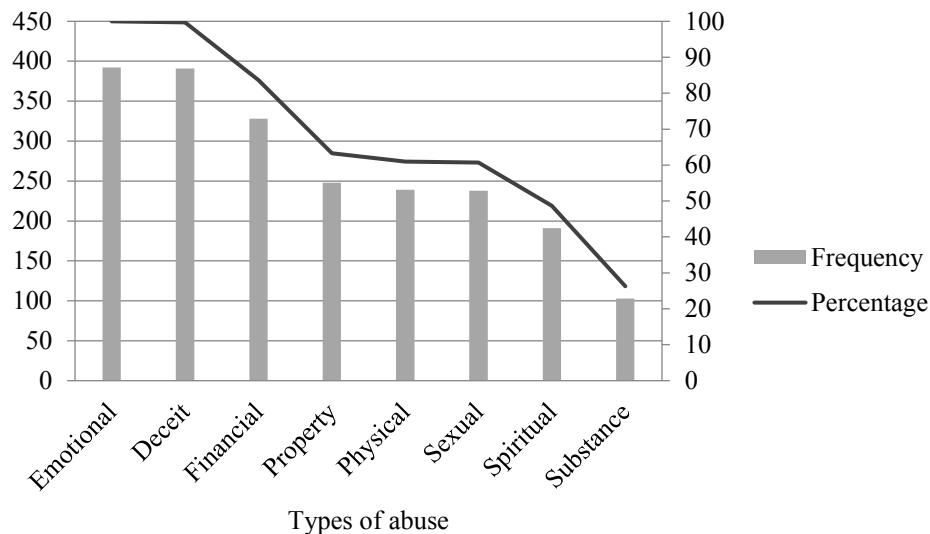


Figure 3. Frequencies and percentages of the different types of abuse experienced by participants during their relationship in Study 2

Participants reported that their abusive relationship had an extreme (70.4%; $n = 276$), followed by a moderate (25.3%; $n = 99$) impact on their mental health. In terms of physical health, some participants did not report any impact (1.8%; $n = 7$), whereas most participants reported that the impact was moderate (44.1%; $n = 173$), followed by extreme (33.9%; $n = 133$), and mild (16.3%; $n = 64$).

Participants reported moderate levels of psychopathic traits in their abusers ($M = 98.63$; $SD = 19.87$), with a higher degree of Factor 1 psychopathy ($M = 54.33$; $SD = 10.48$), than Factor 2 ($M = 42.57$; $SD = 11.3$). The highest and lowest facet scores were associated with the interpersonal facet ($M = 28.60$; $SD = 6.21$), and the antisocial facet ($M = 17.34$; $SD = 6.73$), respectively. Similar averages were found for the affective facet ($M = 25.71$; $SD = 5.81$) and the lifestyle facet ($M = 25.24$; $SD = 6.21$).

Participants reported high rates of PTSD symptomology ($M = 62.03$; $SD = 14.46$) and moderate rates of depression ($M = 25.37$; $SD = 15.21$), and sensitivity to experience anxiety ($M =$

64.0; $SD = 33.48$). Levels of anxiety were significantly higher than ASI-R scores found in an undergraduate population ($M = 25.7$; Aranu et al., 2009), and BDI-II scores were slightly lower than prior research on domestic abuse survivors ($M = 27.2$; Cody et al., 2015).

Despite the elevated levels of mental health impairments participants reported, they also reported moderate levels of resilience ($M = 39.49$; $SD = 7.74$). These levels were slightly lower than normative ratings of resilience from an undergraduate population ($M = 43.68$; Galatzer-Levy, Burton, & Bonanno, 2012). Compared to normative data, the current sample also displayed lower levels of post-traumatic growth ($M = 63.19$; $SD = 25.39$) than prior research on domestic abuse survivors ($M = 68.08$; Cobb et al., 2006) and survivors of workplace psychopaths ($M = 70.50$; Beaudette, 2012).

Participants perceived moderate levels of tangible ($M = 6.59$; $SD = 2.72$) and emotional support ($M = 6.38$; $SD = 2.69$), and had adequate levels of assistance from their social support network ($M = 27.88$; $SD = 8.80$). The current sample received slightly less support than normative data from psychopath survivors ($M = 30.03$, Pagliaro, 2009).

Research Question One: Do the findings for the association between survivors' experiences of abuse, current level of mental health impairments, and their ascribed ratings of psychopathic traits in their abuser replicate the trends found in Study 1a?

A hierarchical multiple regression revealed that participants' levels of PTSD symptomology significantly contributed to their ratings of ascribed psychopathic traits in their abusers, $F(3, 390) = 10.20$, $R^2 = .025$, $p < .01$. The positive beta weights reveal that participants who had higher levels of PTSD symptomology tended to rate their abuser as more psychopathic (Table 30).

The introduction of the abuse variables into the model significantly increased its predictive power from .025 to .154, $F(3, 387) = 24.79$, $\Delta R^2 = .154$, $p < .001$. The positive beta weights indicate that participants who experienced more frequent episodes of abuse, more different types of abuse, and abuse that was more physically harmed tended to rate their abuser as more psychopathic. The versatility of abuse had the strongest effects on participants' ratings, followed by the degree of physical harm. The model lent support for Hypothesis 1a and explained 18% of the variance in participants' ratings of psychopathic traits in their abusers, $F(3, 387) = 21.22$, $R^2 = .180$, $p < .001$.

Table 30

Hierarchical multiple regression analysis assessing the impact of abuse experience and mental health impairments on levels of ascribed psychopathic traits in abusers.

	ΔR^2	Adj R^2	Pearson's r	β	95% CIs	
					Lower	Higher
Model 1	.025**	.023**	.160***			
PTSD				.160	.085	.355
Model 2	.154***	.171***				
Versatility			.380***	.271	2.103	4.817
Harm			.278***	.128	1.018	6.457
Frequency			.204***	.135	.753	5.490

$N = 392$

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

Note. PTSD = post-traumatic stress disorder symptomology, Harm = degree of physical harm sustained from abuse, Frequency = frequency of abuse, Versatility = the amount of different types of abuse experienced.

Table 31 presents the findings that examine the relationship between the ascribed level of psychopathic traits and types of abuse that was reported to be experienced. Participants who rated their abuser as more psychopathic tended to experience more episodes of abuse that were categorized as physical, sexual, financial, and property. Emotional abuse was not included in the analysis as all participants indicated experiencing this type of abuse. The ascribed level of

psychopathic traits in abusers approached significance with participants' experiences of deception, $r = .135$, and substance abuse, $r = .135$, with a Bonferroni corrected p -value of .008. The findings are in line with the predictions of Hypothesis 1b. Please see Appendix T for bivariate correlations between the psychopathy factors and participants' experiences of abuse and mental health impairments.

Table 31

Bivariate correlations of abusers' ascribed level of psychopathic traits and types of abuse experienced by participants for Study 2.

	1	2	3	4	5	6	7	8
1.Psychopathic traits	-							
2.Physical	.269**	-						
3.Sexual	.222**	.159*	-					
4.Financial	.308**	.188**	.238**	-				
5.Deceit	.135	.071	.040	.127	-			
6.Spiritual	.021	.039	.122	.093	.013	-		
7.Substance	.135	.230**	.134	.163**	.074	.093	-	
8.Property	.304**	.312**	.173**	.366**	.111	.024	.192**	-

N = 392

p* < .006, *p* < .001

Note. Emotional abuse was not included due to the lack of variability in the scores (*N* = 392).

Research Question Two: Do survivors' perception of the impact that the abusive relationship had on their mental and physical health, along with their access to social support contribute to their current level of mental health impairments, when controlling for the amount of time since last contact with the abuser, relationship length, and when the abuse began?

To examine the effects that the self-perceived impact that the abusive relationship had on physical and mental health, and the levels of social support on the general mental health impairments of survivors, an exploratory factor analysis was first carried out. The purpose of the factor analysis was to examine whether PTSD, depression, and anxiety could be represented as a single, latent variable. To do perform the exploratory factor analysis it was first necessary to assess the factorability of these variables. Table 32 indicates that all three variables were correlated with each other, but not highly enough to be concerned over issues regarding multicollinearity or singularity.

The three mental health variables were then entered as variables in the exploratory factor analysis. The communalities displayed in Table 32 were also deemed adequate, which suggests the variables have a common variance. The single factor that was extracted had a robust eigenvalue of 1.91 and explained 63.74% of the total variance. The results from the factor analysis reveal that by leveraging the inter-correlations of the mental health variables of PTSD, depression, and anxiety, it is appropriate to reduce the mental health impairment variables to a single factor, which will from now on be termed the mental health status factor.

Table 32

Bivariate correlations and communalities of mental health impairment variables entered into the exploratory factor analysis.

	1	2	3
1.PTSD	-		
2.Depression	.466***	-	
3.Anxiety	.384***	.515***	-
Communality	.581	.702	.630

N = 392

****p* < .001

The hierarchical multiple regression with the mental health status factor as an outcome variable, revealed that the amount of time since participants' were last in contact with their abuser contributed to their level of mental health impairments, $F(1, 304) = 7.15, R^2 = .023, p < .01$. Specifically, participants who had been in contact with their abuser more recently reported elevated levels of mental health impairments (See Table 33). The addition of the length of the abusive relationship into the model was not found to increase its predictive power, $F(1, 303) = .025, \Delta R^2 = .000, p = .875$, nor did the introduction of the variable of when the abuse began in the relationship, $F(1, 302) = 2.60, \Delta R^2 = .004, p = .248$. Despite these additional non-significant variables, the model remained significant, $F(3, 302) = 2.83, R^2 = .027, p < .05$.

The self-perceived impact the relationship had on physical health and mental health was introduced into the model. Only the self-perceived impact on mental health was retained as it explained a unique portion of the variance in participants' mental health impairments, and significantly increased the predictive power of the model by 16%, $F(2, 300) = 30.70, \Delta R^2 = .164, p < .001$. The time since last contact with the abuser and the

self-perceived impact that the abusive relationship had on mental health significantly explained 19% of the variability of participants' mental health impairments, $F(5, 300) = 14.32, R^2 = .193, p < .001$. While, the self-perceived impact of the abusive relationship on physical health was not retained in the model, the beta weight was not significant (with a $p = .06$). The bivariate correlation with the mental health status factor was significant, $r = .230, p < .001$, which suggests that participants who perceived the abusive relationship to have a greater impact on their physical health also reported having higher levels of mental health impairments.

The perception of emotional forms of social support was the next variable to be retained and significantly increased its predictive power, $F(1, 299) = 13.07, \Delta R^2 = .037, p < .001$. More recent contact with the abuser, a greater self-perceived impact that the abusive relationship had on mental health, and a greater perception of emotional forms of support (as indicated by positive beta weights), significantly accounted for 22% of the variability in participants' levels of mental health impairments, $F(6, 299) = 14.82, R^2 = .229, p < .001$.

The introduction of the received amount of social support also significantly increased the predictive power of the model by approximately 3%, $F(1, 298) = 9.96, \Delta R^2 = .026, p < .001$. Although perceptions of tangible forms of support was also associated with mental health impairments, $r = .180, p < .001$, it did not explain an additional portion of the variance over and above that other two forms of support.

The final model significantly accounts for 25% of the variance in participants' levels of mental health impairments. Participants who were in more recent contact with their abuser, perceived the abusive relationship to have more of an impact on their mental

health, and had greater perceptions of emotional forms of support, and a greater reception of social support, tended to have elevated rates of mental health impairments, $F(7, 298) = 14.60$, $R^2 = .256$, $p < .001$. Hypothesis Two was partially supported. While the predictor variables generally did contribute to the model over and above the control variables, this was not the case for the self-perceived impact of the abusive relationship on physical health.

Table 33

Hierarchical multiple regression analysis of the impact on physical and mental health, along with social support had on current levels of mental health impairments, when controlling for time since last contact with the abuser, relationship length, and time when abuse began in the relationship.

	ΔR^2	Adj R ²	Pearson's r	β	95% CIs	
					Lower	Higher
Model 1	.023**	.020**				
Last contact			-.152**	-.152	-.151	-.023
Model 2	.000	.017*				
Length			.007	.009	-.073	.085
Model 3	.004	.018*				
Abuse began			-.055	-.069	-.090	.023
Model 4	.164***	.179***				
Impact on mental health			.400***	.358	.406	.769
Model 5	.037***	.214***				
PESS			.201***	.193	.034	.107
Model 6	.026***	.238***				
Received SS			.073	.189	.008	.034

n = 306

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

Note. Outcome variable is the mental health status factor. Length = relationship length in months and years, Last contact = time since last contact with the abuser in months and years, Abuse began = time since abuse began excluding participants who could not describe the time, or stated after marriage, engagement, or when the relationship ended, Impact on mental health = self-perceived impact that the abusive relationship had on mental health, Received SS = received social support, PESS = Perceived emotional social support.

Research Question Three: When controlling for the length of the relationship, the time that abuse began, and time since last contact with the abuser, are survivors' levels of resilience predicted by their current level of mental health impairments, and social support following their abusive relationship with a psychopathic partner?

The amount of time since last contact with the abuser did not contribute to participants' levels of resilience, $F(1, 304) = .000, p = .993, R^2 = .000$, nor did the length of the relationship, $F(1, 303) = 1.659, \Delta R^2 = .005, p = .199$, or the time that the abuse began in the relationship, $F(1, 302) = .623, \Delta R^2 = .002, p = .431$ (Table 34).

The introduction of the mental health status factor into the model significantly increased its predictive power of the model by approximately 10%, $F(1, 301) = 35.77, \Delta R^2 = .105, p < .001$. The level of mental health impairments was significantly predictive of participants' levels of resilience, in that participants with lower levels of mental health impairments tended to be more resilient, $F(4, 301) = 9.58, p < .001, R^2 = .113$.

Further, significant bivariate relationships were found for resilience and the perceived degree of emotional support, $r = -.190, p < .001$, perceived degree of tangible support, $r = -.145, p < .01$, and received social support, $r = .180, p < .001$. However, only the level of received social support increased the predictive power of the model, where the positive beta weight suggests that participants who received more social support tended to be more resilient, $F(1, 300) = 14.01, \Delta R^2 = .040, p < .001$. The model remained significant with the introduction of received social support, $F(5, 300) = 10.82, p < .001, R^2 = .153$.

Overall, the level of mental health impairments and the received level of social support accounted for 15% of the variability in participants' levels of resilience, when

controlling for the time since last contact with the abuser, when the abuse began, and the relationship length. Partial support for Hypothesis Three was found, as the perceived levels of social support was not retained in the model.

Table 34

Hierarchical multiple regression analysis assessing the impact that the current level of mental health impairments, and social support, has on resilience, when controlling for time since last contact with the abuser, relationship length, and time when abuse began in the relationship.

	ΔR^2	Adj R^2	Pearson's r	β	95% CIs	
					Lower	Higher
Model 1	.000	-.003				
Last contact			.001	.001	-.558	.563
Model 2	.005	-.001				
Length			.074	.074	-.239	1.143
Model 3	.007	-.002				
Abuse began			.065	.048	-.299	.700
Model 4	.113***	.101***				
Mental health			-.323***	-.329	-3.88	-2.04
Model 5	.153***	.139***				
Received SS			.183***	.203	.093	.299

n = 306

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

Note. Last contact = time since last contact with the abuser in months and years, Length = relationship length in months and years, Abuse began = time since abuse began excluding participants who could not describe the time, or stated after marriage, engagement, or when the relationship ended, Mental health = mental health status factor, Received SS = received social support.

Research Question Four: Are survivors' levels of post-traumatic growth predicted by their mental health impairments, social support, duration of abuse, amount of time since last contact with their abuser, and levels of resilience?

The hierarchical multiple regression revealed that the amount of time since last contact with the abuser was significantly predictive of participants' levels of post-

traumatic growth, $F(1, 304) = 9.13, R^2 = .029, p < .01$. The positive beta weights revealed that participants who have not been in contact with their abusers for a longer amount of time reported higher levels of post-traumatic growth (See Table 35).

The introduction of the length of the relationship into the model significantly increased its predictive power, in that, longer relationships were associated with higher levels of post-traumatic growth, $F(1, 303) = 6.79, \Delta R^2 = .021, p < .01$. The time since last contact and length of the relationship accounted for 5% of the variance in participants' levels of post-traumatic growth, $F(2, 302) = 8.04, p < .001, R^2 = .050$. The introduction of the time that the abuse began in the relationship into the model did effect its predictive power, $F(1, 302) = .029, \Delta R^2 = .000, p = .865$.

The mental health status factor provided a significant and unique contribution to the variance of post-traumatic growth, $F(1, 301) = 28.03, \Delta R^2 = .081, p < .001$. The mental health status factor increased the predictive power of the model by 8%, $F(4, 301) = 11.38, p < .001, R^2 = .131$. Lower levels of mental health impairments were predictive of participants' who experienced more post-traumatic growth.

The introduction of the level of perceived emotional support increased the predictive power of the model, $F(1, 300) = 49.41, \Delta R^2 = .124, p < .001$. The addition of the level of received social support also increased the predictive power of the model, $F(1, 299) = 5.91, \Delta R^2 = .014, p < .05$. Lower perceptions of emotional support and more received social support were predictive of higher levels of post-traumatic growth, $F(6, 299) = 18.40, p < .001, R^2 = .270$. The perceived degree of tangible support was only found to have a negative association with post-traumatic growth, $r = -.280, p < .01$, and it did not uniquely contribute to the model.

Resilience was also retained in the model as it significantly increased its predictive power, $F(1, 298) = 14.29$, $\Delta R^2 = .033$, $p < .001$. Overall, partial support was found for Hypothesis Four: lower levels of mental health impairments and perceived emotional support, higher levels of received social support and resilience, being in longer abusive relationships, and not being in contract with their abuser for a longer duration of time was predictive of participants' elevated levels of post traumatic growth, $F(7, 298) = 18.52$, $p < .001$, $R^2 = .303$. These variables explained approximately 30% of the variance in participants' ratings of post traumatic growth.

Table 35

Hierarchical multiple regression analysis whether current levels of mental health impairments, social support, and levels of resilience predict post-traumatic growth, when controlling for time since last contact with the abuser, relationship length, and time when abuse began in the relationship.

	ΔR^2	Adj R ²	Pearson's r	β	95% CIs	
					Lower	Higher
Model 1	.029**	.026**				
Last contact			.171***	.171	.874	4.136
Model 2	.021**	.044***				
Length			.148**	.146	.642	4.630
Model 3	.000	.041**				
Abuse began			.029	-.010	-1.567	1.318
Model 4	.081***	.120***				
Mental health			-.304***	-.280	-10.14	-4.64
Model 5	.124***					
PSS		.243***	-.404***	-.363	-4.341	-2.449
Model 6	.014*					
Received SS		.255***	.271***	.142	.077	.735
Model 7	.033***					
Resilience		.287***	.335***	.199	.281	.892

n = 306

p < .01, *p < .001

Note. Length = relationship length in months and years, Last contact = time since last contact with the abuser in months and years, Abuse began = time since abuse began excluding participants who could not describe the time, or stated after marriage, engagement, or when the relationship ended, Mental health = mental health status factor, PSS = Perceived emotional support, Received SS = received social support.

Research Question Five: Do survivors' somatic markers permit them to decide advantageously on the Iowa Gambling Task? Is their decision making impacted by their symptoms of mental health conditions, or their levels of post-traumatic growth and resilience?

The mental health variables, resilience, and post-traumatic growth did not yield significant bivariate correlations with disadvantageous deck selections in any of the blocks in the IGT. See Table 36 for the descriptive statistics for the net scores across the

blocks, and the bivariate correlation coefficients between the mental health variables, post-traumatic growth, and resilience. Due to the lack of significant bivariate correlations between the recovery outcome variables and disadvantageous deck selection, they were not included into the ANOVA model.

Table 36

Bivariate correlations between the number of disadvantageous deck selections by block and current levels of mental health impairments, post-traumatic growth, and resilience.

	<i>M (SD)</i>	Block 1	Block 2	Block 3	Block 4	Block 5
Growth	64.46 (26.13)	-.052	.063	-.048	.082	-.050
Resilience	39.09 (8.91)	-.083	-.116	-.081	-.010	.030
PTSD	67.83 (14.48)	-.027	.023	-.112	-.019	.069
Anxiety	65.64 (32.34)	-.008	.024	.044	.044	.013
Depression	24.55 (13.79)	.056	.073	-.033	-.029	.074

n = 247

Note. Growth = post-traumatic growth

A repeated measures ANOVA was used to examine if participants learned to avoid disadvantageous deck selections over the course of the IGT. The analysis revealed a significant main effect of Block, indicating that participants' decision making changed over the course of the IGT, $F(3.14, 838.92) = 41.71, p < .001, \eta^2 = .145$.

As shown in Figure 4, participants decreased their selection of disadvantageous decks after the third block. This was verified with the Sidak post-hoc analyses, which revealed that during block 5 participants selected significantly fewer disadvantageous decks ($M = 7.56, SD = 5.29$), compared to block 1 ($M = 10.82, SD = 5.69, p < .001$), block 2 ($M = 13.16, SD = 6.08, p < .001$), block 3 ($M = 12.71, SD = 6.69, p < .001$), and block 4 ($M = 12.16, SD = 5.76, p < .001$). Further, significantly more disadvantageous deck selections were made in block 2 ($M = 13.16, SD = 6.08, p < .01$) and block 3 ($M =$

$12.71, SD = 6.69, p < .001$), compared to block 1 ($M = 10.82, SD = 5.69, p < .001$). None of the hypotheses for Research Question five were supported.

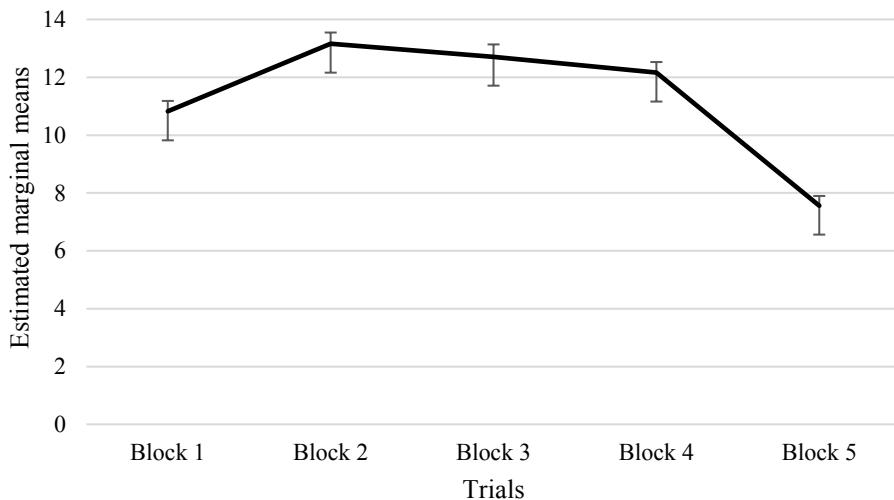


Figure 4. Estimated marginal means of net score across the trials in the IGT with error bars representative of standard error

Research Question Six: Do survivors' who display more positive outcomes (e.g., more resilience, lower levels of PTSD symptoms) better able to categorize facial affect, than those who display more negative outcomes (e.g., higher levels of anxiety, lower levels of post-traumatic growth)?

A 5×6 repeated measures ANOVA (Intensity \times Emotion) was used to examine if participants' accuracy ratings of facial affect varied according to the level of emotional intensity and emotion type that was expressed by the faces.

The analysis revealed a significant main effect of Intensity, indicating that participants' accuracy in categorizing facial affect, regardless of the type of emotion that was expressed, varied according to the level of emotional intensity of each block (of 12 trials), $F(4, 2.855) = 763.37, p < .001, \eta^2 = .800$. As shown in Figure 5, participants'

accuracy ratings increased as the level of emotional intensity increased across the blocks. This was verified with the Sidak post-hoc analyses, which revealed participants' accuracy had a significant and linear improvement from block 1 at 20% intensity ($M = 27.65, SE = .931, p < .001$), block 2 at 40% intensity ($M = 67.19, SE = 1.51, p < .001$), block 3 at 60% intensity ($M = 82.90, SE = 1.15, p < .001$), block 4 at 80% intensity ($M = 89.24, SE = .823, p < .001$), and to block 5 at 100% intensity ($M = 91.88, SE = .784, p < .001$).

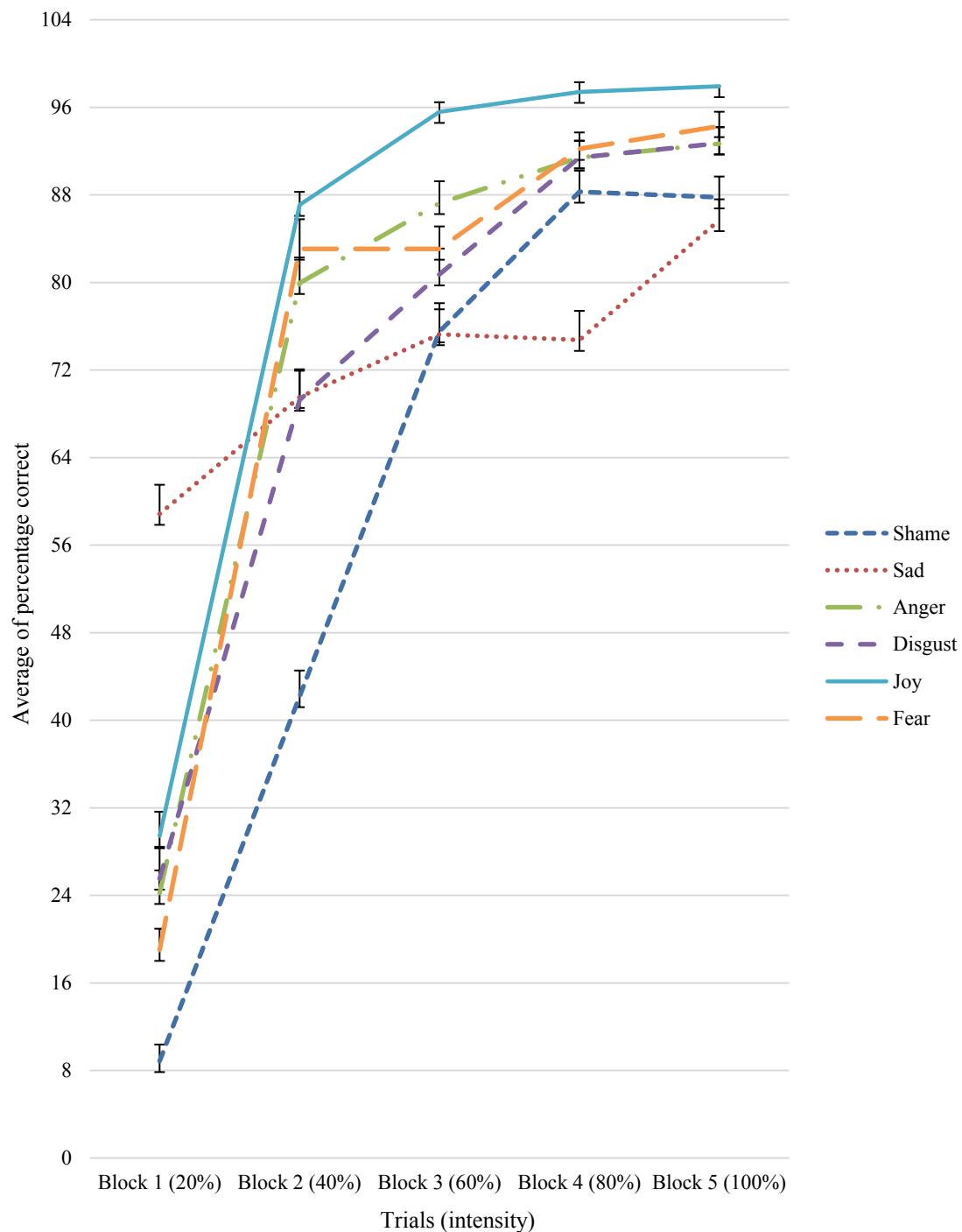


Figure 5. Estimated marginal means of the percentage of accurate ratings of facial affect by emotion type by each block with error bars representative of standard error

A significant main effect of Emotion was also found, which indicates that participants accuracy ratings varied according to emotion type and irrespective of the level of

emotional intensity, $F(5, 4.517) = 39.71, p < .001, \eta^2 = .172$. As shown in Figure 6, participants had the highest accuracy ratings for facial expressions of joy and the lowest accuracy ratings for shame. Sidak post-hoc analyses verified that joy had the most accurate ratings ($M = 80.68, SE = .871, p < .001$), and shame had the least ($M = 60.52, SE = 1.22, p < .001$). Following joy, anger was the next most accurately rated ($M = 75.16, SE = 1.00, p < .001$), significantly more so than expressions of fear ($M = 69.53, SE = 1.13, p < .001$).

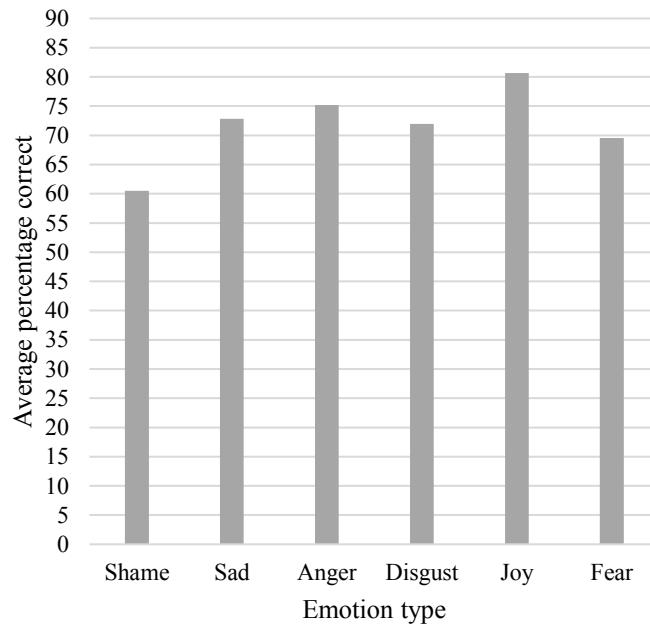


Figure 6. Estimated marginal means of the percentage of accurate ratings of facial affect by emotion type with error bars representative of standard error

These main effects were superseded by an Intensity \times Emotion interaction effect, which indicates that participants' accuracy ratings were dependent on the level of intensity of the emotional expression and the type of emotion that was expressed, $F(20, 15.05) = 35.05, p < .001, \eta^2 = .155$.

A noticeable trend in Figure 5 is that at the lowest level of intensity (20%), sad facial expressions had the highest rates ($M = 58.90$, $SE = 2.66$) of accurate categorizations and shame had the lowest rates ($M = 8.60$; $SE = 1.52$). However, as the levels of intensity increased, participants had the lowest rates of improvement of their accuracy ratings for sad faces, with a slight drop in accuracy ratings at 80% intensity ($M = 74.7$; $SE = 2.66$). While the accuracy ratings for sad faces improved at 100% intensity ($M = 85.68$; $SE = 1.91$), sad faces remained the least accurately categorized, which was followed by shameful faces ($M = 87.76$; $SE = 1.91$).

A series of $2 \times 5 \times 6$ mixed ANOVAs (Group \times Intensity \times Emotion) were performed to examine the influence that high and low ratings of PTSD symptoms, anxiety, depressive symptoms, resilience, and post-traumatic growth had on accuracy ratings of facial affect, in relation to levels of intensity and emotion type. The recovery outcomes variables did not affect participants' ability to accurately categorize facial affect, either in terms of emotion type or the level of intensity (for non-significant findings see Appendix U). No evidence was found to support Hypothesis Six.

Discussion- Study 2

The purpose of Study 2 was to empirically assess the use of the Somatic Marker Hypothesis (SMH) to investigate Whiffen and MacIntosh's (2005) proposed pathway between emotional functioning and interpersonal relationships in a sample of survivors of a romantic relationship with a psychopathic abuser.

The results from Study 2 replicated that of Study 1a. Abusers' levels of psychopathic traits were: 1) predicted by survivors' levels of PTSD symptoms, and experiences of abuse that was frequent and versatile, and 2) related to physical, property,

and financial forms of abuse. In contrast to Study 1a, the results from Study 2 also found the ascribed levels of psychopathic traits in abusers to be predicted by the degree of harm that survivors sustained from abuse, and were related to survivors' experiences of sexual abuse.

These findings for Study 2 were likely due to its greater statistical power from a larger sample size that enhanced the trends observed in Study 1. It is also important to note that in Study 1a survivors were asked to identify the types of abuse they experienced by "checking" all that apply, where participants could specify their experience in an open-ended response if they wished. However, in Study 2 participants were only provided an open-ended item to indicate the different types of abuse they experienced. This resulted in many survivors explaining why they felt they did or did not experience these types of abuse. It was evident during the data cleaning phase of Study 2 that many participants did not identify with how I would define sexual abuse (e.g., some survivors limited sexual abuse to physical force). For this reason, a coding scheme was constructed during the phase of data cleaning to ensure consistency.

The results of Study 2 support the first set of hypotheses, and are in line with prior research on psychopathic abusers. Prior research found that abusers with elevated levels of psychopathic traits engage in severe forms of violence (Huss & Langhinrichsen-Rohling, 2000; Petersson et al., 2016), along with frequent (Huss & Ralston, 2008) and versatile forms of abuse during romantic relationships (Petersson et al., 2016; Williams et al., 2005). Further, psychopathic traits in domestic abusers are consistently related to engagement in physical, sexual, financial, and property forms of abuse (Kirkman, 2005; Pagliaro, 2009; Petersson et al., 2016; Williams et al., 2005). Similar to Study 1, the

majority of the sample in Study 2 experienced deception and emotional abuse. Thus, in line with prior research, the results of the present study indicate that psychopathic abusers are prone to perpetrate deception (e.g., aliases, infidelities), and other forms of emotional abuse (Graña et al., 2014; Kirkman, 2005; Pagliaro, 2009).

Somatic Marker Functioning in Survivors of Psychopathic Abusers

Overall, the results from Study 2 do not clarify the relationship between somatic marker functioning and recovery outcomes in survivors of psychopathic abusers during romantic relationships. Specifically, the hypotheses for research questions five and six were not supported: survivors' level of mental health impairments, or experiences of positive outcomes (i.e., post-traumatic growth, resilience) were not found to be associated with their performance on the IGT or the facial affect recognition task.

Generally, survivors performed well on both tasks. In the IGT, survivors increasingly began to decrease their selections from disadvantageous decks around the midpoint of the task (around block three). This trend is similar to that of healthy controls in prior IGT studies (e.g., Bechara et al., 1997), including a study that utilized an online data collection method (Humeny et al., 2016). In terms of facial recognition, survivors were the most accurate in rating facial expressions of joy and faces at higher levels of intensity, and were the least accurate at categorizing expressions of shame, and faces at lower levels of intensity. Normative data on facial recognition tasks have found similar trends. For example, basic emotions (e.g., joy) are easier to categorize than secondary emotions (e.g., shame; Tracy, Robins, & Schriber, 2009). Further, positive emotions of joy have been found to have higher accuracy rates than negative emotions, such as fear, in both controls and individuals with PTSD (Poljac et al., 2011).

The results for hypotheses five and six are surprising, especially considering that ample evidence suggests that survivors of domestic abuse and/or psychopathic abusers experience symptoms of PTSD, depression, and anxiety, and have difficulties in subsequent interpersonal relationships (e.g., revictimization, diminished perception and reception of social support; Brown, 2008; Devries et al., 2013; Foa et al., 2000; Gutner et al., 2006; Pagliaro, 2009; Thomas et al., 2014; Trevillion et al., 2012). There is also an extensive body of research that finds social functioning to be predicted by individuals' ability to accurately categorize facial affect (Frigerio et al., 2002; Marsh et al., 2007; Schidt & Zachariae, 2009). Further, elevated symptoms of depression, PTSD, or anxiety are consistently found to impair facial affect recognition and everyday functioning, including decision making and problem solving (Cella et al., 2010; Heuer et al., 2010; Mueller et al., 2010; Poljac et al., 2011; Qureshi et al., 2010; Yoon et al., 2009). These findings have been explained by a dysfunction in brain areas associated with the somatic marker system (e.g., amygdala, OFPC; Davidson, 2002; Dannlowski et al., 2007; Damasio, 1994; Fonzo et al., 2010; Rolls, 2008).

There may be a number of reasons why the findings did not align with the hypotheses for research question five and six. First, the tasks were the last portion of the study. There was a high dropout rate between the 392 participants who completed the questionnaire portion, 247 who completed the IGT, and the 193 participants who completed the facial affect recognition task. Participants who encountered difficulties (e.g., feelings of frustration) during either of the tasks may have dropped out of the study, which may have left only those participants who felt they had effectively performed the

task. These outcomes could have been mitigated if the tasks were closer to the beginning of the study.

The facial affect recognition task was only assessed in terms of accuracy, which may not be sensitive enough to capture individual differences. Prior review papers have suggested that a longer stimulus duration during facial affect recognition tasks can improve accuracy ratings among samples with depression (Bistricky et al., 2011). Further, domestic abuse survivors with clinical levels of PTSD have been found to have slower processing speed than controls (DePrince & Freyd, 2004; Twamley et al., 2009). Thus, an assessment of reaction time, fMRI, or electroencephalogram (EEG) when categorizing the faces may have provided a more sensitive assessment of somatic marker functioning as related to survivors' recovery outcomes (e.g., elevated resilience or diminished experiences of anxiety).

In terms of methodological issues, the facial affect recognition task was organized so that there was no practice portion. Participants may have done poorer on the first block because they spent this time learning the nature of the task, which may have taken attentional resources away from processing the facial stimuli. Further, the task utilized two male faces of varying emotional expressions, where the emotional intensity increased across the blocks. Participants may have recognized similar faces and expressions in earlier blocks that may have aided them in classifying the faces in the later blocks. The task may have been subject to practice effects and may have benefited from a practice portion and counterbalancing of the intensity levels of the stimuli. Facial affect recognition tasks and the IGT have predominately been assessed in a lab setting. It may

be that, although online studies are well-suited for collecting questionnaire data, they may not be as effective when collecting data from tasks requiring perceptual judgements.

The majority of studies that were reviewed in the introduction on the IGT and facial affect recognition tasks were from clinical samples, were not specific to domestic abuse survivors, and were compared against a control group. The current study recruited participants who identified as being previously abused by a psychopathic individual and explored survivors' ranges of scores on a number of variables. Although survivors reported high rates of PTSD symptoms, for example, there may not be enough variability in the ranges of scores to capture differences on the tasks. It could also be that the high and low groups on the variables that assessed mental health impairments were not extreme enough. For example, the low PTSD group had an average IES-R score of 45.9 and the high had an average score of 76.5 (see Appendix U). Creamer and colleagues (2003) argued that an IES-R score above 33 indicates a high degree of PTSD symptomology. Thus, differences on performance on the tasks could have been examined using scores on the mental health variables that would be considered as high and low in comparison to normative data (e.g., scores below 33 on the IES-R), as opposed to what was in the top and bottom 33% of the current sample.

The analysis of the two tasks provided an exploratory view of resilience and post-traumatic growth in relation to somatic marker functioning. Arce and colleagues (2009) found the only empirical evidence for the association between resilience and facial affect recognition. The majority of research on social functioning, and resilience and post-traumatic growth has been from either qualitative data, conceptual reviews, or from self-report questionnaires relating to social support. Further, the argument for resilience and

post-traumatic growth being associated with problem solving and effectively utilizing emotional information tends to mainly be from conceptual review papers. Therefore, no strong empirical evidence exists for the notion that elevated levels of resilience and/or post-traumatic growth will lead to better performance on the IGT or the facial recognition task.

Evidence for the Pathways Between Recovery Outcomes and Social Support

While the current sample of survivors of psychopathic abusers appear to have relatively intact somatic marker functioning (as evident from the performance on the IGT and facial affect recognition task), it is important to note that there is currently no empirical evidence to support the relation between somatic marker functioning and Whiffen and MacIntosh's (2005) proposed pathways in survivors' recovery. Yet, the results of Study 2 do provide evidence for the pathways between survivors' recovery outcomes (e.g., levels of PTSD, resilience) and interpersonal functioning that shed light on Whiffen and MacIntosh's (2005) feedback pathway.

It is important to reiterate that while survivors did identify as being abused by a psychopathic partner, and the average MSRP-S score ($M = 98.63$) for Study 2 was higher than that of normative data from Beaudette (2012; $M = 87.2$), the Study 2 analyses examined the full range of MSRP-S scores, ranging from 33 - 142. Thus, the analysis does reflect those participants who scored their abuser as low on the MSRP-S, thus the construct of psychopathy may not be an appropriate label for these abusers. The analyses for Hypothesis Two to Four could be redone to include only those participants who rated their abuser as high on the MSRP-S to truly examine those survivors of psychopathic abusers [similar to Beaudette's (2012) and Pagliaro's (2009) methods].

Partial support was found for Hypothesis Two. Survivors who were in more recent contact with their abuser reported elevated levels of mental health impairments (i.e., symptoms of anxiety, PTSD, and depression). This finding parallels research that suggests traumatic experiences (e.g. communicating with an abuser) that are more recent are associated with elevated levels of distress (Hayes et al., 2012; Kleim & Ehlers, 2009).

The self-perceived impact of the abusive relationship on mental health and levels of social support (i.e., elevated levels of receiving social support and perceiving emotional support) were found to contribute to survivors' levels of mental health impairments, when controlling for the time since last contact with the abuser, relationship length, and when the abuse began in the relationship.

The self-perceived impact that the abusive relationship had on physical health was not significant in the regression model, but was significantly correlated with survivors' mental health impairments. Thus, survivors appear to perceive that their abusive relationship negatively impacted their physical health; however, this was not found to be over and above that of the impact that the relationship had on their mental health. The findings are consistent with prior research that finds domestic abuse and abuse committed by a psychopathic individual contributes to significant declines in the mental health of survivors (Devries et al., 2013; Foa et al., 2000; Pagliaro, 2009; Trevillion et al., 2012). Further, research has found that psychological forms of abuse (e.g., deception, emotional abuse) precede, and/or occur in conjunction with, physical forms of abuse (Mechanic et al., 2008a; Queen, 2007; Schumacher & Leonard, 2005). While it is expected that psychopathic abusers would contribute physically harmful forms of abuse (due to their association with severe violence; Huss & Langhinrichsen-Rohling, 2000; Petersson et al.,

2016), it was also anticipated that psychopathic abusers would be skilled at engaging in implicit forms of abuse (e.g., deception, manipulation) that would be particularly detrimental to their victims' mental health.

Similar to Study 1, the majority of the sample did not experience severe forms of physical harm from the abuse, even though more than half of the sample identified as experiencing physical and sexual forms of abuse. Survivors who identified as having experienced sexual forms of abuse often cited being psychologically coerced into performing sexual acts, as opposed to being physically forced. One hundred percent of survivors experienced emotional abuse, the majority experienced deception, followed by financial and property abuse. Thus, survivors encountered more situations that adversely affected their mental health (e.g., sexual abuse, financial abuse) than situations that harmed their physical health. For example, economic forms of abuse can lead to stressors in other areas of the victim's life, such as financial and occupational stress (LeBlanc et al., 2014; Townsend, 2009).

While physical abuse can be detrimental to physical and mental health, it appears that non-physical forms of abuse tend to be more immersed in the dynamics of the relationship, are more long-term, frequent, and difficult to objectively define as abusive (Foran et al., 2014; Lawrence et al., 2009; Queen, 2007; Schumacher & Leonard, 2005). Further, when survivors rated a higher impact of the relationship on physical health they may have only taken into account the direct impact of abuse on physical health, such as injuries from physical assault. The physical effects of abuse can often occur indirectly. These include the impact of chronic stress on immune system functioning or

cardiovascular health, and maladaptive coping behaviours (e.g., eating disorders; Anderson, 2010; Kernic et al., 2000).

Elevated levels of social support (i.e., receiving and perceiving emotional support) was not expected in the current sample to be predictive of survivors' mental health impairments. A consistent trend in research has been that social support mitigates the detrimental effect that domestic abuse has on survivors' mental health (Canady & Babcock, 2009; Coker et al., 2002; Madsen & Abell, 2010). However, research has also suggested that social support may be important in the initial recovery from trauma and not in the later stages (Schwarzer et al., 2006).

On the other hand, it may be that survivors who experience elevated levels of mental health impairments may need more social support, which could be why they report higher rates of perceiving and receiving social support. Yet, the current study did not provide an assessment of the extent that survivors feel they need social support. It may also be that because survivors completed self-report questionnaires on their experiences of symptoms of anxiety, PTSD, and depression, that the analysis was essentially assessing their level of awareness of the impairment (this is a general limitation of using self-report measures to examine mental health impairments). It may be also that survivors who report higher levels of mental health impairments are more aware of their impairments (than those who report lower levels) because they have social support that could express to them that they are experiencing negative reactions from their abusive relationships, and/or can validate their experiences of these mental health impairments.

The finding on social support and mental health impairments may also be linked to the time since last contact with the abuser. The majority of survivors had recently ended contact with their abuser, with 40.1% ending contact within the last year. Approximately 18% of survivors reported being in current contact with their abuser. In the early stages of exiting and/or coping with an abusive relationship, survivors may react with elevated levels of mental health impairments, regardless of the degree of social support. Over time, as survivors adapt to their new circumstances and recover from their experiences, they may better be able to utilize and benefit from their social resources. Further, survivors were recruited from domestic abuse support websites. This suggests that survivors were experiencing enough distress from their experience to search for meaning and an understanding of their experience, along with a desire to connect (e.g., openness to receiving support, willingness to provide advice) with other individuals in similar situations.

Predictors of positive functioning in survivors of psychopathic abusers.

Partial support was found for Hypothesis Three and Four for the predictors of positive functioning following a romantic relationship with a psychopathic abuser.

In terms of resilience, while all forms of social support were correlated with survivors' levels of resilience, only the received level of social support was uniquely predictive of survivors' resilience. Perceptions of tangible and emotional forms of support did not uniquely contribute to survivors' levels of resilience over and above that of the received level of social support.

The findings for Hypothesis Three parallel prior research which suggests social support can foster survivors' resilience (Banyard & Williams, 2007; Holliman, 2006;

Lynch et al., 2006) by facilitating healthy coping mechanisms and promoting self-disclosure (e.g., emotional expression; Canady & Babcock, 2009). Self-disclosure is associated with enhanced feelings of closeness with others and openness to accept social support (Lepore et al., 2004).

Survivors' resilience was also found to be predicted by their level of their mental health impairments (i.e., symptoms of anxiety, PTSD, and depression). Results for Hypothesis Three parallel the consistent trend in research that finds elevated levels of resilience to be associated with lower levels of mental health impairments (Bonnano, 2004; Dutton & Greene, 2010; Mancini & Bonnano, 2006).

Partial support was found for Hypothesis Four. Survivors' post-traumatic growth was predicted by lower levels of mental health impairments, elevated levels of resilience, lower levels of perceived emotional support, higher rates of received social support, being in a longer abusive relationship, and not being in contact with their abuser for a longer duration. While findings from research on mental health impairments and post-traumatic growth have not been consistent, the current findings align with research that suggests lower levels of mental health impairments are needed for survivors to have adequate resources for coping and to engage in meaning making/benefit finding, which they may not have if they were experiencing elevated levels of mental health impairments (Johnson et al., 2007; Joseph et al., 2012; Westphal & Bonnano, 2007).

Post-traumatic growth and social support. Research has consistently found the reception of social support to be a protective factor for survivors, which can facilitate recovery and diminish levels of mental health impairments (Cobb et al., 2006; Coker et al., 2002; Richardson, 2002). I did not expect that elevated levels of post-traumatic

growth would be predicted by lower levels of perceived emotional support, especially because survivors' post-traumatic growth was also predicted by higher rates of received social support. Perhaps survivors with elevated levels of post-traumatic growth perceive lower levels of emotional support because post-traumatic growth is associated with self-reliance, self-appreciation, assertiveness, and increased feelings of control over one's life (Cobb et al., 2006; Linley & Joseph, 2004; Tedeschi, 1996). These survivors may feel they themselves, not their social support, are primarily responsible for the positive changes they have made in recovery.

Further, the perceptions of emotional forms of support factor scores used in the analysis are comprised of three items because the total score from the PSS scale was not found to be internally consistent. There may be measurement issues with using only three items as a measure for perceived levels of emotional support. It may also be that while survivors may be receiving elevated levels of social support, they may not feel they have people in their support network with whom they can comfortably share their private issues. A perceptual bias by survivors may also account for their perception of social support. Survivors of domestic abuse, especially those who have survived a psychopathic abuser, frequently develop a lack of trust for other people (Brown, 2008; Bergstrom & Forth, 2011).

Whiffen and MacIntosh's (2005) hypothesize that survivors commonly distance themselves emotionally from others. However, in line with prior evidence, survivors with elevated levels of post-traumatic growth, although open to receiving support from others, may also act in their own self-interest by distancing themselves from others as a protective mechanism (Linley & Joseph, 2004; Tedeschi, 1996). The rational underlying

the findings for social support and post-traumatic growth are speculative. Further investigation is needed to understand the mechanisms underlying perceived and received social support in survivors of psychopathic abusers who achieve post-traumatic growth. One avenue could be to examine the discrepancy between the rates of perceived and received social support, and/or assess survivors' need for social support during their recovery.

Post-traumatic growth and resilience. The results for hypotheses three and four suggest that post-traumatic growth and resilience are distinct but interrelated concepts. Specifically, survivors' levels of resilience contributed to their post-traumatic growth. This is consistent with that of Benismon (2012), who found a positive association between resilience and post-traumatic growth. This finding may be due to characteristics of the scales used to assess the two concepts, which may highlight the common outcomes that are associated with both concepts, such as social support, positive emotional experiences, and adaptive coping skills. In the regression models, both resilience and post-traumatic growth were predicted by lower levels of mental health impairments and elevated levels of received social support. Although survivors' levels of resilience were not associated with relationship characteristics (e.g., length, time since last contact), survivors with elevated levels of post-traumatic growth had been in a longer-term abusive relationship and were not in contact with their abuser for a longer duration, than those with lower levels of post-traumatic growth.

The differences between the variables predicting these two positive functioning variables may be because resilience is a dynamic, yet trait-like characteristic (Luthar,

2006). It provides a protective mechanism during adversity that permits individuals to emerge relatively unchanged (Bonanno, 2004; Levine et al., 2009).

On the other hand, post-traumatic growth is contingent on the extent the survivors' worldview has been invalidated, and whether they engage in meaning making/benefit finding of the trauma (Tedeschi & Calhoun, 2006). Research has found post-traumatic growth to be dependent on several factors, including the time that has elapsed since the trauma (Helgeson et al., 2006), subjective severity of the trauma (Frazier et al., 2001; Tedeschi & Calhoun, 2006), and level of distress (Benismon, 2012; Kunst, 2010).

Those survivors in the current sample who had higher levels of post-traumatic growth and who were in the abusive relationship for a longer duration may have: 1) experienced severe and frequent forms of abuse, and/or 2) perceived the abusive relationship as having a more negative impact due to the amount of time of that had been invested in the abusive relationship. These factors may have prompted survivors to: 1) have their worldview invalidated, 2) reconstruct their cognitive schemas, and 3) engage in meaning making/benefit finding of their experience in the abusive relationship.

Prior research has suggested that post-traumatic growth is a process that occurs over time (Tedeschi & Calhoun, 2006), and that elevated rates of post-traumatic growth are associated with longer periods of time since the trauma (Helgeson et al., 2006). Thus, it follows that survivors in the current sample who have not been in contact with their abuser for longer durations may have more time to recover from the abusive relationship (as evident from lower levels of mental health impairments), without being interrupted by negative emotional triggers arising from contact with their abuser. Further, they may have

had more opportunities to engage in the processes that precede post-traumatic growth (e.g., benefit finding), than those who have been in recent contact with their abuser.

Limitations

The study has several limitations that should be taken into consideration when interpreting the findings. The study voluntarily recruited participants solely from domestic abuse support websites where there was likely a selection bias. This is especially because between Study 1 and Study 2 there were changes in the recruitment announcements²⁷ that included a more detailed description of psychopathic characteristics of abusers (see Appendix A and Appendix K for announcements). While the intention was to ensure that recruitment targeted participants who experienced abusers with a high degree of psychopathic traits, this recruitment method may have placed constraints on recruiting a more diverse pool of participants (e.g., wider range of scores on MSRP-S and recovery outcome variables).

Further, the current sample represents a specific subset of survivors who are either seeking social support, an outlet for emotional disclosure, and/or to build connections with others. The use of domestic abuse websites and participation in a study may be a means in which survivors feel they are engaging in meaning making of their trauma. For example, survivors may feel they are helping others in similar situations, or working toward preventing these experiences from happening to others. Due to the low dropout rate of the survey portion of the study, participants apparently had sufficient mental (e.g., attention, motivation concentration) and emotional resources (e.g., ability to safely manage triggering material). Thus, these survivors may have elevated levels of resilience

²⁷ Due to changes in the Carleton University Ethics Review Board protocol that required additional details for the recruitment announcement and informed consent for Study 2.

and/or post-traumatic growth and lower levels of mental health impairments than survivors recruited from other settings (e.g., women's shelters), and/or with compensation (e.g., monetary, counselling resources).

The controlled environment of lab-based studies may provide an advantage when conducting research with sensitive populations compared to the online methodology used in the present study. Lab-based studies provide one-on-one instruction for participants by the researcher and an immediate source for help if issues arise. Lab-based studies appear also appear more legitimate and comfortable for sensitive populations.

The current sample was predominately highly educated, female, and Caucasian. Prior research has found socio-demographics factors to contribute to domestic abuse survivors' recovery (Statistics Canada, 2016). Further, participants with higher levels of education may be more comfortable with the university research study process, and, as previously mentioned, may have more attentional resources (e.g., concentration) to complete the survey portion. These attentional factors may be particularly important due to the online nature of the study.

Limitations may also be due to the assessment tools used. The limitations of the modified SRP were previously reviewed (see p. 95 and p. 146). The modified SRP has been used in other studies that examined psychopath survivors (e.g., Beaudette, 2012; Pagliario, 2009; Uzieblo et al., 2011). Although the scale has been used to examine the ascribed level of psychopathic traits in populations that vary in terms of their relationship with the psychopathic abuser (e.g., romantic partner, co-worker), the modified SRP has yet to be validated in a survivor population, particularly in domestic abuse survivors. Specifically, the items on the scale have not been tailored to a sample that reports

psychopathic individuals who engage in more immoral, rather than criminal behaviours, or includes questions that are specific to domestic abuse experiences. Nonetheless, the results from Study 2 found the lowest scores for the antisocial facet, a finding that coincides with that of Study 1. This finding highlights that the interpersonal and emotional traits may be more integral to the construct of psychopathy than the antisocial traits (e.g., Book et al., 2013), particularly in a community sample.

There were also measurement issues for the VSS. The item about duration since last contact could have been more comprehensive. The item did not take into consideration when the romantic relationship ended (e.g., number of attempts to leave the relationship), if survivors were voluntarily or involuntarily in contact with their abuser (e.g., stalking), or the type of last contact (e.g., in person, email, phone calls). The item that assessed when the abuse began in the relationship was also poorly formulated as an open-ended question, which resulted in data that could not be included in the regression models. Participants often misinterpreted the question as asking when they realized the relationship was abusive as opposed to when, reflecting back, their abuser started abusive behaviours. Including a timeline of response options, which are similar to the responses used for the items that assessed relationship length or time since last contact with the abuser, may have mitigated this problem.

Future Directions

Study 2 did not find empirical evidence that supported the use of the SMH for providing insight into Whiffen and MacIntosh's (2005) feedback pathway between emotional and interpersonal functioning. Because Study 2 was exploratory, a future study would be beneficial to replicate aspects of the current study in a lab-based setting with a

smaller sample size (i.e., 100 participants). This study could examine the tasks with a control group, while also addressing the more general limitations that were outlined above. This could include recruiting from different sources (e.g., university sample, women's shelter), providing compensation for participation, and refining measurement techniques. These measurement techniques could include counterbalancing the tasks within the self-report questionnaires and a more focused set of self-report questionnaires to limit the length of the study.

A replication study could also include a mixed-methods approach utilizing qualitative data from in-person interviews, along with quantitative data from scores on self-report questionnaires and tasks. The in-person interviews could target social relationships more specifically. This could include assessments of current perceptions and reception of social support, as well as assessments of social support during the abusive relationship and when exiting the relationship. Such qualitative research could better inform the pathways proposed by Whiffen and MacIntosh (2005) by examining survivors' level of positive and negative functioning (e.g., IGT performance, levels of post-traumatic growth). This research has theoretical importance, not only for understanding the recovery outcomes of survivors of psychopathic abusers, but also in shedding conceptual insight into the role of social support in post-traumatic growth, and for providing empirical evidence for conceptualizing resilience as distinct concept from post-traumatic growth.

In terms of facilitating a theory of psychopathy and domestic abuse, a mixed-methods approach may be a useful avenue for investigating Holtzworth-Munroe and Stuart's (1994) Batterer Typologies, or Johnson's (2008) typologies of abusers based on

coercion of control from the perspective of survivors. Recruitment of survivors of domestic abuse (not specific to psychopathic abusers) would be useful to provide a variable range of experiences. These experiences may include assessment of understudied areas of cyber abuse and economic forms of abuse. Abusers typologies can then be categorized based on the experiences of survivors. Further, comparisons can be made between survivors who experience an abuser who they rate as high on psychopathic traits, in comparison to those abusers who are less psychopathic (and fit into another construct or typology, such as borderline/dysphoric). This would not only provide another perspective to complement Holtzworth-Munroe and Stuart's (1994) and Johnson's (2008) research, but would also provide a more casual link between survivors' abuse experiences and recovery, in relation to the degree of psychopathic features they experienced in their abusers. This research would provide insight into how to assess risk, areas for intervention, and treatment options for survivors based on the specific typology they experienced.

A more sophisticated statistical analysis would also be useful next step to investigate Whiffen and MacIntosh's (2005) feedback pathway. This is because in Study 2 there were a number of factors that likely contribute to the relationship between survivors' emotional functioning and their interpersonal relationships. While the regression models did include control variables (e.g., relationship length), they did not simultaneously take into account the numerous variables that were assessed in the study. For example, the regression models did not include possible confounding variables, such as socio-demographic factors. Latent pathway modelling would enable a more comprehensive investigation of the conceptual model presented in Figure 7. The model

depicts how survivors' variables associated with positive outcomes (e.g., resilience) may influence Whiffen and MacIntosh's (2005) feedback pathway between survivors of psychopathic abusers' emotional functioning and their interpersonal relationships.

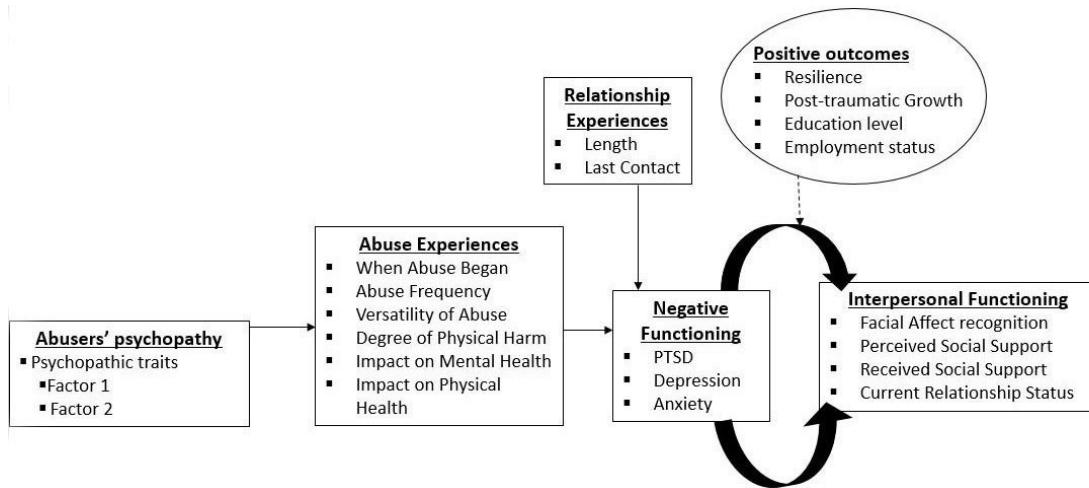


Figure 7. Proposed conceptual model of the pathways contributing to positive and negative functioning in survivors of psychopathic abusers

A second step to have a future study include measures of emotion regulation [e.g., Gratz & Roemer's (2004) difficulties with emotion regulation scale], the discrepancy between received and perceived social support, and the perceived need for social support to examine the pathways between emotional and interpersonal functioning following an abusive romantic relationship.

In terms of the task data, hierarchical linear modelling techniques may be a useful means for understanding the influence that specific variables and their interactions with other variables on performance. Of particular interest, would be the interaction between positive (e.g., resilience) and negative (e.g., PTSD symptoms) recovery outcomes on performance in the facial affect recognition task and the IGT. Such a model could also

control for variables including education level, age, gender, and the extent of recovery (e.g., time since last contact with abuser, time since termination of relationship, duration of abuse).

General Conclusion and Theoretical Implications

The purpose of the current project was to utilize Damasio's (1994) SMH as a theoretical framework for understanding the effect of victimization by a psychopathic abuser during a romantic relationship. The SMH posits that a somatic marker system in the brain assists individuals in integrating and utilizing emotional information to aid in their everyday functioning. PTSD, anxiety, and depression are associated with impairments in the brain areas involved in the somatic marker system. These mental health impairments are also associated with poor performance on the IGT and facial affect recognition tasks, both of which have been theoretically tied to social decision making.

I wanted to utilize the SMH framework to investigate Whiffen and MacIntosh's (2005) proposed pathways between emotional functioning and interpersonal relationships. Whiffen and MacIntosh propose that survivors commonly cope with impairments in emotional functioning caused by abuse in a manner that perpetuates and extends these impairments. Survivors tend to isolate themselves or maintain an emotional distance from others. As a result, survivors are hindered in their ability to utilize support from their social relationships that may aid in their recovery.

Nevertheless, the findings from Study 2 did not find support for the use of the SMH as a framework for understanding recovery outcomes in survivors of psychopathic abusers. This was indicated by relatively good performance on the IGT and facial

recognition task, which was not predicted by any aspects of survivors' recovery (e.g., depressive symptoms, levels of resilience).

The findings of Study 1 and Study 2 provided a deeper understanding of the pathways between emotional functioning and interpersonal impairments in survivors. Ascribed psychopathic traits in abusers, particularly those associated with Factor 1 psychopathy, were predictive by survivors' experiences of abuse that was physically harmful, frequent, and versatile in nature. Ascribed psychopathic traits were also associated with engagement in physical, sexual, financial, property, and emotional abuse (e.g., deception). A specific form of emotional abuse that abusers appear skilled at is gaslighting: the presentation of false information or withholding of information to instill confusion. Psychopathic characteristics that are associated with attentional and emotional deficits may permit abusers to use specific linguistic tactics, such as love bombing, persistent communication, playing the victim (e.g., presupposition accommodation, personal pronoun use) to erode victims' sense of self and contributes to survivors' social isolation. However, further investigation is needed to understand the role of psychopathic traits, and cyber and economic forms of abuse, in relation to survivors' relationship experiences and recovery outcomes.

It is not surprising that survivors who ascribed a higher level of psychopathic traits to their abusers report elevated levels of post-traumatic stress symptoms. Survivors with elevated levels of mental health impairments tended to have been in more recent contact with their abuser, perceived the abusive relationship to have a greater negative impact on their mental health, and had elevated levels of social support.

In terms of positive recovery outcomes, those survivors with elevated level of resilience tended to have higher levels of social support and lower level of mental health impairments. Survivors who demonstrated elevated levels of post-traumatic growth were also higher on resilience, had been in a longer-term abusive relationship, were out of contract with their abuser for a longer duration, and had lower mental health impairments. Interestingly, post-traumatic growth was predicted by lower levels of perceived emotional support and elevated levels of received social support.

The current project addresses a gap in the literature on survivors of psychopathic abusers. It supports the notion that Factor 1 psychopathy, in particular the interpersonal traits, to be more integral to psychopathy (at least in domestic abusers who likely live in the community), than the criminal features (Book et al., 2013; Skeem & Cooke, 2007). In line with the assertions of Neumann and Hare (2008), and Beaudette (2012), psychopathic individuals who can attain their goals (e.g., control over others) without having a high level of criminality may be qualitatively different than those who are in contact with the criminal justice system.

The project highlights that psychopathic traits in domestic abusers leave victims susceptible to the extreme harms of emotional forms of abuse. Prior research has largely focused on the abuser themselves and has sampled from those involved with the criminal justice system. The project also provides insight for the pathways between emotional and interpersonal functioning following abuse. It does so by addressing both positive and negative aspects of survivors' recovery. The findings provide conceptual insight for the different processes underlying resilience and post-traumatic growth.

Due to the exploratory nature of this study further research is needed that may be used to build on a theory of survivors of psychopathic abusers in romantic relationships. Further insight is needed on how to best assess and conceptualize psychopathy in the context of domestic abuse, and the role of social support in facilitating positive outcomes during survivors' recovery. Such research will assist in informing policies surrounding the legal system, and avenues for preventative action and treatment of survivors, including the safe and effective involvement of survivors' social network.

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Appendix A

Study 1- Recruitment Announcement

Who we are recruiting

The ‘Experiences in a relationship with a psychopath: Non-victim and victim samples’²⁸ experiment is designed to examine the relationship between emotion and victimization by someone while in a relationship. We are looking for participants (aged over 18) who have **NOT** been victimized (to act as our control group) and participants who have been victimized while in a relationship (i.e., spouse, dating relations, common law, etc.).

Victimization experiences may include verbal/ emotional abuse (i.e., bullying, degradation, manipulation), conning, coercion (i.e., intimidation, threats, control of finances, social isolation, and limited mobility), lying and deceit (i.e., infidelities), sexual assault, and theft (i.e., property or financial).

Particularly we are looking for people who have been victimized by a potential psychopath, sociopath, narcissist, or any individual demonstrating abusive, criminal, or antisocial traits as a family member (i.e., spouse) or by a significant other (i.e., dating relations, common law, etc) for a study examining emotion in victims. A person who possesses such characteristics often has many shallow relationships, lacks empathy, lies pathologically, is superficially charming, and fails to take responsibility for their actions.

For your safety, we recommend that individuals currently in a victimizing relationship contact their local Police authorities, health care physician, or Distress Centre and **NOT** participate in the current study.

What your participation will involve

If you are interested in participating in the study, please register for an account on the top right box of this website. Following this, you will be asked to read the “Warnings and Precautions for Victim Populations”, read the “Informed Consent”, provide your consent, a complete a few questionnaires (if applicable will assess the presence or absence of the above traits in the person who victimized you, your mental health, etc), and a series of open-ended questions. If you wish you may also answer open-ended questions as the third part of the study. As well, if you are undergoing mental health assistance from a professional, such as a counsellor or psychologist, we ask that you receive clearance to participate.

Incentive

Participation in the current study is strictly voluntary (there will be no incentive or cash for participation). If you are a student of Carleton University and participating in this

²⁸ In the pilot stages of Study 1 when ethics clearance was initially approved I wanted to keep open the possibility of collecting data for a control group, and to utilize the student recruitment pool (i.e., SONA) at Carleton University. However, due to the high turnout for Study 1a and from the feedback from my Prospectus committee it was deemed that there was not a need to also recruit students, and that a control group was not needed if I treated the variables in the study as continuous.

study through the online SONA system, for your participation you will receive up to 3% toward your grade in PSYC 1001, 1002, 2001, or 2002.

Precautions

Some of the questionnaires (and if you choose to participate to answer the open-ended questions) may address stressful topics. If you feel uncomfortable or wish to withdraw at any time (even skipping a few questions on the questionnaires), you may do so as the study is entirely voluntary and confidential. The complete study (questionnaires and open-ended questions) should take at most 1.5 hours. You do not have to complete all of the study at one time; you can stop and complete the study at your convenience. This study has been approved by the Carleton University Ethics Committee for Psychological Research (12-173).

Appendix B

Study 1- Warnings and Precautions for Victim Populations

Below are descriptions of disorders that may be present in individuals who have been victimized by others. We ask that you go through each of the symptoms and risky behaviors (that could become harmful to your health) associated with each disorder to see whether you relate to any.

It is strongly recommended that if you are experiencing any of these symptoms and find that they interfere with your daily occupational, social, mental, or physical functioning that you seek medical attention from your local physician or local mental health call centre. Individuals who receive assistance for mental health problems can greatly benefit from receiving help.

We also that if you do wish to participate in the present study that you are aware that some aspects of the study maybe emotionally triggering (the study details will be furthered explained on the following webpage) and may not be suited for someone experiencing the outlined symptoms.

These disorders are serious mental health issues and participants should consider their own mental health and safety before they decide to participate in the current study. If participants would like further information about the study, the following disorders, or their participation, they are asked to contact the primary researcher, Courtney Humeny at chumeny@connect.carleton.ca. Once you have finished reading about these disorders, please verify you have read this on the bottom of this page to proceed to the Informed Consent Webpage for further details about the study.

Complex PTSD aka Disorders of Extreme Stress not Otherwise Specified

- extended/ recurring abuse (over months to years) can lead to a severe form of PTSD, which is called ‘Complex PTSD’
- often people who experience Complex PTSD avoid thinking or talking about topics related to the trauma as they are too overwhelming
- Self harm, alcohol and/ or substance use is common as a way to avoid and numb feelings and thoughts associated with trauma

Symptoms of Complex PTSD include:

Alterations in Emotional Regulation. May include persistent sadness, suicidal thoughts, explosive anger, or inhibited anger.

Alterations in Consciousness. Includes forgetting traumatic events, reliving traumatic events, or having episodes in which one feels detached from one's mental processes or body.

Changes in Self-Perception. May include helplessness, shame, guilt, stigma, and a sense of being completely different from other human beings.

Alterations in How the Perpetrator is Perceived. Examples include attributing total power to the perpetrator, becoming preoccupied with the relationship to the perpetrator, or preoccupied with revenge.

Alterations in Relations with Others. Examples include isolation, distrust, or a repeated search for a rescuer.

Changes in One's System of Meanings. May include a loss of sustaining faith or a sense of hopelessness and despair.

As cited by: United States Department of Veteran Affairs
[\(http://www.ptsd.va.gov/professional/pages/complex-ptsd.asp\)](http://www.ptsd.va.gov/professional/pages/complex-ptsd.asp)

For further academic sources on Complex PTSD see:

Herman, J. (1997). *Trauma and recovery: The aftermath of violence from domestic abuse to political terror*. New York: Basic Books.

Ford, J. D. (1999). Disorders of extreme stress following war-zone military trauma: Associated features of Posttraumatic Stress Disorder or comorbid but distinct syndromes? *Journal of Consulting and Clinical Psychology*, 67, 3-12.

Post Traumatic Stress Disorder (PTSD)

Symptoms of Post Traumatic Stress Disorders are described as:

- a) Exposure to a traumatic event that causes a threat to physical integrity of self or others where they response with intense fear, helplessness, or horror
- b) Persistent re-experience of the event (i.e., intrusive thoughts or dreams, flashbacks, sense of reliving the experience)
- c) Physiological issues (i.e., hypervigilance, difficulties falling or staying asleep, problems concentrating, anger problems, exaggerated startle response)
- d) Persistent avoidance and emotional numbing (i.e., avoiding stimuli, people, or places associated with the trauma; memory problems especially in recalling parts of the trauma, decreased capacity in emotional experience, and expectation that one's future is constrained, feelings of detachment from others)

Depression

Depression as: a sad mood nearly everyday, diminished interest and pleasure in activities previously thought to be enjoyable, insomnia or hypersomnia, restlessness or feeling slowed down, feelings of worthlessness, inappropriate guilt, indecisiveness, poor concentration, and suicide ideation

As cited in the Diagnostic and Statistical Manual IV-TR is used by clinicians and psychiatrists to assist in diagnosing and classifying mental illnesses (American Psychiatric Association, 2000)

Have you read the Warnings and Precautions for Victim Populations?

Yes

No (You cannot proceed to the Informed Consent webpage until you read this page)

Appendix C

Study 1- Informed Consent

The purpose of an informed consent form is to ensure that you, as the participant, understand the purpose of the study as well as the nature of your involvement. The informed consent form should provide sufficient information such that you have the opportunity to determine whether or not you wish to participate in the study.

Research title: Experiences in a relationship with a psychopath: Non-victim and victim samples

Research personnel: This research is being conducted through the Institute of Cognitive Science department at Carleton University. If you have any questions or concerns about this research you can contact the Faculty Supervisor, John Logan (613-520-2600, x2690; john_logan@carleton.ca) or the Principal Researcher, Courtney Humeny (chumeny@connect.carleton.ca). If you have any concerns or questions regarding the ethics of this experiment, please contact Avi Parush (613 520-2600 ext. 6026; avi_parush@carleton.ca, or for other issues the Cognitive Science Chair Jo-Anne LeFevre (613-520-2600 ext. 2693; jo-anne_lefevre@carleton.ca).

Purpose: We are interested in the influence that victimization during a relationship (i.e., dating, common law partner, spouse, etc) has on emotion. Psychopaths (aka sociopath, narcissist, or any individual demonstrating abusive, criminal, deceitful, conning, manipulative, or antisocial traits) are individuals who have many shallow relationships, lack empathy, lie pathologically, and superficially charm, and fail to take responsibility for their actions. We are examining individuals who have **not** been victimized, who will act as our comparison group and those participants who have been victimized. We will ask that you complete questionnaires and open-ended questions. This research will assist in understanding of survivors that may be used to inform treatment options for victimization.

Task requirements: Your participation in this study would include questionnaires and open-ended questions. You do not have to participate in all parts of the study and do not have to complete the full study in one sitting; you can stop and resume the study at your convenience.

Duration and location: The duration of your participation in this study should take at most 1.5 hours to complete.

Student Incentive: If you are a student at Carleton University, you will receive 3% credit towards your PSYC 1001, 1002, 2001, or 2002 grade for your participation.

Potential risk and discomfort: If, at any time, during the experiment, you feel uncomfortable, you may decide to end your participation. Some people may find the questionnaires and/or open-ended questions triggers stressful or uncomfortable memories

of victimization. If you have a history of suicidal thoughts, we ask that you consider your emotional health and safety before consenting to participate in the study. If you do not live in the Ottawa area, we recommend that you contact your local crisis support centre or general physician. We ask that if you are experiencing suicidal thoughts as a result of your victimization experiences that you seek help from a mental health professional in your local area, who can be contacted through your local physician, phone book, or distress centre. The topic of this study may trigger strong emotional reactions, especially in the open-ended questions as this will touch on details of your victimization experiences. We ask that if you are undergoing mental health assistance from a professional, such as a counsellor or psychologist that you receive clearance to participate. If you feel uncomfortable or wish to withdraw at any time, you may do so as the experiment is entirely voluntary. We ask that when participating in the study that you situate yourself in a safe location (especially if you are still in contact with the person who victimized you). This is especially true when participating in the open-ended questions as you must be careful in answering questions if the victimizer is in close physical proximity. We stress that you take the appropriate precautions and you not continue with the study if they feel any danger. We ask that participants consider their safety before consenting to the study. We ask that participants locate a time and place that is secure when participating in the study, such as a friend or family's home or a time that the person who victimized you will not be around you.

Anonymity and confidentiality: Student emails will be collected to provide credit points for participation. Participants will be identified using an anonymous number through their account on the secure website. Only the researchers and web administer will have access to the information provided on the website. To ensure confidentiality, the data collected and informed consents will be kept for 5 years in a secure office at Carleton University, after which they will be destroyed. Data from this study will only be analyzed at the group-level (no individual data will be used), which will be used for conferences and publication.

Right to withdraw: Your participation in this study is entirely voluntary. You have the right to withdraw from the experiment at any time and you will receive your credit points (if you are a Carleton University student) regardless of whether you withdraw from the experiment or not. You also have the option of not answering certain questions or not participating in all parts of the study.

Signatures: By signing this form, you indicate that you have read the above information and you agree to take part in the study.

Your student email (if at Carleton University): _____

Yes
No

Date: _____

Participation in Open-Ended Questions: By signing below you agree that you would like the opportunity to participate in the open-ended questions portion of the study. **If you have not been victimized in any way (and are participating as part of our comparison group) we recommend that you do not participate in this portion as the questions will not apply to you.** Thus, you do NOT need to provide consent (Click No if you have NOT been victimized in a relationship). The topics of the questions will include discussion of perceived and received social support, coping methods (i.e., self harm, denial, repression, self-medicating, sought counseling), and perceptions of interpersonal relations (before, during, and after victimization). Self-perceptions about experiencing emotions (i.e., shame, guilt, etc), general moods, and how the survivor views the reactions of their victimization in others or to the victimizer will be noted. The open-ended questions will gather information on 1) the onset, type, severity, and length of victimization, such as whether there was emotional or physical abuse or deception, 2) the relationship with the psychopath including when they first met and how they have fared since the relationship or victimization ended, and 3) the existence of other health or mental health problems (prior and subsequent to victimization) and other any other victimization experiences. If you decide later that you do not wish you participate in the open-ended questions portion of the study, you can withdraw your participation (even if you have indicated your consent here).

Yes

No

Date: _____

This study has been approved by the Carleton University Ethics Committee for

Psychological Research (12-173)

Appendix D

Study 1- Debriefing Form

Thank you for your participation! You completed all parts of the ‘Experiences in a relationship with a psychopath: Non-victim and victim samples’ study. However, before you go, we would briefly like to tell you a bit more about our study and why we are interested in examining these issues.

What are we trying to learn in this research?

Through this research, we are trying to understand the victimization experiences of psychopath survivors. A psychopath is someone who has many shallow relationships, lacks empathy, lies pathologically, is manipulative and superficially charming, and fails to take responsibility for their actions. Specifically, we are examining the outcomes of resiliency and negative survivor outcomes. To do this we are looking at health outcomes, decision making, emotion, coping strategies, and interpersonal relationships. We are also looking to see if there are victimization experiences of psychopath survivors that may differentiate them from other victim populations.

What are our hypotheses and predictions?

It is predicted that whether a survivor demonstrates resiliency or negative outcomes will be distinguished by specific emotions. It is hypothesized that survivors demonstrating resiliency will indicate greater overall emotional functioning (i.e., lower anxiety, shame, and symptoms of depression; greater control and stability of moods), be more expressive of their emotions, and consequently have a greater ability to be aware of and process emotion compared to individuals who may experience negative outcomes as a result of victimization. We predict these findings will provide insight into the unique experiences of victimization by psychopathic individuals.

Why is this important to scientists or the general public?

This study has wide scale importance in understanding the interpersonal and emotional consequences of victimization. Due to the limited research on psychopath survivors, these findings will inform further understanding of this victim population, which include 1) promoting the processes found in resilient survivors in the recovery process and 2) advancing knowledge of the relationship between emotional functioning and interpersonal relations in resiliency. Because the characteristics of psychopathy increase the likelihood of involvement with the criminal justice system these findings may also be useful legally, especially during interpretations of Victim Impact Statements.

Where can I learn more?

If you experienced anxiety, distress or in this study or are experiencing problems with addictions and gambling behaviours as a result of participation in this study please see:

Addiction and Mental Health Services at the Sandy Hill Community Centre

613-789-8941

http://www.sandyhillchc.on.ca/mainEngl/apgso_engl.html

Carleton University Health and Counselling services
613-520-6674
<http://www2.carleton.ca/health/>

Ottawa Region Distress Centre
613- 238- 3311
<http://www.dcottawa.on.ca/>

If you do not live in the Ottawa area, we recommend that you contact your local crisis support centre or general physician. We ask that if you are experiencing suicidal thoughts as a result of your victimization experiences that you seek help from a mental health professional in your local area, who can be contacted through your local physician, phone book, or distress centre.

For online support groups on psychopath survivors and victimization during a relationship see:

Aftermath: Surviving Psychopathy Foundation
<http://www.aftermath-surviving-psychopathy.org/>

Lovefraud
<http://www.lovefraud.com/>

The Institute for Relational Harm Reduction and Public Pathology Education
<http://saferelationshipsmagazine.com/>

Centre for Mental Health and Addictions- List of Canadian Mental Health Resources
http://www.camh.net/care_treatment/index.html

Mental Health American- List of American Mental Health Resources
<http://www.nmha.org/go/help>

What if I have questions later?

Thank you for participating in this study if you have any further questions about this research feel free to contact the Faculty Supervisor, John Logan (613-520-2600, x2690; john_logan@carleton.ca) or the Principal Researcher, Courtney Humeny (chumeny@connect.carleton.ca). If you have any concerns or questions regarding the ethics of this experiment, Ethics Committee for Psychological Research Chair, **Avi Parush** (613 520-2600 ext. 6026; avi_parush@carleton.ca), or for other issues the Cognitive Science Chair Jo-Anne LeFevre (613-520-2600 ext. 2693; jo-anne_lefevre@carleton.ca).

Thank you for your participation.

Appendix E**Study 1- Demographics**

Please fill out the following questions about yourself. If you do not wish to answer any questions, please leave them blank.

1. Age:
2. Gender:
Male
Female
3. Ethnicity:
Caucasian
African- Canadian
Asian
Hispanic
Aboriginal/ Inuit
Other (Please specify):
4. Employment status:
Not employed (not looking for work)
Not employed (looking for work)
Part- time
Full- time
Seasonal or contract
Retired
5. Highest level of education completed:
Elementary school
Secondary school
Community college
Technical or trade school
University
Graduate school

Appendix F**Study 1- Victimization Screening Survey**

1. Are you currently undergoing treatment for a mental health issue?

No

Yes

If Yes, have you received clearance from your counsellor/doctor to participate in the current study?

Yes

No (If No we ask that you not participate in this study as it may trigger reactions that may impede your treatment)

2. Do you consider yourself to be a victim of someone you have been in a relationship (i.e., dating, common law, marriage) with?

Yes

No

Other (please specify):

3. Gender of victimizer:

Male

Female

4. Ethnicity of victimizer:

Caucasian

African

Asian

Hispanic

Aboriginal or Inuit

Other (please specify):

5. What was your relationship with the victimizer?

Boyfriend/ Girlfriend

Common Law partner

Friend

Spouse (marriage)

Other (please specify):

6. How long did the relationship last?

Less than 6 months

6 months – 12 months

1 to 2 years

2 to 5 years

5 to 10 years

10 years to 20 years

More than 20 years

7. How long ago was your last contact with the victimizer?
- Less than 6 months
 - 6 months – 12 months
 - 1 to 2 years
 - 2 to 5 years
 - 5 to 10 years
 - 10 years to 20 years
 - More than 20 years
 - N/A
8. How frequently were you victimized by the victimizer?
- Rarely (a single incident)
 - Sometimes (a limited number of incidents)
 - Frequently (multiple incidents)
 - Very Frequently (a large number of incidents)
9. What was the most serious degree of physical injury committed against you in adulthood by the victimizer?
- None
 - Mild injury/ no medical treatment
 - Moderate injury/ first aid or outpatient medical treatment
 - Extreme injury/ hospitalized
10. What kind(s) of physically violent acts did the victimizer commit against you in adult hood (Check all that apply)
- None
 - Physical
 - Sexual
11. What kind(s) of non-violent but harmful acts did the victimizer commit against you in adulthood (check all that apply)?
- None
 - Emotional (please specify):
 - Spiritual (please specify):
 - Financial
 - Substance (i.e., forced intoxication)
 - Deceit (i.e., lies, manipulation)
 - Property crime (please specify):

Appendix G

Modified Self-Report Psychopathy Scale-Short

Please rate the degree to which you agree with the following statements about the person whom you have been in a relationship and may suspect or know is a psychopath. If there is more than one possible candidate, please choose the one you had the closest and most recent relationship with. Only answer items if you are certain about whether you agree or disagree, based on your observations and knowledge. You can be honest because you are given complete anonymity.

1 Disagree Strongly	2 Disagree	3 Neutral	4 Agree	5 Agree Strongly
---------------------------	---------------	--------------	------------	------------------------

He or She.....

1. Is a rebellious person
2. Has never been involved in delinquent gang activity
3. Thinks people are wimps.
4. Has often done something dangerous just for the thrill of it
5. Has tricked someone into giving him or her money
6. Has assaulted a law enforcement official or social worker
7. Has pretended to be someone else in order to get something.
8. Likes to see fist-fights
9. Would get a kick out of ‘scamming’ someone
10. Would think it is fun to see how far he or she can push people before they get upset
11. Enjoys doing wild things.
12. Has broken into a building or vehicle in order to steal something or vandalize
13. Doesn’t bother to keep in touch with his or her family any more
14. Rarely follows the rules
15. Thinks he or she should take advantage of other people before they do it to him or her
16. People sometimes say that he or she is cold-hearted
17. Likes to have sex with people he or she barely knows
18. Loves violent sports and movies
19. Sometimes he or she thinks they have to pretend to like people to get something out of them
20. Has been convicted of a serious crime
21. Keeps getting in trouble for the same things over and over.
22. Every now and then he or she carries a weapon (knife or gun) for protection.
23. He or she thinks they can get what he or she wants by telling people what they want to hear.
24. Never feels guilty over hurting others.
25. Has threatened people into giving him or her money, clothes, or makeup
26. Thinks a lot of people are “suckers” and can easily be fooled.

27. Admits that he or she often “mouths off” without thinking.
28. Sometimes dumps friends that he or she doesn’t need any more.
29. Has purposely tried to hit someone with the vehicle that he or she was driving.

Appendix H

Study 1- Open-Ended Questions

If they begin to experience suicidal thoughts at any point during this portion of the study you should immediately stop participation in the study, seek attention from their local hospital emergency room and recommend that they go there to receive assistance.

The following question will ask you about if your experience has affected your relationship with others. You can skip any questions that you wish and the study is completely voluntary. You may find this question to be of a sensitive nature. Do you wish you proceed?

Yes

No

1. Has your victimization affected your relationship with others? Do you notice a difference between your relationships before and after victimization?

The following question will ask whether you are currently satisfied with your relationships with others. Some may find this question emotionally taxing. Do you wish to proceed?

Yes

No

2. Are you satisfied with your current relationships, if so what do you think is your most satisfying relationship and why? If you are not satisfied, why are you not satisfied, what is missing?

The following question will address your mental health. Would you like to proceed?

Yes

No

3. Have you ever been diagnosed with a mental health problem or sought help for a mental health problem?
4. Were there any immediate effects of these victimization incidents on your well-being? How did you cope with the situation?

We would like to know about your initial experience with the victimizer, would you like to proceed with this question or move on to the following question?

Yes

No

5. How did you first meet him or her? What happened? What was your first impression? What was appealing or unappealing about him or her?

We would like to know about your initial experience with the victimizer, would you like to proceed with this question or move on to the following question?

Yes

No

6. Was there anything worrisome or unusual about their behaviours when you first met? If so, what were they? Where they common throughout your relationships? How did he or she try to explain them? How far into the relationship did the abusive behaviours start?

The following question will address deception in the relationship. If you do not wish to continue with the study you can click the 'Exit study' button to be Debriefed or if you wish to sign out and continue these questions at another time, please click the 'Sign out' Button. If you wish to proceed with the next question, click 'Yes':

Yes

No

7. Was there any deception used in your relationship? If so, what kind of deception? How did you feel about this? How did you figure out deception was being used?

The following question will examine your reactions to the victimizer. This study is completely voluntary and you can withdraw at anytime. Do you wish to proceed?

Yes

No

8. Were there any changes in his or her behaviour leadings up to the victimization incidents? At what point in the relationship did these incidents begin? Did he or she ever try to explain them?
9. If you did express your thoughts or feelings about his or her behaviour to him or her, how did they respond? Was their response sincere?

This maybe a sensitive question, but if you wish to proceed we would like to know your feelings about victimization:

Yes

No

10. How do you feel you were victimized?

The following question will address your family and friends' reactions. Would you like to proceed with this question?

Yes

No

11. Did your family or friends know the victimizer? Do you know of their first impression of him or her? If they are aware of your victimization, how did they react to this?

If you experience any suicidal thoughts, you should seek medical attention immediately. You will now be presented with the Debriefing Form is provided on the webpage with resources about victimization.

Appendix I

Correlation Matrix of Demographics, Recovery Outcomes, and Abuse Experiences

Table 37

Bivariate correlations of the relationships between participants' demographics, recovery outcomes, and abuse experiences

	1	2	3	4	5	6	7	8	9	10	11	12	13	15	16
1. Gender	-														
2. Type	.113	-													
3. Last contact	.077	.094	-												
4. Length	.111	.607**	.063	-											
5. Frequency	-.100	.338**	.163	.229*	-										
6. Harm	.063	.249*	-.118	.105	.143	-									
7. Physical	-.130	.225*	-.101	.184	.186	.592**	-								
8. Sexual	.047	.106	.019	.017	.254**	.301**	.247*	-							
9. Financial	.235*	.260**	.057	.088	.189	.312**	.182	.120	-						
10. Deceit	-.007	.124	.061	.119	.073	.107	.085	-.073	.449**	-					
11. Spiritual	-.200*	.110	-.155	.077	.194*	.151	.247*	.122	.077	-.073	-				
12. Substance	-.062	-.003	-.061	-.086	.134	.071	.083	.286**	.203*	.106	.126	-			
13. Property	.020	.188	.024	-.061	.225*	.335**	.139	.195*	.330**	.356**	.117	.249*	-		
14. Versatility	-.023	.286**	-.033	.097	.357**	.516**	.547**	.549**	.606**	.433**	.458**	.515**	.626**		
15. Age	.228*	.413**	-.026	.404**	.042	-.021	-.013	-.130	.055	.105	.065	-.053	-.005	-	
16. Education	-.064	-.174	-.049	-.167	-.002	-.053	-.913	.022	-.027	.062	-.010	-.019	.080	.015	-
17. Resilience	-.242	-.185	-.134	-.166	.054	-.068	-.179	-.295*	.032	-.111	.161	.021	.015	-.044	-.013
18. Anxiety	.076	.038	-.029	-.110	.354	.099	-.004	.069	.293*	.152	.086	.124	.206	.054	.136
19. Depression	.128	-.163	.012	-.068	.401	.028	-.079	-.034	.086	.106	.008	.045	.086	.154	.147
20. PTSD	.021	-.185	-.015	-.290*	.070	.336**	.032	.123	.167	-.065	-.005	.021	.129	-.112	.138
21. Positive emot	-.195	-.178	.130	-.256*	-.085	-.030	-.036	-.103	-.137	-.281*	-.007	-.012	-.300*	-.172	-.108
22. Negativ emot	-.073	-.096	-.018	-.287*	-.045	.256*	.095	.114	.075	.014	.040	.062	-.014	-.147	.109

	17	18	19	20	21	22
17. Resilience	-					
18. Anxiety	-.057	-				
19. Depression	-.160	.752**	-			
20. PTSD	-.023	.700**	.523**	-		
21. Positive emot	.445**	.097	.063	.153	-	
22. Negativ emot	.172	.572**	.447**	.579**	.544**	-

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

Note. Bivariate correlations were carried out using pairwise deletion. Emotional abuse was not included due to a lack of variability in scores.

Gender = abuser gender coded 0 = male and 1 = female ($N = 105$)

Type = type of relationship coded from 0 = boyfriend/girlfriend, 1 = common-law, 2 = spouse ($N = 105$)

Last contact = time since last contact with the abuser coded 0 = N/A, 1 = less than six months age, 2 = six to twelve months, 3 = one to two years, 4 = two to five years, 5 = five to ten years, 6 = ten to twenty years, 7 = 20+ years ($N = 105$)

Length = length of relationship, 0 = less than six months, 1 = six to twelve months, 2 = one to two years, 3 = two to five years, 4 = five to ten years, 5 = ten to twenty years, 6 = 20+ years ($N = 105$)

Frequency = frequency of abuse from 0 = rarely to 3 = very frequent ($N = 105$)

Harm = Degree of harm sustained from abuse from 0 = none to 3 = Extreme injury/hospitalization ($N = 105$)

Types of abuse were coded as 0 = no experiences and 1 = experienced this type of abuse. Physical = physical abuse, Sexual = sexual abuse, Financial = financial abuse, Deceit = use of deception, Spiritual = spiritual abuse, Substance = substance abuse, Property = property abuse ($N = 105$)

Versatility = versatility of abuse ($N = 105$)

Age = participant age ($n = 83$)

Education = from lowest education level 0 = elementary school to 5 = graduate school ($n = 83$)

Resilience ($n = 61$), Anxiety and depression ($n = 61$), PTSD = post-traumatic stress disorder symptomology ($n = 62$), positive emot = positive emotional experiences ($n = 64$), negativ emot = negative emotional experiences ($n = 64$)

Appendix J

Complete dialogue of Gaslighting Experiences

- 1) Dialogue over dinner with Helen, her husband (Abuser), and her children after she spent the weekend at church:

Abuser: "So, **you** must be feeling pretty fucking holy eh, gone to a church think all weekend?"

Helen: "Pardon me?"

Abuser: **You** heard me, **you** think **you're** pretty holy don't **ya**? Better than me?

Helen: "What are you talking about?" [Tears start welling]

Abuser: "What are **you** getting upset about? **You** act like **you're** some holy person and **you're** just a piece of shit. **You** always have to ruin everything don't **ya**? **Ya** gotta pull out the tears to try and make everyone look like an ass. **You** love making me look like shit don't **you**?"

Helen: "What on earth are you talking about? You're the one who started this by calling me holy!"

Abuser: "What are **you** talking about? I never said that."

- 2) Muscari rejects her husband's (Abuser) sexual advances:

Abuser: Is there something wrong with **you**?

Muscari: Excuse me? [Pause] Did you just say, is there something wrong with me? There's nothing wrong with me.

Abuser: **I** think there's something wrong with **you**. Most women want sex. And **you** don't want sex. There must be something wrong with **you**.

Muscari: It hurts me to have sex with you because I don't feel emotionally connected with you.

Abuser: **I** try to be nice to **you** and to love **you** and to not make **you** mad at me.

Muscari: I still don't feel emotionally connected

Abuser: Is this because **I** don't make enough money? [Pause] What do **you** want?

Muscaro: I want to be loved.

Abuser: **You** don't know what **you** want. **You're** just a spoiled brat. **You're** selfish and **you're** picky and **you** have to have everything exactly the way **you** want it. And **you're** just using sex as a weapon to get what **you** want.

- 3) Renee decides to volunteer as a tutor at a local non-profit organization. She calls her boyfriend (Abuser) to discuss evening that would work best [She quits volunteering after this conversation]:

Abuser: "How could **you** make such a decision without consulting **me** first?"

Renee: "I am consulting you. I haven't confirmed anything with the organization."

Abuser: "**You're** lying! **You** did all of that research without asking **me** first."

Renee: "I'm not sure what you mean. I mentioned to you my desire to tutor and you thought it was very selfless of me to volunteer."

Abuser: [avoiding my factual statement] "**You** are putting **us** at risk by working with THOSE people. **You're** putting **your** child at risk. These people are drug dealers and users."

Renee: [confused because I hadn't even mentioned to him the profile of the students I would be assisting] "That's not true. You don't know that."

Abuser: "**YOU TOLD ME THESE PEOPLE YOU HELP ARE AT-RISK."**

Renee: [thinking he had misunderstood what I meant by at-risk, I attempted to clarify] "I'm sorry. At-risk doesn't mean they've done something bad, specifically. It means—"

Abuser: [interrupting with elevated and angry voice] "Don't tell **me I'm** stupid! Don't lie to **me** now. **You** are such a liar! **You** are so selfish! How could **you** do this to **me**? I love **you** so much and **you** choose to waste **your** evening helping THOSE people!?"

Renee: [confused and wishing I could explain to him that my choice to help these people is not going to take away time from us] "That's just silly. Helping and volunteering makes me happy. I want to see these people succeed. I can show you the statistics that support—"

Abuser: [interrupting me again with more anger and vile in his language] “**You** fucking ungrateful bitch! **You’re** going to choose THOSE people over me? Because if **you** choose THOSE people, I’m gone. All I want to do is love **you** and **you** treat me like trash!”

Appendix K

Study 2- Recruitment Announcement

Who we are recruiting

The “Emotion, resilience, and post-traumatic growth in domestic abuse survivors” study investigates the outcome of being in an abusive romantic relationship.²⁹

We are looking for participants (aged over 18) who identify as being in a prior heterosexual abusive romantic relationship.

Abusive experiences may include verbal/ emotional abuse (i.e., bullying, manipulation), coercion (i.e., intimidation, threats, control of finances, isolation), lying and deceit (i.e., infidelities), and sexual assault. Particularly we are looking for people who identify as being abused by a romantic partner who displays **psychopathic or narcissistic characteristics**. These may include:

- *Pathological lying (i.e., use of aliases)*
- *Engaging in infidelities*
- *Failure to take responsibility for their actions*
- *Lacks empathy, guilt, and ability to feel deep emotions*
- *Manipulative and exploitative of others*
- *Sense of entitlement, grandiose sense of self-worth, or feelings of superiority*
- *Involvement in criminal activities*
- *Impulsive and irresponsible*
- *Engages in risk taking behaviours (e.g., drug use)*
- *Being superficially charming*

What your participation will involve

If you are interested in participating in the study please follow the link www.cuaftermath.com, which is a secure website where you will be asked to make an account with a username and password (no personal or identifying information will be asked, such as your name or address). The study will take approximately 1.5 hours to complete. The website is not compatible with mobile devices or Ipads, please use a computer or laptop device.

On the secure website, you will be asked to complete a few questionnaires, a card game where you will select decks to gain as many points as possible, and a task where you will be presented a series of images of male faces and asked what emotion they are expressing.

The questionnaires will include questions on your experiences of anxiety, depression, and post-traumatic stress, experiences of positive growth, and perceptions of interactions with other people (i.e., social support). There will also be questions

²⁹ Ethics clearance for Study 2 was obtained from the Carleton University Research Ethics Board- A (CUREB-A; as opposed to CUREB-B that was used for Study 1) due to changes in the eligibility criteria that required departments that were not part of psychology to submit to CUREB-A. CUREB-A had different requirements for recruitment announcements and informed consents than CUREB-B.

addressing experiences in the abusive relationship (e.g., onset, type, severity, and length of abuse), and traits of the abuser, such as:

Does he or she think it is fun to push people until they get upset?

Has been convicted of a serious crime?

Does he or she think they can get what they want by telling people what they want to hear?

Please do not participate if...

1. You identify as CURRENTLY in an abusive relationship. For your safety, we recommend that individuals currently in a relationship not participate in the current study. We worry for participants' safety if they complete this study while in close physical proximity to their abuser.
2. We ask if you are currently undergoing or have undergone treatment for a gambling problem that you do not participate because the card game is similar to a gambling game.

Some of the questionnaires may address stressful topics. If you wish to withdraw at any time (even skipping a few questions on the questionnaires), you may do so as the study is entirely voluntary and anonymous. There will be no penalization if you decide to withdraw, no matter at what point in the study. You do not have to complete all of the study at one time; you can stop and complete the study at your convenience. There is the possibility that participation in the study may trigger or exacerbate distress.

Incentive

Participation in the current study is strictly voluntary (there will be no incentive or cash given for participation).

This study has been approved by the Carleton University Research Ethics Board-A (CUREB-A) (**103670**).

Appendix L

Recruitment Letter Template

Dear (website owner):

My name is Courtney Humeny, I am a PhD candidate in Cognitive Science at Carleton University in Ottawa, Canada. I am writing you today to inquiry about the possibility of recruiting participants for my dissertation research from your domestic abuse support website.

My research is carried out under the supervision of Dr. John Logan (john_logan@carleton.ca), and investigates the outcome of being in a romantic abusive relationship. Particularly we are looking for adults (over age 18) who identify as having been in a prior heterosexual abusive relationship with a partner who displays narcissistic or psychopathic characteristics. A person who possesses such characteristics often has many shallow relationships, lacks empathy, lies pathologically, is superficially charming, and fails to take responsibility for their actions.

This study has been approved by the Carleton University Research Ethics Board-A (CUREB-A) (**103670**), who can be contacted at 613-520-2517 or ethics@carleton.ca.

My research is anticipated to help bring understanding to the interpersonal and emotional consequences of domestic abuse. Due to the limited research on survivors of a romantic relationship with abusers who display psychopathic or narcissistic characteristics, these findings will inform further understanding of this population, which include advancing knowledge of the relationship between emotional functioning and interpersonal relations. Because the characteristics of individuals with psychopathic characteristics increase the likelihood of involvement with the criminal justice system these findings may also be useful legally, especially during interpretations of Victim Impact Statements and to victim support workers and Crown attorneys, who could use insight from this research to develop better modes of working with these types of victims and help increase their ability to participate efficiently in the court process (i.e., testifying against their abuser). Discovering avenues to mitigate the difficulties resulting from victimization is essential, not only for individuals' well-being, but also to improve the efficiency and effectiveness of health services to this group.

I am emailing you as the owner or administrator of an online support website for survivors of domestic abuse to request permission to have a link to the current study entitled "Emotion, resilience, and post-traumatic growth in domestic abuse survivors" on your website between the dates of March 7 to May 31st 2016.

What participation entails:

Briefly I will overview what participation in the study entail. I have attached a copy of the Informed Consent to this letter where you can gather more information on the purpose

of the study, potential risks, confidentiality, and study procedure. I have also attached a copy of the Recruitment Announcement that can be posted on your website if you do feel it is suitable to recruit participants on your domestic abuse support website.

The study will take approximately 1.5 hours and will consist of self-report questionnaires and two behavioural tasks.

Participation will involve going to a secure data collection website (www.cuaftermath.com). Participants are required to create a secure, password-protected account where they use an alias name. Participants will not be required to provide any information that would allow them to be identified (i.e., name, address).

On the website, participants are asked to complete a few questionnaires, a card game where you will select decks to gain as many points as possible, and a task where you will be presented a series of images of faces and asked what emotion they are expressing. The questionnaires will include questions on experiences of anxiety, depression, and post-traumatic stress, and social interactions (e.g., assessing access to social support). There will also be questions addressing traits of the abuser (e.g., involvement criminal activity) and experiences of the abusive relationship (e.g., onset, type, severity, and length of abuse).

Please email me at Courtney_humeny@carleton.ca if there are any questions or concerns about my study. You may also contact my thesis supervisor at john_logan@carleton.ca

Thank you,

- Courtney Humeny

Appendix M

Study 2- How Are You Feeling? Webpage

Before proceeding to the Informed Consent webpage and the study itself, we ask that you read through the following in order to self-reflect on how you are currently feelings about your experiences. We would like you to be aware that this study touches on sensitive topics relating to domestic abuse and mental health outcomes, where participation in the study may cause emotional distress. We also feel that *participation in the study may be unsafe for individuals who are currently in an abusive relationship*. One reason for this is that **we do not wish for participants to participate if they maybe in close physical proximity to their abuser**. For this we ask you only participate if you have previously been in an abusive relationship and are not currently in a relationship you identify as abusive.

One of the two tasks in the study mimics a gambling card game. Individuals who have a gambling addiction may be uncomfortable with this task and should not participate in the study.

It is normal for individuals who have experienced an abusive relationship to exhibit particular reactions as they cope with their experiences. Some of these reactions may include:

- Explosive anger
- Suicidal thoughts
- Negative self-talk, feelings of low self-esteem or insecurity
- Feelings of helplessness, guilt, and shame
- Forgetting aspects of your experiences, or reliving these events (e.g., nightmares, flashbacks, intrusive thoughts)
- Feeling detached from one's own body and other people
- A preoccupation with the relationship with the perpetrator or with revenge
- Isolation, distrust, and repeated searches to be rescued
- A desire to help others in similar situations, or to prevent others from experiencing similar situations
- A loss of sustaining faith or sense of hopelessness and meaning
- Feeling on edge and being easily startled
- Difficulties falling or staying asleep (or sleeping too much)
- Feeling numb, including a loss of interest in activities that were previously enjoyed
- Persistent avoidance of reminders of the experiences, such as people or places

For further resources on reactions to abusive experiences and domestic abuse, please see:
Herman, J. (1997). *Trauma and recovery: The aftermath of violence from domestic abuse to political terror*. New York: Basic Books
Evans, P. (2010). *The verbally abusive relationship: How to recognize it and how to respond* (3rd ed.) Avon: MA: Adams Media

The aforementioned reactions that some people may experience are the body's normal reaction to abuse or trauma. Some people may experience more of these reactions than others. Some people may not experience these reactions at all. Everyone is unique in their experience and their reactions to it. However, if you find that your experiences and the reactions listed above cause you distress and interfere with your daily functioning there is the option to reach out to your local physician, mental health call centre, or women's centre. Individuals who receive assistance can often benefit from receiving help. We recommend if you are seeing a mental health professional, to discuss your participation in the study with them.

We also ask that if you do wish to participate in the present study that you are aware that some aspects of the study maybe emotionally triggering and may not be suitable for everyone. For example, participation in the study may cause you to feel negatively about yourself or to feel overwhelmed. Participation in the study may amplify some reactions you are already experiencing or, may trigger new forms of distress. We ask that you take some time to reflect on:

How are you feeling?

Do you feel comfortable and stable?

When you think about your experiences do you feel overwhelmed?

Do you feel you are in a safe place to share your experience through participation in a study?

We ask that you engage in self-care as needed if you decide to participate in the current study. You may want to pick an evening when you have some spare time, take some time to mediate before participation, or take breaks when necessary if you choose to participate. If you would like more information about particular aspects of the study, please feel free to contact the primary researcher, Courtney Humeny at courtney_humeny@carleton.ca.

If you have a history of suicidal thoughts, we ask that you consider your emotional health before consenting to participate in the study. We ask that if you are experiencing suicidal thoughts as a result of your victimization experiences that you seek help from a mental health professional in your local area, who can be contacted through your local physician, distress centre, or The National Domestic Abuse Hotline at:

The National Domestic Abuse Hotline

<http://www.thehotline.org/>

1-800-799-7233

Appendix N

Study 2- Informed Consent

Title: Emotion, resilience, and post-traumatic growth in domestic abuse survivors

Funding Source: Aftermath: Surviving Psychopathy Research Grant (<http://www.aftermath-surviving-psychopathy.org/>). The researcher does not receive a personal stipend from the foundation's grant, nor will the foundation have access to the study's database.

Date of ethics clearance: January 12th 2016

Ethics Clearance for the Collection of Data Expires: May 28th 2016

This study aims to examine the interplay between emotion, resilience, post traumatic growth, and relationships in survivors of domestic abuse. **The researcher for this study is Courtney Humeny, a fifth-year PhD student in the Institute of Cognitive Science, Carleton University.**

She is working under the supervision of Dr. John Logan in the Institute of Cognitive Science, Carleton University.

The duration of your participation in this study should take at most 1.5 hours and will take place on this secure website <www.cuaftermath.com> upon your consent to participate.

Your participation in this study will include questionnaires and two tasks on the secure website. One task will be a card game asking you to gain as many points as possible by making selections from four decks. The second task will ask you to categorize images of faces by their emotional expressions.

The questionnaires will include questions on:

- Experiences of anxiety, depression, post-traumatic stress, and positive changes following your abusive relationship
- General interactions with other people, such as if you perceive others around you to be helpful
- Experiences of domestic abuse that address traits of the abuser (e.g., prior involvement in criminal activity) and experiences of the abusive relationship (e.g., onset, type, severity, and length of abuse).

Please consider your emotional safety before participation. We ask that you take some time to reflect on whether you are in a safe place, both emotionally and physically. The subject matter of the study and questions in the questionnaires may cause emotional distress that may contribute to negative self-talk, insomnia, etc.

Participation is voluntary: you have the right to end your participation in the study at any

time, for any reason, up until May 28th, 2016 (when data collection is anticipated to be completed).

The secure website allows each participant to create an account. Participants will be identified with an alias name and no identifiable information will be collected (i.e., name, address). The account allows participants to carry out the follow:

- 1)Quick Exit-** The data collection website will provide a quick exit button, which will be located on the top right corner of the webpage as a red button labeled as “Hide”. This button will immediately load an alternative webpage and will not provide you with the debriefing form for the study.
- 2)Withdraw from Study:** The Withdraw from study button will be labeled “Withdraw” on the website. If you withdraw from the study it will mark the termination of your participation in the study and all information you have provided will be immediately destroyed. In addition, you will be provided a Debriefing form, which will provide resources for mental health and domestic abuse survivor support. **You have the right to withdraw from the experiment at any time, without penalty, regardless of the amount of the study you have completed.**
- 3)Logout from study:** There is also an option to Logut of the study, that way you do not have to complete the full study in one sitting; you can logout of your account and resume at your convenience. Due to the voluntary nature of the study, you have the option of not answering certain questions or not participating in all parts of the study.

The website will ask participants to create a username and password for an account. No IP addresses are tracked. The database that collects participant responses is password-protected, but is not encrypted. Only the website programmer and principal researcher will have access to this database. The web programmer will sign a confidentiality agreement which will require that they not access the website after data collection begins. The survey data will be stored in a password-protected Google Drive folder, which is a separate database from where the participant account information and task responses are stored. Data stored in the Google Drive folder may be subject to the US Patriot Act and could be accessed by US officials.

Breaches to confidentiality: If a participant contacts the principal researcher expressing suicidal thoughts, for safety reasons the participant will be asked to provide their name and they will be referred to their local ER. We are aware that this step involves breaking confidentiality, but the welfare of the participant takes priority (APA and CPA and Tri-Council guideline 3.1). The situation is documented, and the supervisor and ethics chair are contacted.

Once the project is completed, all research data will be kept for five years and potentially used for other research projects on this same topic. At the end of five years, all research

data will be securely destroyed. (Electronic data will be erased and hard copies will be shredded.) Data from this study will only be analyzed at the group-level (no individual data will be used).

Only group data will be used for conferences and publication. If you would like a copy of the finished research project, you are invited to contact the researcher to request an electronic copy which will be provided to you.

The ethics protocol for this project was reviewed by the Carleton University Research Ethics Board, which provided clearance to carry out the research. Should you have questions or concerns related to your involvement in this research, please contact:

CUREB-A contact information:

Professor Louise Heslop, Chair (CUREB-A)
Professor Andy Adler, Vice-Chair
Carleton University Research Ethics Board
Carleton University
511 Tory
1125 Colonel By Drive
Ottawa, ON K1S 5B6
Tel: 613-520-2517
ethics@carleton.ca

Researcher contact information:

Courtney Humeny
Institute of Cognitive Science
Carleton University

Supervisor contact information:

John Logan
Institute of Cognitive Science
Carleton University

Appendix O

Study 2- Debriefing Form

Thank you for your participation in the “Emotion, resilience, and post-traumatic growth in domestic abuse survivors” study. However, before you go, we would briefly like to tell you a bit more about our study and why we are interested in examining these issues.

What are we trying to learn in this research?

Through this research, we are trying to understand the outcomes and experiences of domestic abuse survivors. Particularly we are interested in abusers who display psychopathic characteristics, which include someone who has many shallow relationships, lacks empathy, lies pathologically, is manipulative and superficially charming, and fails to take responsibility for their actions. Specifically, we are examining the outcomes relating to concepts, such as resilience and posttraumatic growth. To do this we are looking at mental health outcomes, decision making, emotion, and interpersonal relationships. We are also looking to the interplay between concepts, such as resilience, and patterns in social interactions and decision making.

What are our hypotheses and predictions?

It is hypothesized that survivors demonstrating higher rates of resilience will also demonstrate lower levels of mental health impairments, be more expressive of their emotions, and consequently have a greater ability to be aware of, and process emotion during social interactions. We predict these findings will provide insight into the unique experiences of victimization by romantic partners with psychopathic characteristics.

Why is this important to scientists or the general public?

This study has wide scale importance in understanding the interpersonal and emotional consequences of victimization. Due to the limited research on survivors of domestic abusers who display psychopathic characteristics, these findings will inform further understanding of this population. It may be useful to:

- 1) Promote the processes found to be related to resilience and post traumatic growth in a therapeutic setting
- 2) Advance knowledge of the relationship between emotional functioning and interpersonal relations in resilience and post traumatic growth

Psychopathic characteristics is associated with an increased likelihood of involvement with the criminal justice system these findings may also be useful legally, especially during interpretations of Victim Impact Statements.

Where can I learn more?

The study you have participated in touches on a lot of different topics. If you are interested in learning more about psychopathic characteristics in general, please refer to the following websites and books:

Dr. Hare's page for the Study of Psychopaths
<http://www.hare.org/>

The Sociopath next door
Martha Stout

Women who love psychopaths
Sandra Brown

If you experienced anxiety distress, or are experiencing problems with addictions and gambling behaviours as a result of participation in this study we recommend that you contact your local crisis support centre or general physician. We ask that if you are experiencing suicidal thoughts that you seek help from a mental health professional in your local area, who can be contacted through your local physician or distress centre.

For online support groups on surviving an abuser with psychopathic characteristics, please see:

Aftermath: Surviving Psychopathy Foundation
<http://www.aftermath-surviving-psychopathy.org/>

Lovefraud
<http://www.lovefraud.com/>

Centre for Mental Health and Addictions- List of Canadian Mental Health Resources
http://www.camh.net/care_treatment/index.html

Mental Health American- List of American Mental Health Resources
<http://www.nmha.org/go/help>

What if I have questions later?

Thank you for participating in this study if you have any further questions about this research feel free to contact the Faculty Supervisor, John Logan (613-520-2600, x2690; john_logan@carleton.ca) or the Principal Researcher, Courtney Humeny (courtney_humeny@carleton.ca) who is a fifth-year PhD candidate. If you have any concerns or questions regarding the ethics of this experiment, you can contact the Carleton University Research Ethics Board-A (CUREB-A) Chair, Louise Heslop (613 520-2600 ext. 2378; louise_heslop@carleton.ca).

Thank you for your participation.

This study has been approved by the Carleton University Research Ethics Board-A (CUREB-A) (**103670**)

Appendix P**Study 2- Demographics**

Please fill out the following questions about yourself. If you do not wish to answer any questions, please leave them blank.

1. Age:
2. Gender
Male
Female
3. Ethnicity
Caucasian
African- Canadian
Asian
Hispanic
Aboriginal/ Inuit
Other (Please specify):
4. Location
Canada
United States
Europe- United Kingdom
Europe (non-United Kingdom)
Other (Please specify):
5. Employment status
Not employed (not looking for work)
Not employed (looking for work)
Part- time
Full- time
Seasonal or contract
Retired
6. Occupational background
Information technology/ Computing
Service/ Support
Engineering/ Science
Medical/ Government
Student
Other (Please specify):
7. Highest level of education completed
Elementary school

Secondary school
Community college
Technical or trade school
University
Graduate school

8. Relationship status:

Single (not interested in dating/a relationship)
Single (interested in dating/ a relationship)
Dating
In a relationship
Married
Other (please specify):

Appendix Q**Study 2- Victimization Screening Survey**

The following series of questionnaire will assess your experiences of abuse while in a romantic relationship (i.e., dating, common law, spouse, etc). Abuse can range from, but is not limited to: verbal/ emotional abuse (i.e., bullying, manipulation, conning), lying and deceit, sexual assault, theft (i.e., property or material goods). Generally, the experience of being abused entails being unwillingly taken advantage of by another person's chosen or negligent actions.

1. Gender of abuser:
Male
Female

2. Ethnicity of abuser:
Caucasian
African
Asian
Hispanic
Aboriginal or Inuit
Other (please specify):

3. What was your relationship with the abuser?
Friend
Spouse
Boyfriend/ Girlfriend
Common Law partner
Other (please specify):

4. How long did the romantic relationship last?
Less than 6 months
6 months – 12 months
1 to 2 years
2 to 5 years
5 to 10 years
10 years to 20 years
More than 20 years

5. How long ago did contact with him or her stop?
Less than 6 months
6 months – 12 months
1 to 2 years
2 to 5 years
5 to 10 years
10 years to 20 years
More than 20 years
In current contact
6. How frequently were you experience abuse by this romantic partner?
Rarely (a single incident)
Sometimes (a limited number of incidents)
Frequently (multiple incidents)
Very Frequently (a large number of incidents)
7. What was the most serious degree of physical injury committed against you by the abusive partner?
None
Mild injury/ no medical treatment
Moderate injury/ first aid or outpatient medical treatment
Extreme injury/ hospitalized
8. What kind(s) of physically violent acts did the abuser commit against you by the abusive partner.
Please write in the specify box how you feel you were victimized by each of these harmful acts. Providing examples and feelings will assist the researcher in gaining a deep understanding of your experience. Please write NO if you had none of these experiences.
Physical (please specify):
Sexual (please specify):
9. What kind(s) of non-violent but harmful acts did the abuser commit against you by the abusive partner.
Please write in the specify box how you feel you were victimized by each of these harmful acts. Providing examples and feelings will assist the researcher in gaining a deep understanding of your experience. Please write NO if you had none of these experiences.
Emotional (please specify):
Spiritual (please specify):
Financial (Please specify):
Substance (i.e., forced intoxication) (please specify):
Deceit (i.e., lies, manipulation) (please specify):
Property crime (please specify):

10. On the following scale rate how you perceive the abusive partner to have an impact on these aspects of your health

Physical:					
0	1	2	3	4	
N/A	Rare	Mild	Moderate	Extreme	

11. Mental

0	1	2	3	4
N/A	Rare	Mild	Moderate	Extreme

12. Please specify when in the romantic relationship, in terms of years or months did you first notice any abusive behaviors: (please specify):

Appendix R

Iowa Gambling Task Instructions

Please read through the **instructions** for the Iowa Card game below:

Once you click on the link below to begin the game you will be asked to select one card at a time from any of the 4 decks, which will be labeled A, B, C, D. The purpose of the task is to gain as many points as possible. Points can be gained or lost when a card is selected from a deck. Decks are chosen by clicking the A, B, C, D deck you wish to choose from. You can switch from any deck to another at any point until the task ends. You will be notified when the task is over. The duration of the task is estimated to be 10-15 minutes.

Appendix S

Facial Affect Recognition Stimuli and Instructions

Instructions:

As part of this task you will view several photos depicting facial expressions of emotions of joy, shame, anger, sadness, fear, and disgust. After you view each photo, you will be asked to indicate what emotion is being expressed in the image. A list of choices will be provided, please click your answer. You will then be provided with a fixation point screen to prepare you for the next image. There will be an option for a break for one minute every 12 photos. There are 60 photos in total. Please make select your choice of emotion as fast as possible as there is a time limit to make this selection.

It is important to keep playing the task until you are told to stop. If you stop the task in the middle or close your internet browser, you will have to restart the task.



Table 38

Counterbalancing of facial affect stimuli

Block 1 – 20%	Block 2—40%	Block 3 – 60%	Block 4—80%	Block 5—100%
Anger	Joy	Shame	Sadness	Anger
Joy	Sadness	Disgust	Anger	Joy
Sadness	Fear	Sadness	Joy	Sadness
Fear	Anger	Fear	Disgust	Fear
Disgust	Shame	Anger	Sadness	Disgust
Shame	Joy	Sadness	Shame	Shame
Joy	Disgust	Joy	Fear	Joy
Disgust	Fear	Shame	Anger	Disgust
Fear	Disgust	Fear	Joy	Fear
Shame	Anger	Disgust	Shame	Shame
Anger	Sadness	Joy	Fear	Anger
Sadness	Shame	Anger	Disgust	Sadness

Appendix T

Study 2- Correlation Matrix between Psychopathy factors, Abuse Experiences, and Mental Health Impairments

Table 39

Bivariate correlations between psychopathy factor scores, participants' abuse experiences, and current level of mental health impairments

	1	2	3	4	5	6	7	8	9	10	11	12
1.Factor 1	-											
2.Factor 2	.571**	-										
3.Frequency	.207**	.157**	-									
4.Versatility	.315**	.349**	.240**	-								
5.Harm	.143**	.329**	.052	.460**	-							
6.Physical	.166**	.293**	.036	.583**	.679**	-						
7.Sexual	.241**	.148**	.131**	.556**	.211**	.159**	-					
8.Spiritual	.075	-.034	.094	.429**	-.038	.039	.122*	-				
9.Deceit	.145**	.097	.127*	.244**	.028	.071	.040	.013	-			
10.Property	.204**	.326**	.140**	.621**	.315**	.312**	.173**	.024	.111*	-		
11.Financial	.250**	.289**	.282**	.569**	.169**	.188**	.238**	.093	.127*	.366**	-	
12.Substance	.084	.153*	.101*	.533**	.208**	.230**	.134**	.093	.074	.192**	.163**	-

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

Note. Bivariate correlations were carried out using pairwise deletion. Emotional abuse was not included due to a lack of variability in scores.

Appendix U

Mixed ANOVA Findings for Hypothesis Six

Table 40

Means and standard deviations of high and low scores on recovery outcome variables

	<i>M</i>	<i>SD</i>
Anxiety		
High	102.0	13.3
Low	30.1	15.5
Depression		
High	40.9	8.0
Low	10.2	5.2
PTSD		
High	76.5	4.5
Low	45.9	10.1
Resilience		
High	37.0	14.5
Low	14.0	10.7
Growth		
High	92.9	5.7
Low	33.1	15.4

Table 41

Interaction effect findings of recovery outcome variables on facial affect recognition by emotion type and level of intensity

Group	<i>df</i>	<i>F</i>	η^2	<i>P</i>
Anxiety × intensity	4, 2.73	.474	.004	.689
Anxiety × emotion	5, 4.78	.541	.004	.737
Depression × intensity	4, 4.69	.286	.001	.912
Depression × emotion	5, 2.96	.006	.002	.917
PTSD × intensity	4, 3.03	.854	.007	.469
PTSD × emotion	5, 4.47	.519	.004	.750
Resilience × intensity	4, 2.74	1.72	.026	.272
Resilience × emotion	5, 4.46	1.21	.026	.304
Growth × intensity	4, 3.09	1.37	.011	.250
Growth × emotion	5, 4.66	1.16	.009	.330