Telltale Gait: The Role of Nonverbal Cues in Perceptions of Personality and Vulnerability

by

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Abstract

Non-verbal behaviour often provides one of the first opportunities to make socially relevant judgments. For example, gait has been shown to inadvertently signal information about personality and vulnerability. Although non-verbal cues such as gait appear to signal socially relevant information, researchers have identified distinct differences in the ability of observers to accurately perceive these cues. Based on this research, Study 1 examined the personalities and victimization histories of walkers in relation to their gait, and Study 2 explored individual differences in observer's perceptions of the walkers' personality and vulnerability. While victimization history was associated with the display of vulnerable gait cues in Study 1, this association was dependent on victimization type and the cognitive state of the walker. That is, when the walkers felt comfortable, those who had exclusively experienced sexual victimization displayed significantly more vulnerable gait cues than non-victims, while walkers who had exclusively experienced violent victimization did not. Conversely, when the walkers felt uncomfortable, no associations were identified between gait and victimization history. Further, no associations were identified between gait and personality. In Study 2, psychopathy was identified as the most salient predictor of accuracy in perceiving vulnerability to victimization. This association was also dependent on victimization type, where observers higher on psychopathy were significantly more accurate in perceiving vulnerability to violent, but not sexual victimization. While observers were not able to accurately perceive the walkers' personalities, there was a general tendency to view sexual victims as passive, while violent and non-victims were viewed as charismatic. Taken together, the results of the current study raise questions about the role gait plays in perceptions of vulnerability and personality among psychopathic observers.

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Dedication

I would like to dedicate my Master of Arts thesis to those who have been victimized by psychopathic individuals. It is my hope that, through a better understanding of the victim selection process, we can one day reduce the occurrence of victimization and the impact these individuals have on the lives of survivors.

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Telltale Gait: The Role of Nonverbal Cues in Perceptions of Personality and Vulnerability

Nonverbal behaviour often provides one of the first opportunities to make judgments about socially relevant information. For example, nonverbal behaviour such as posture, gesturing (e.g., Richards, Rollerson, & Phillips, 1991), and gait (e.g., Grayson & Stein, 1981) have been associated with inadvertent cues signaling information about personality (e.g., submissiveness versus dominance) and vulnerability. While non-verbal behaviour appears to influence perceptions of others' personality and vulnerability, recent research suggests that the display of these non-verbal cues may be context dependent (Fulham, Blais, Book, & Ritchie, 2016; Johnston, Hudson, Richardson, Gunns, & Garner, 2004). That is, individuals tend to display significantly more vulnerable gait cues when they feel safe and/or comfortable in their environment than when they feel unsafe and/or uncomfortable.

According to McArthur and Baron's (1983) ecological approach to social perceptions theory, the ability to recognize these non-verbal cues is an adaptive quality that can benefit goal attainment and survival. Supporting this notion, researchers have begun identifying individual differences in the ability to accurately perceive non-verbal cues signaling information about personality and vulnerability. Psychopathic individuals, for example, appear to be more adept at identifying nonverbal cues signaling vulnerability than non-psychopathic individuals, and are subsequently more accurate in judging others' vulnerability based on these cues (Book, Costello, & Camilleri, 2013; Ritchie, Blais, Forth, & Book, 2016; Wheeler, Book, & Costello, 2009).

Unfortunately, researchers have yet to consider the possibility that the associations between victimization history and gait, and accuracy in perceiving vulnerability to victimization may depend on victimization type. That is, while gait may be associated with experiences of sexual victimization (e.g., Murzynski & Degelman, 1996), it remains unclear whether the same is

true for those with a history of violent victimization. Further, previous research examining individual differences in perceptions of vulnerability has failed to adequately distinguish between violent and sexual victimization (e.g., Book et al., 2013; Ritchie et al., 2016). In particular, these studies have either combined violent and sexual victimization into a single variable defined as any victimization experiences equal to or greater in severity than bullying (e.g., Book et al., 2013), or used overlapping definitions of violent and sexual victimization (e.g., Ritchie et al., 2016). Thus, before we can reliably conclude that accuracy depends on victimization type, more discrete definitions of these constructs need to be established.

The aim of Study 1 was to assess the personality characteristics of the walkers and identify whether the association between victimization history and gait was dependent on the type of victimization experienced by the walkers (i.e., violent versus sexual) and their cognitive states (i.e., comfortable versus uncomfortable). In Study 1, women undergraduate students were filmed walking down a hallway under two conditions. Under the first condition, participants were unaware of the camera when walking down the hallway. Conversely, the same participants were made aware of the camera when walking under the second condition. This was done to elicit a comfortable and uncomfortable cognitive state among the walkers. These participants were then asked to complete a series of questionnaires measuring various personality traits and their victimization histories (i.e., violent and sexual).

Using a subsample of the walkers collected in Study 1, Study 2 sought to replicate the associations between psychopathy, personality, and victimization history identified in the literature (e.g., Book et al., 2013) and explore additional individual differences in perceptions of nonverbal cues. Study 2 was also the first study to examine whether individual differences in accuracy were dependent on distinct types of victimization (i.e., violent versus sexual). In Study

2, men and women undergraduate students were asked to participate as observers, viewing a series of walker videos and rating each walker on her personality characteristics and vulnerability to violent and/or sexual victimization. These participants were also asked to complete a series of questionnaires assessing psychopathy, general personality, and dark personality traits.

Following a review of structural personality models, personality traits are discussed in relation to antisocial behaviour and criminality. Traits that have been strongly associated with antisocial behaviours, such as psychopathy and the Dark Tetrad, are then expanded upon. Personality is then discussed in relation to victimization experiences and the display of non-verbal cues. Various movement patterns inherent to personality and vulnerability are explored. Finally, individual differences in the ability to accurately perceive these non-verbal cues are discussed and additional individual differences that have yet to be identified are considered. Research questions and hypotheses are provided following a brief summary of the literature.

Structural Models of Personality

Larsen and Buss (2010) define personality as a set of psychological traits (i.e., average tendencies of an individual) and mechanisms (i.e., information processors) that exist within the individual and endure over time. These traits and mechanisms are believed to influence how individuals interact with their environments (Larsen & Buss, 2010). For several decades, researchers have developed theoretical frameworks in an attempt to explain individual differences in interpersonal behaviours. Of these frameworks, the Five Factor Model (FFM; Costa & McCrae, 1995; Goldberg, 1981; McCrae & John, 1992; Saucier & Goldberg, 1996) and the Interpersonal Circumplex (IPC; Trapnell & Wiggins, 1990; Wiggins, 1979) have been used most prominently, however, the HEXACO model of personality (Lee & Ashton, 2004) has

become increasingly influential over the past decade (Ashton, Lee, & de Vries, 2014).

The FFM, also known as the Big Five, is an empirically derived personality taxonomy composed of five hierarchical and orthogonal (i.e., statistically unrelated) dimensions. After years of combining lexical (i.e., identifying traits based on words encoded into natural language; Allport, 1937) and statistical (e.g., factor analysis; Catelle, 1943; Fiske, 1949; Tupes & Christal, 1996; Norman, 1963) approaches, researchers identified (1) conscientiousness, (2) agreeableness, (3) neuroticism, (4) extraversion, and (5) openness to experience as the five basic dimensions of personality (e.g., Costa & McCrae, 1985; Goldberg, 1981; McCrae & Costa, 1990; Peabody & Goldberg, 1989). Each of the Big Five dimensions is also characterized by a series of six sub-traits or facets (see Table 1). The Big Five are thought to be stable over time and have been replicated across a variety of populations (e.g., adults, youth, and students; Botwin & Buss, 1989, Digman & Inouye, 1986; Goldberg, 1981; McCrae & Costa, 1990).

Table 1

Dimensions and Facets of the Five Factor Model

Personality Dimension	Facets
Conscientiousness	<ol style="list-style-type: none"> 1. Competence 2. Order 3. Dutifulness 4. Achievement striving 5. Self-discipline 6. Deliberation
Agreeableness	<ol style="list-style-type: none"> 1. Trust 2. Altruism 3. Modesty 4. Straightforwardness 5. Compliance 6. Tender-mindedness
Neuroticism	<ol style="list-style-type: none"> 1. Anxiety 2. Anger hostility 3. Depression 4. Self-consciousness 5. Impulsive 6. Vulnerability
Extraversion	<ol style="list-style-type: none"> 1. Gregariousness 2. Assertiveness 3. Activity 4. Excitement-seeking 5. Positive emotions 6. Warmth
Openness to experience	<ol style="list-style-type: none"> 1. Ideas 2. Fantasy 3. Aesthetics 4. Actions 5. Feelings 6. Values

Although some researchers believe that the FFM is one of the best models for explaining human personality (e.g., Digman, 1990; McCrae & John, 1992), others have posited that it is inadequate in accounting for all individual differences (e.g., Mershon & Gorsuch, 1988). Those

in disfavoured argue that a more comprehensive model of personality, not exclusively focusing on higher order dimensions, is required to best explain individual differences (Mershon & Gorsuch, 1988). Others have argued that the FFM contains too many factors (e.g., Zuckerman, Kuhlman, & Camac, 1988), and would be better represented by a two- or three factor model of personality (Cloninger, 1988; Digman, 1985; Gough, 1987; Hogan, 1991; Tellegen, 1982; Zuckerman et al., 1988). As proponents of the FFM, McCrae and John (1992) counter these arguments by reminding researchers that the FFM was never intended to be an exhaustive explanation of individual differences, but rather a representation of the highest order personality dimensions.

While the FFM has become a widely accepted model of personality, large-scale lexical studies conducted over the past decade have resulted in the identification of a six-dimensional personality model known as the HEXACO (HEXACO; Ashton, Lee, & Goldberg, 2004a; Ashton et al., 2014; Ashton et al., 2004b; Lee & Ashton, 2004, 2008). The HEXACO consists of (1) honesty-humility, (2) emotionality, (3) extraversion, (4) agreeableness, (5) conscientiousness, and (6) openness to experience. Some researchers have argued that the HEXACO better accounts for variance in interpersonal behaviour than the FFM (Ashton et al., 2014). Currently, the only measures available to assess the HEXACO model of personality are the HEXACO Personality Inventory (i.e., HEXACO-PI; Lee & Ashton, 2004) and its derivative (i.e., HEXACO-60; Ashton & Lee, 2009). Using these measures, the HEXACO model of personality has been successfully replicated cross culturally (De Raad et al., 2014).

With overlapping nomenclature, it is not surprising that the HEXACO conceptualization of extraversion, conscientiousness, and openness to experience are congruent with the respective FFM constructs (Lee & Ashton, 2004; Lee, Ashton, & de Vries, 2005a). Although consistent in wording, the similarity between the HEXACO agreeableness and FFM agreeableness can be

slightly misleading. In fact, researchers suggest that these constructs do not overlap and are actually slight variants of each other (Ashton et al., 2014). For example, HEXACO agreeableness has been defined as forgiveness, tolerance, and being even-tempered (Ashton et al., 2014; Lee & Ashton, 2006), capturing characteristics of emotional stability that define the FFM neuroticism construct. Conversely, the sentimental component of the FFM agreeableness construct is captured by HEXACO emotionality, which has been defined as fearfulness, anxiety, and vulnerability (Ashton et al., 2014; Lee & Ashton, 2006). The most obvious distinction between the FFM and HEXACO, however, is the addition of the honesty-humility dimension, a personality trait reflecting modesty, sincerity, trust, greed-avoidance, and fairness (Ashton et al., 2014; Lee & Ashton, 2004, 2005; Lee et al., 2013).

Unlike the empirically based FFM and HEXACO models of personality, the IPC is a theoretically based model of interpersonal traits (Wiggins, 1991). Leary (1957) defines interpersonal behaviour as any behaviour that is overtly, conscientiously, ethically, or symbolically related to another person, regardless of whether that person is real, collective, or imagined. The IPC originated from the work of Freedman, Leary, Ossorio, and Coffey (1951), Leary (1957), and Lorr and McNair (1969) and is structured around the association between two primary factors: (1) dominance (i.e., the desire for power) and (2) warmth (i.e., the desire for social harmony; Wiggins, 1991). In the literature, dominance has also been referred to as agency or status and warmth has been referred to as communion or love. According to Wiggins (1991), dominance and warmth are fundamental to interpersonal behaviour as they drive the evolutionary goal of achieving status and maintaining social bonds.

The IPC takes on a circular structure that is made up of eight bipolar octants (i.e., interpersonal traits) theoretically developed around the two fundamental traits, dominance and

warmth (see Figure 1). The eight octants comprising the IPC are (1) assured-dominant, (2) arrogant-calculating, (3) cold-hearted, (4) aloof-introverted, (5) unassured-submissive, (6) unassuming-ingenuous, (7) warm-agreeable, and (8) gregarious-extraverted. These octants interrelate on a two-dimensional plane (Acton & Revelle, 2002) and correspond to specific degrees around the circumplex. Interpersonal traits that are closest together in the circumplex are positively related (e.g., assured-dominant and gregarious-extraverted), while those opposite each other are negatively related (e.g., assured-dominant and unassured-submissive; Markey & Markey, 2009).

Figure 1. The circumplex model of interpersonal behaviour.

The IPC's dominance-submissiveness and warm-agreeable octants are thought to be variants of the FFM's extraversion and agreeableness dimensions, respectively (Trapnell &

Wiggins, 1990; Wiggins, Trapnell, & Phillips, 1988). Supporting this, research has demonstrated that the extraversion and agreeableness dimensions of the FFM are 30-degree rotational variants of the IPC dominant and warmth axes (Barford, Zhao, & Smillie, 2015; DeYoung, Weisberg, Quilty, & Peterson, 2013; McCrae & Costa, 1989; Pincus, 2002; Wiggins & Broughton, 1991; see Figure 2). Recent research mapping the HEXACO-PI onto the IPC identified slightly different results, where HEXACO agreeableness was rotated slightly closer to the politeness octant on the IPC and HEXACO extraversion was rotated closer to the enthusiasm octant on the IPC (Barford et al., 2015). Interestingly, the HEXACO honesty-humility dimension appears to be a variant of the politeness octant on the IPC, falling at almost identical angles. While this finding suggests that politeness and honesty-humility are very similar constructs, Barford and colleagues (2015) note that the correlation between these dimensions is not strong enough to indicate complete conceptual-overlap (i.e., $r = .49$).

Figure 2. Overlap between the Five-Factor Model, HEXACO, and the circumplex model of interpersonal behaviour.

According to Markey and Markey (2009), the IPC is one of the most popular models for examining the dominance-submissiveness dyad. This is not surprising as the Interpersonal Adjective Scale (IAS; Wiggins, 1979; Wiggins, 1995), a popular measure of the IPC (Gurtman, 2009), is one of the few tools to assess dominance and submissiveness as distinct constructs. Although dominance and submissiveness can be viewed as bipolar, some researchers have argued that dominance is independent of submissiveness and vice versa (e.g., Carli, LaFleur, & Loeber, 1995; Cattell, 1946). Subsequently, rather than explicitly assessing these traits, correlates of dominance and submissiveness are often measured (e.g., assertiveness and compliance, respectively; Costa & McCrae, 1985; Hogan, 1986).

Over several decades, distinct methods have been established to measure the IPC (e.g.,

IAS; Wiggins, 1979) and FFM (NEO Personality Inventory Revised; Costa & McCrae, 1992) models of personality. Despite having different frameworks for describing interpersonal behaviour, McCrae and Costa (1989) argue that the FFM and IPC are complementary models. Specifically, information from the FFM can help orient and interpret the IPC octants (McCrae & Costa, 1989). Conversely, the IPC provides useful information about two of the five dimensions (i.e., extraversion and agreeableness) not captured by the FFM on its own (McCrae & Costa, 1989). Given the complementary nature of these models, a version of the IAS was created to account for the Big Five personality dimensions in addition to the IPC octants (i.e., Revised Interpersonal Adjectives Scale – Big Five; IASR-B5; Trapnell & Wiggins, 1990). With the addition of the Big Five, the IASR-B5 is a highly efficient instrument for assessing personality, which can be useful when exploring individual differences in interpersonal behaviour.

Personality and Criminality

An interpersonal behaviour that has long captivated researchers is criminality. In particular, researchers have sought to identify characteristics that motivate or inhibit individuals from engaging in criminal behaviour. In their influential study, Glueck and Glueck (1950) compared the personality characteristics of offenders to non-offenders. Compared to the non-offenders, the offenders showed greater deviancy, ambivalence, hostility, suspiciousness, destructiveness, impulsivity, vivaciousness, and extraversion (Glueck & Glueck, 1950). Although Caspi et al. (1994) have since replicated these characteristics, subsequent research associating the Big Five and criminality has been inconsistent. In a meta-analysis conducted by Miller and Lynam (2001), low agreeableness and low conscientiousness were identified as correlates of criminal behaviour. Although the remaining dimensions did not correlate with criminality in this meta-analysis, a subsequent study conducted by Clower and Bothwell (2001)

provides evidence that criminal behaviour may be accounted for by the interaction between low openness and low conscientiousness. Moreover, it is problematic to draw conclusions about the association between neuroticism, extraversion, and criminal behaviour as criminality has been correlated with both high and low scores on these Big Five dimensions (Blackburn & Maybury, 1985; Lykken, 1995; Mealey, 1995; Miller & Lynam, 2001).

Within the HEXACO model of personality, the honesty-humility dimension has been particularly salient in accounting for variance in delinquent or criminal behaviour beyond the Big Five dimensions. In particular, research has indicated that individuals scoring low on honesty-humility tend to engage in more antisocial behaviours (Lee et al., 2005a; Lee, Ashton, & Shin, 2005b; Marcus, Lee, & Ashton, 2007). Evidence also suggests that the honesty-humility dimension is strongly correlated with other personality characteristics predictive of antisocial behaviour, such as psychopathy, Machavellianism, and narcissism (Ashton, Lee, & Son, 2000). While the remaining HEXACO factors were not strongly associated with antisocial tendencies in this study (Ashton et al., 2000), other studies have correlated low scores on the HEXACO's conscientiousness and agreeableness factors with criminality (e.g., prior arrests, work place delinquency; Ashton & Lee, 2008; Samuels et al., 2004). Although honesty-humility has been consistently associated with antisocial behaviour, a recent study employing multiple linear regression analysis identified agreeableness and conscientiousness as the most salient predictors of criminal behaviour after controlling for the remaining HEXACO factors, including the honesty-humility dimension (Petrovic, Medjedovic, Savic, & Zeleskov-Djoric, 2014). This finding may not be generalizable, however, as Petrovic and colleagues (2014) collected data from a sample of institutionalized offenders in Serbia. With that in mind, it appears that honesty-humility remains a salient predictor of antisocial behaviour.

Among the available studies mapping criminal behaviour onto the IPC, hostility has been identified as a characteristic of persistent antisocial behaviour and social deviance (Blackburn & Maybury, 1985; Harpur, Hare, & Hakstian, 1989). In addition to hostility, Blackburn (1998) identified high dominance and low warmth (e.g., love, communion) as key components of criminality as indexed by higher conviction rates. Although these interpersonal characteristics appear to be associated with criminality in general, Blackburn (1998) reported less consistent results when focusing on specific offence types. For example, dominance and warmth were not significantly correlated with violent and sexual offending. While the FFM, HEXACO, and IPC offer inconclusive evidence of an association between personality and crime, researchers have often turned to psychopathic personality as a means of explaining interpersonal differences in criminal tendencies (e.g., Leistico, Salekin, DeCoster, & Rogers, 2008).

Characteristics of Psychopathic Personality

Psychopathy has been defined as a constellation of maladaptive personality traits characterized by interpersonal (e.g., manipulative), affective (e.g., remorseless), behavioural (e.g., impulsive), and antisocial features (e.g., early onset and diverse criminal behaviours; Hare, 2003). Researchers estimate that less than 1% of the general population would qualify as psychopathic (Coid, Yang, Ullrich, Roberts, & Hare, 2009; Hare, 1998; Neumann & Hare, 2008; Ullrich, Farrington, & Coid, 2008), while approximately 15 to 25% of the offender population would meet the diagnostic criteria (Hemphill, Hare, & Wong, 1998; Salekin, Rogers, & Sewell, 1996). Although only a small proportion of the general population would be considered psychopathic, these individuals possess a specific set of characteristics that can be extremely destructive to society and cause considerable harm to others (e.g., physical, mental, financial; Babiak & Hare, 2006; Hare, 2003). This is evidenced by the overrepresentation of psychopathic

individuals in the offender population.

Given the characteristics of psychopathy, it is not surprising that a consistent association has been identified with general and violent offending (e.g., Leistico et al., 2008; Wormith, Olver, Stevenson, & Girard, 2007). According to a recent meta-analysis conducted by Blais, Solodukhin, and Forth (2014), psychopathy is equally related to engagement in instrumental (e.g., committing aggression for the purpose of obtaining something) and reactive violence (i.e., committing aggression as an impulsive emotional response to provocation). Psychopathic offenders are also more likely to recidivate upon release, often in a violent manner, than non-psychopathic offenders (Mokros, Vohs, & Habermeyer, 2013; Olver, Lewis, & Wong, 2013; Olver, Stockdale, & Wormith, 2009; Rice & Harris, 2013; Salekin et al., 1996; Yang, Wong, & Coid, 2010). In addition to violence, psychopathic individuals are more likely to engage in persistent sexual offending (e.g., Hanson & Morton-Bourgon, 2005; Hawes, Boccaccini, & Murrie, 2013). The association between psychopathy and violence has also been identified outside of clinical offender samples, where students and general community members scoring higher on psychopathy are more likely to engage in antisocial behaviour than those scoring lower on psychopathy (Walters, 2003a, 2003b; Vitacco, Neumann, & Pardini, 2014).

In clinical samples, psychopathy is often assessed with the Hare Psychopathy Checklist-Revised (PCL-R; Hare, 2003). Given the presence of psychopathy in the general population, however, several measures have been developed to assess psychopathy in student and community samples. Many of these measures are derivatives of the PCL-R and reflect a similar factor structure. Measures such as the Levenson Self-Report Psychopathy Scale (LSRP; Levenson, Kiehl, & Fitzpatrick, 1995) and the Self-Report Psychopathy Scale (Paulhus, Neumann, & Hare, in press) have been moderately correlated with the PCL-R. These measures

are also composed of two factors that have also been consistently reported within the PCL-R (Hare, 1991, 2003; Harpur, Hakstian, & Hare, 1988). Factor 1 psychopathy is comprised of the interpersonal (e.g., superficial charm) and affective (e.g., lack of empathy) features of psychopathy (Hare, 1991). Conversely, Factor 2 psychopathy is comprised of the unstable lifestyle (e.g., impulsive) and antisocial (e.g., delinquent) features of psychopathy (Hare, 1991).

The two-factor model of psychopathy has recently been separated into a four facet-model, where Factor 1 psychopathy became the (1) interpersonal and (2) affective facets, and Factor 2 psychopathy became the (3) lifestyle and (4) antisocial facets. Self-report psychopathy scales have accurately represented this four-factor model (Neal & Sellbom, 2012; Williams & Paulhus, 2004). Although the four-facet model of psychopathy has been replicated in a variety of populations (e.g., community, juvenile, forensic psychiatric, and offender; Babiak, Neumann, & Hare, 2010; Kosson et al., 2013; Neumann, Kosson, & Salekin, 2007), some researchers have argued for a three-facet structure where psychopathy is characterized by interpersonal, affective, and behavioural features (Cooke & Michie, 2001). While this proposition has since ignited a debate over the underlying facet structure of psychopathy, both the three- and four-facet models have received empirical support (e.g., Cooke & Michie, 2001; Cooke, Michie, Hart, & Clark, 2005; Edens, Marcus, Lilienfeld, & Poythress, 2006; Hare, 2003).

Viewing psychopathy as a variation of general personality, some researchers have attempted to map the construct of psychopathy onto the FFM, HEXACO, and IPC models of personality. From an interpersonal perspective, psychopathy appears to map onto the hostility octant of the IPC (Blackburn & Maybury, 1985; Leary, 1959) and may also be associated with dominance (Harpur et al., 1989). Other studies have identified associations between psychopathy and the arrogant/calculating and coldhearted octants (Foreman, 1989; Hart & Hare, 1994),

reflecting the callous and manipulative nature of psychopathic individuals. Among the HEXACO dimensions, psychopathy has been characterized by low honesty-humility (Lee & Ashton, 2005; Lee et al., 2013). This association is not surprising given that, unlike those possessing psychopathic traits, individuals high on honesty-humility tend to act fairly and cooperatively even when the opportunity to exploit others arises (Hilbig, Zetter, Leist, & Heydasch, 2013). Although less consistent, psychopathy has also been associated with low scores on the HEXACO's conscientiousness, emotionality, and agreeableness factors (Lee et al., 2013).

Among the FFM traits, evidence that psychopathy is characterized by low agreeableness and low conscientiousness as variants of psychopathy is robust (e.g., Harpur, Hart, & Hare, 2002; Jackson & Richards, 2007; Lee & Ashton, 2005; Lynam et al., 2005; Miller & Lynam, 2003; Miller, Lynam, Widiger, & Leukefeld, 2001; Widiger & Lynam, 1998; Williams & Paulhus, 2004). The associations between psychopathy and the remaining dimensions are less clear. In order to obtain statistically meaningful results, Harpur and colleagues (2002) note that the remaining dimensions (i.e., neuroticism, extraversion, openness) need to be measured at a facet level. Despite evidence that psychopathy is unrelated to these higher order dimensions, at the facet level psychopathy appears to be associated with the gregarious, assertive, activity, and excitement-seeking facets of the extraversion dimension, the anger hostility and impulsivity facets of the neuroticism dimension, and the openness facet of the openness to experience dimension (Harpur et al., 2002; Miller & Lynam, 2001). Contrary to these findings, a meta-analysis conducted by Decuyper, De Pauw, De Fruyt, De Bolle, and De Clerco (2009) found no association between psychopathy and openness at the facet level. Overall, research suggests that psychopathy can be described as a variant of general personality traits. Although the association between psychopathy, extraversion, openness, and neuroticism has been somewhat inconsistent

throughout the literature, psychopathy appears to be consistently characterized by low agreeableness, low conscientiousness, and low honesty-humility. With evidence of an association between psychopathy and general personality, it is not surprising that researchers have also found a strong association between psychopathy and dark personality traits.

Dark Personalities

Among subclinical populations, psychopathy has been identified as a main factor in the constellation of dark personality traits characterized by exploitative, manipulative, and callous interpersonal behaviour (Jones & Paulhus, 2010). Together, psychopathy (e.g., antisocial, impulsive, callous, lack of remorse; Hare, 2003), Machiavellianism (e.g., manipulative, calculating, self-interested; Christie & Geis, 1970; Jones & Paulhus, 2011), and narcissism (e.g., entitled, grandiose, egotistic, lack of empathy; Campbell & Miller, 2011; Rhodewalt & Peterson, 2009) form the Dark Triad (Paulhus & Williams, 2002). More recently, a fourth personality trait – referred to as “everyday sadism” – was added to this constellation of dark personalities (Buckels, Jones, & Paulhus, 2013; Chabrol, Leeuwen, Rogers, & Sejourne, 2009). According to Buckels and colleagues (2013), everyday sadists are individuals who gain pleasure from hurting others and are often willing to go out of their way to hurt others. With the addition of everyday sadism, the “Dark Triad” was renamed the “Dark Tetrad”. Unfortunately, little research exists on the Dark Tetrad at the present time.

Since the introduction of the Dark Triad, numerous models have been developed in an attempt to account for the common core of these traits. While some researchers have argued that the Dark Triad traits are mutually related based on characteristics of low agreeableness (Paulhus & Williams, 2002), others have argued the core can be accounted for by a lack of empathy (Baron-Cohen, 2011), characteristics of low honesty-humility (Lee & Ashton, 2005), or

exploitation (Jonason & Webster, 2010). Nevertheless, in a recent study comparing these four models, Book, Visser, and Volk (2015) provide evidence that the core of the Dark Triad is best accounted for by the HEXACO model of personality, and more specifically, low scores on the honesty-humility dimension. Given the recent addition of everyday sadism, however, it is unknown whether the HEXACO remains the best model to account for the core of the Dark Tetrad. Regardless, all four Dark Tetrad traits have been associated with aversive behaviours (Buckels et al., 2013; Buckels, Trapnell, & Paulhus, 2014; Furnham, Richards, & Paulhus, 2013; Paulhus, 2014) such as deviance/antisociality (Buckels et al., 2014; Chabrol et al., 2009), online trolling (Buckels et al., 2014), bullying (Book, Volk, & Hosker, 2012), and gaining pleasure from others' misfortune (Porter, Bhawner, Woodworth, & Black, 2014). While research exploring the characteristics of individuals who engage in antisocial or criminal behaviour is vital to preventing such behaviour, it is equally as important to identify the characteristics of those who are victimized.

Personality and Victimization

Given that certain personality traits have been associated with an increased likelihood of engaging in antisocial behaviour, it is not surprising that certain personality traits have also been associated with vulnerability. For example, a study conducted by Corbin, Bernat, and Calhoun (2001) identified a negative association between perceived levels of assertiveness and vulnerability, where those with previous victimization experiences were seen as significantly less assertive. Research has also suggested that victims of sexual assault tend to be more submissive and less powerful in social situations (e.g., Amir, 1975; Browne & Finkelhor, 1986; Cohn, 1975; Corbin et al., 2001; Finkelhor & Brown, 1985; Gidycz, Coble, Latham, & Layman, 1983; Miller et al., 1978; Murzynski & Degelman, 1996; Selkin, 1978; White & Smith, 2001).

According to Myers, Templer, and Brown (1984), characteristics such as submissiveness may be present even before victimization occurs, suggesting that a precondition of these vulnerable traits may be associated with an increased likelihood of victimization. Stevens (1994) later supported this notion by asking predatory rapists to describe their victim selection techniques. Several of these rapists indicated that characteristics of submissiveness played a large role in who they chose to victimize. For example, when engaged in conversation, women who looked down or turned away would be considered submissive and cooperative targets. It is not a surprising proposition that submissiveness may increase vulnerability, as submissiveness has been characterized by low confidence, inhibition, helplessness, and/or fearfulness (Carli et al., 1995). Conversely, dominant or assertive individuals may be less vulnerable to victimization as they tend to exude confidence, disinhibition, and boldness in social situations (Corbin et al., 2001; Judge, Bono, Illies, & Gerhardt, 2002; Lord, De Vader, & Alliger, 1986). In addition to personality characteristics, research suggests that previous experiences of sexual victimization are a risk factor for future experiences (Gidycz et al., 1983; Koss & Dinero, 1989; Russell, 1984; Wyatt, Guthrie, & Notgrass, 1992). This association may be partially explained by the tendency for victims of sexual assault to become increasingly submissive and depressive post victimization (e.g., Gidycz et al., 1983), as these traits may be associated with non-verbal cues signaling vulnerability (e.g., Richards et al., 1991).

Nonverbal Communication and Vulnerability

Research has suggested that certain traits, such as dominance and submissiveness, can be distinguished based on nonverbal cues such as body language. For example, Richards and colleagues (1991) were able to identify distinct body language cues after covertly filming women engaged in conversation with a confederate and asking men observers to rate the women on their

perceived level of submissiveness or dominance. In this study, women perceived as submissive tended to maintain their sitting position and used their hands and feet during conversation (Richards et al., 1991). Conversely, women perceived as dominant were more likely to change their sitting position and use their arms and legs during conversation (Richards et al., 1991). In addition to these ratings, Richards and colleagues (1991) also asked the men observers to select women they would choose to exploit. Consistent with previous research associating submissiveness and vulnerability (e.g., Myers et al., 1984), these men had a preference for approaching the submissive women for exploitation. These ratings were true even after controlling for the presence of sound (i.e., whether or not the conversation could be heard by the observer), providing support for the significance of nonverbal cues in the observers' perceptions of submissiveness and vulnerability.

A subsequent meta-analysis conducted by Hall, Coats, and LeBeau (2005) offers further support for the importance of nonverbal cues in perceptions of others. Specifically, Hall and colleagues (2005) investigated the association between perceived and actual levels of dominance, and various nonverbal behaviours identified in the literature. While Hall and colleagues provide evidence that the presentation of nonverbal behaviours (e.g., eye contact, gesturing, weight shift, posture) varies with perceptions of dominance, this association is less consistent across actual levels of dominance. Thus, the effect of nonverbal behaviours on perceptions of dominance appears to be stronger than the effect of nonverbal behaviours on actual levels of dominance. Although perceptions of dominance were marginally correlated with actual levels of dominance, the results of Hall and colleagues (2005) suggest these may be distinct constructs and should therefore not be used interchangeably. In other words, the association between nonverbal behaviour and perceived dominance should not be used to draw conclusions about the behaviour

of individuals at different levels of actual dominance.

A study conducted by Wolff (1943) was one of the first to examine the role of gait cues in perceptions of others. In this study, observers provided impressionistic personality descriptions of adults filmed playing a ring toss game. Attributing observer impressions exclusively to gait style, Wolff (1943) reported that the observers were more likely to rate the adults as weak, introverted, or pessimistic when they exhibited a stooped posture, shuffled their feet, and did not bend their knees while walking. Conversely, the observers were more likely to view the adults as happy and optimistic when they exhibited a “sauntering gait” (i.e., carefree, easygoing) and briskly lifted their feet.

Questioning the validity of Wolff’s (1943) results, Montepare and Zebrowitz-McArthur (1988) sought to investigate whether nonverbal cues other than gait could account for differences in observer impressions. In this study, Montepare and Zebrowitz-McArthur (1988) showed observers two conditions. In the first condition, observers viewed a series of videos depicting individuals walking (i.e., “walkers”) in point-light¹. Under this condition, only the joint and limb movement of each walker was visible to the observers. In the second condition, observers viewed a series of walkers filmed under regular conditions, where the body shape, gender, age, attractiveness, clothing, and movements of the walkers were visible to the observers (Montepare & Zebrowitz-McArthur, 1988). Under both conditions, observers were asked to rate the walkers’ traits (i.e., powerfulness, happiness), gait, and ages (Montepare & Zebrowitz-McArthur, 1988). Irrespective of the condition, the walker’s age, and the walker’s gender, observers perceived walkers with youthful gaits (i.e., greater hip sway, knee bending, picking up feet, arm swing, loose jointedness, and an overall bouncy rhythm) as more powerful and happy than those with

¹ To create a point-light display, walkers dress in black lycra body suits with small reflective disks on all major joints (e.g., ankles, knees, elbows). When filmed under point-light conditions, walkers become moving lighted skeletons and cues such as clothing, weight, age, and gender are concealed from the observer.

more mature gaits (i.e., more stiff, greater stride length, more forward lean; Montepare & Zebrowitz-McArthur, 1988). Therefore, even after controlling for nonverbal cues other than gait (e.g., clothing, attractiveness, age, gender), nonverbal gait cues remain an important component in perceptions of others (Montepare & Zebrowitz-McArthur, 1988).

Given the apparent influence of gait, it is conceptually important to understand why gait style may elicit certain impressions. One theory that provides insight into the role of gait in perceptions of others is McArthur and Baron's (1983) ecological approach to social perception theory. According to the ecological approach theory, observable characteristics such as a person's face and body movements provide socially useful information about how to interact or act with that individual (Gunns, Johnston, & Hudson, 2002; McArthur & Baron, 1983; Montepare & Zebrowitz-McArthur, 1988). Being able to recognize socially relevant information is thought to be an adaptive quality that can benefit both goal attainment and survival (Gunns et al., 2002; Schaller, 2008). From this perspective, gait may be particularly salient in comprehending socially relevant information and subsequently forming impressions about another person, as it is often one of the first behaviours an observer is exposed to. In fact, research has suggested that nonverbal behaviours such as gait account for a large majority of information people obtain during social interactions (Landau, 1989).

Victimization and Gait

In addition to distinguishing traits such as powerfulness (e.g., Montepare & Zebrowitz-McArthur, 1988), research has suggested that gait cues may provide socially relevant information about individuals' vulnerability to victimization (e.g., Grayson & Stein, 1981; Gunns et al., 2002; Murzynski & Degelman, 1996). Supporting this notion, Stevens (1994) asked predatory rapists to describe their victim selection techniques and found that body movement

heavily influenced perceptions of vulnerability (Stevens, 1994). Specifically, these rapists appeared to target women based on the way they carried themselves (e.g., “She walks on her heels not her toes”; Stevens, 1994, p. 427). Although this study was qualitative, it still provides support for the association between gait cues and perceptions of vulnerability, and suggests that observers may be attending to these body movement cues when making socially relevant judgments.

Grayson and Stein (1981) were the first to establish specific components of gait associated with inadvertent cues signaling vulnerability to victimization. In this study, a group of offenders ($N = 12$) who previously committed assault against strangers were asked to view a series of video clips depicting women walking alone in a high assault area of New York (Grayson & Stein, 1981). Following each video clip, the offenders were asked to rate the walker’s vulnerability to assault (Grayson & Stein, 1981). Using the offenders’ wording (e.g., “you could take that one out”), Grayson and Stein (1981) then constructed a 10-point Likert scale, where 1 was indicative of the walker being “very easy to rip off” and 10 was indicative of “would avoid it, too big a situation”. This scale was then used by a second sample of offenders ($N = 53$) to rate the walker’s vulnerability to assault (Grayson & Stein, 1981). These offenders had all committed assault, ranging in severity from simple assault to murder. Notably, the 10-point scale was constructed around the wording of the first sample of offenders to ensure the second sample of offenders easily understood the ratings. Grayson and Stein (1981) then divided the walkers into victim and non-victim groups based on the vulnerability ratings provided by the second sample of offenders. The body movement of these groups was then compared to determine whether victims and non-victims display unique body language (Grayson & Stein, 1981). Notably, the actual victimization history of these walkers was unknown in this study.

Upon comparison, five distinct movement categories were identified in which victims' body language significantly differed from the body language of non-victims (Grayson & Stein, 1981). These movement categories include: (1) stride length (i.e., short, medium, long), (2) type of weight shift (i.e., transfer of weight from one foot to another; lateral, up/down, forward/back, three-dimensional), (3) type of walk (i.e., postural, gestural, non-specific), (4) body movement (i.e., unilateral, contralateral), and (5) foot movement (i.e., swing, lift; Grayson & Stein, 1981). Specifically, those categorized as victims displayed long or short strides, shifted their body weight laterally, diagonally, or with an up/down movement, walked gesturally, moved unilaterally, and lifted their feet while walking (Grayson & Stein, 1981). Conversely, those categorized as non-victims displayed medium strides, shifted their weight in a three-dimensional manner, walked posturally, moved contralaterally, and swung their feet while walking (Grayson & Stein, 1981). Although it is unclear whether gait cues influenced the offenders' perceptions of the walker's vulnerability, it is possible that these cues may have inadvertently signaled vulnerability to the potential assailants.

Expanding on the work of Grayson and Stein (1981), Murzynski and Degelman (1996) sought to examine the impact of body language on judgments of vulnerability to sexual assault. In this study, three adult models were filmed as they mimicked the typical victim and non-victim gait patterns identified by Grayson and Stein (1981; Murzynski & Degelman, 1996). A sample of college students and a sample of police officers were then asked to independently view each video clip and rate each woman's confidence level and vulnerability to sexual assault (Murzynski & Degelman, 1996). Notably, although these two distinct groups were asked to rate vulnerability, Murzynski and Degelman (1996) did not examine ratings separately for the students and police officers. Rather, analyses focused on these participants as a single group.

Consistent with Grayson and Stein (1981), both students and police officers rated the women mimicking the typical victim gait style as significantly more vulnerable to sexual assault and significantly less confident than the women mimicking the typical non-victim gait style (Murzynski & Degelman, 1996).

A subsequent study conducted by Sakaguchi and Hasegawa (2006) investigated the convergence between gait cues, women's self-reported frequency of being approached, self-reported personality, and vulnerability to being touched inappropriately by a stranger. Methodologically consistent with previous research, videos of women walkers displayed in point-light were shown to a sample of men observers who rated the likelihood that they would inappropriately touch each walker (Sakaguchi & Hasegawa, 2006). In this study, women walkers perceived as vulnerable to inappropriate touching were highly neurotic, shy, low on extraversion, displayed shorter strides, and walked slowly (Sakaguchi & Hasegawa, 2006). This finding supports previous research suggesting self-conscious individuals are more likely to be viewed as vulnerable to victimization (e.g., Myers et al., 1984) and suggests that gait style may contain inadvertent information about personality traits in addition to vulnerability.

With evidence of an association between gait and perceptions of vulnerability, Gunns and colleagues (2002) sought to explore whether a walker's vulnerability to attack could be predicted exclusively from gait information after controlling for extraneous factors (e.g., clothing). To do this, Gunns et al. (2002) filmed women walking under point-light conditions, eliminating extraneous information such as clothing and attractiveness. The walker video clips were then shown to a sample of men and women observers, who were asked to rate how easy it would be to mug and rape each walker (Gunns et al., 2002). Consistent with previous studies (i.e., Grayson & Stein, 1981; Montepare & Zebrowitz-McArthur, 1988), walkers who displayed

forward/backward or lateral weight shift were perceived as easier to attack than walkers with a three-dimensional weight shift. Moreover, women who displayed gestural walking styles, lifted their feet, and walked slower were perceived as easier to attack than women who displayed postural walking styles, did not lift their feet, and walked quickly (Gunns et al., 2002). When entered into a multiple regression analysis, the only two movement cues to independently predict ease of attack ratings were foot movement and walking speed (Gunns et al., 2002). Gunns and colleagues (2002) noted that movement cues associated with low vulnerability to attack are suggestive of the possibility of faster escape (i.e., longer strides, faster walks).

Highlighting the importance of movement cues, Gunns and colleagues (2002) reported that variations in gait accounted for almost 77% of the variance in ease-of-attack ratings. Johnston and colleagues (2004) reported consistent findings, where gait accounted for 78% of the variance in ease-of-attack ratings. Interestingly, while Gunns et al. (2002) report foot movement and walking speed as the only independent predictors of ease-of-attack ratings, Johnston et al. (2004) identified stride length, type of walk, use of whole body, energy, and constraint (i.e., movement limitations due to height and weight, physical injury, or restrictive clothing) as independent predictors of ease-of-attack ratings. In this study, Johnston and colleagues (2004) also identified that vulnerable gait cues can be adapted through gait training to reflect less vulnerability and subsequently lower a walker's ease-of-attack ratings. To test the impact of gait training, Johnston and colleagues (2004) divided a sample of five women walkers into three groups; (1) received gait training (i.e., they were shown how to walk in a less vulnerable manner), (2) received self-defense training, and (3) did not receive either training (Johnston et al., 2004). While there was no change in vulnerability ratings pre and post self-defense training, the women who received gait training were perceived as significantly less

vulnerable post-training than they were pre-training (Johnston et al., 2004). Recognizing that these results do not account for the ability to physically defend oneself upon attack, Johnston and colleagues (2004) suggest gait training may be beneficial to reducing perceptions of vulnerability and potential victimization.

In addition to gait training, research has also suggested that the footwear and clothing worn by walkers may impact the display of vulnerable gait cues and subsequent perceptions of vulnerability (Gunns et al., 2002). Using a point-light display, observers were shown videos of women walking in different clothing and footwear. The use of point-light methodology meant the observer could only see the limb and joint movement of the walker and would not be influenced by the presence of certain clothing and footwear. Interestingly, the results of this analysis indicated that footwear (i.e., heels versus loafers) and clothing (i.e., slacks versus skirts) affect walking style and account for a significant proportion of variance in ease-of-attack ratings (Gunns et al., 2002). Specifically, women wearing heels and/or skirts tended to display a more vulnerable walking style than those wearing loafers and/or slacks (Gunns et al., 2002). Gunns and colleagues (2002) postulate that this discrepancy may be a result of movement constraints associated with certain styles of clothing or footwear. With this in mind, it may be beneficial for future studies investigating the association between gait and vulnerability to control for the style of clothing or footwear worn by the walkers.

In a recent study, Blaskovits (2015) examined the associations between gait, personality, and sexual and violent victimization histories under point-light conditions using both men and women walkers. Although previous research has examined the association between gait and victimization history in terms of sexual victimization (e.g., Murzynski & Degelman, 1996; Sakaguchi & Hasegawa, 2006) or sexual and violent victimization collapsed together (e.g.,

Gunns et al., 2002), there has yet to be an exploration of this association across distinct types of victimization. Thus, Blaskovits (2015) was the first to examine the association between gait and victimization history across sexual and violent victimization histories.

Contrary to previous research indicating a negative association between vulnerable gait cues and powerfulness (Montepare & Zebrowitz-McArthur, 1988), Blaskovits (2015) reported higher levels of dominance among individuals displaying more vulnerable gait patterns under point-light conditions. Given that participants were asked to dress in a tight black spandex, Blaskovits (2015) speculated that the nature of the research may have unintentionally increased the number of dominant individuals interested in participating and decreased the number of submissive individuals. Further, it is possible that vulnerable gait patterns were associated with dominance as participants were asked to watch the researcher walk in a pattern and then follow the same walking pattern around the laboratory. Due to the nature of this task and the focus required to replicate the walking pattern, participants' natural gait patterns may have impeded.

Blaskovits (2015) also identified a significant association between the display of vulnerable gait cues and experiences of any form of victimization, where walkers who had previously experienced victimization were significantly more likely to display vulnerable movement cues (i.e., short or long stride length; transfer of weight from one foot to another; lateral, up/down, or forward/back; gestural or non-specific walk; unilateral body movement; lifted foot movement) than non-victims. This association, however, was dependent on the type of victimization experienced by the walker. Specifically, while gait was significantly associated with experiences of violent victimization, no association was identified between gait and experiences of sexual victimization (Blaskovits, 2015). This finding is inconsistent with previous gait research suggesting sexual victims display vulnerable walking patterns (e.g., Murzynski &

Degelman, 1996; Sakaguchi & Hasegawa, 2006). Notably, these constructs were not independent, as 55% of sexual victims had also reported experiences of violent victimization. Despite these differential findings, observers were more likely to rate walkers as easy targets when they displayed the vulnerable gait cues. This finding highlights the importance of movement in perceptions of vulnerability, as the observers viewed the walkers under point light conditions and were therefore not influenced by extraneous factors such as gender and clothing.

With a variety of vulnerable body movements identified in the above literature, a summary of these movements has been provided in Table 2.

Table 2

Summary of Body Movements Associated with Vulnerability in the Literature

Body Movement	Previous Studies
Short or long strides	Blaskovits, 2015; Grayson & Stein, 1981; Gunns et al., 2002; Johnston et al., 2004; Montepare & Zebrowitz-McArthur, 1988; Murzynski & Degelman, 1996; Sakaguchi & Hasegawa, 2006
Abnormally wide strides	Grayson & Stein, 1981
Gestural or non-specific walk	Blaskovits, 2015; Grayson & Stein, 1981; Johnston et al., 2004
Straight knees	Grayson & Stein, 1981; Montepare & Zebrowitz-McArthur, 1988
Non-erect posture	Grayson & Stein, 1981
Weight shift that is either side-to-side, back and forth, or bouncing	Blaskovits, 2015; Grayson & Stein, 1981; Montepare & Zebrowitz-McArthur, 1988; Murzynski & Degelman, 1996
Constraint	Johnston et al., 2004
Isolated and unilateral body movement	Blaskovits, 2015; Grayson & Stein, 1981; Johnston et al., 2004; Montepare & Zebrowitz-McArthur, 1988; Murzynski & Degelman, 1996
Restrained energy that is either abnormally low or high	Grayson & Stein, 1981; Gunns et al., 2002; Johnston et al., 2004; Sakaguchi & Hasegawa, 2006
Cadence (pace)	Sakaguchi & Hasegawa, 2006
Head movements that are separate from the spine	Grayson & Stein, 1981
Downward gaze	Grayson & Stein, 1981
Lifted feet	Blaskovits, 2015; Grayson & Stein, 1981; Murzynski & Degelman, 1996; Gunns et al., 2002
Arms either held close to the body or moved only partially	Grayson & Stein, 1981; Montepare & Zebrowitz-McArthur, 1988; Gunns et al., 2002

Note. Adapted from “*The Convergence of Psychopathy Self-Reported Vulnerability, and Other-Rated Vulnerability*,” by S. Wheeler, 2010. Unpublished Master’s Dissertation.

Cognitive State and Gait

While ample research supports the association between gait and vulnerability (e.g., Grayson & Stein, 1981; Montepare & Zebrowitz-McArthur, 1996), these studies have neglected to consider the possibility that gait patterns are context dependent and malleable, rather than stable characteristics. In addition to providing evidence that gait can be altered through training, Johnston and colleagues (2004) examined the impact of different contexts (i.e., safe vs. dangerous environments) on walking style and perceived vulnerability ($n = 79$ women). The results of this study suggest that gait patterns may change as a function of the walker's cognitive state. While walkers displaying typical victim gait patterns were perceived as easier to attack, this was only true when the walkers were asked to picture themselves in a "safe" environment (Johnston et al., 2004). Specifically, women rated as easy to attack in the "safe" condition were rated as significantly more difficult to attack in the "dangerous" condition (Johnston et al., 2004). Further, the women who displayed vulnerable gait patterns in the "safe" condition tended to display typical non-victim gait patterns (e.g., high energy, greater arm swing, and longer strides) when asked to picture themselves in the "dangerous" condition (Johnston et al., 2004). These findings suggest that the walker's cognitive state (e.g., safe and comfortable versus on guard) may impact the presentation of gait regardless of victimization experiences.

In a recent study, Fulham and colleagues (2016) investigated whether the relationship between violent victimization history and gait was dependent on the walker's cognitive state, self-perceived vulnerability, and perceived impact of victimization. To assess this, Fulham and colleagues (2016) filmed a sample of walkers under two conditions. In the first condition, the walkers were unaware they were being filmed from behind with a hidden camera as they walked down a hallway. In the second condition, the same walkers were made aware of the hidden

camera and asked to walk down the hallway again (Fulham et al., 2016). Consistent with previous research (e.g., Grayson & Stein, 1981; Murzynski & Degelman, 1996), victimization history was significantly, positively correlated with vulnerable gait cues. However, this relationship was only true when the walkers were unaware that they were being filmed. When walkers were aware that they were being filmed, victimization history was unrelated to vulnerable gait cues (Fulham et al., 2016). Similar to Johnston and colleagues (2004), Fulham and colleagues (2016) attribute this finding to the walker's cognitive state, where they may have felt more comfortable and safe when they were unaware of the filming than when they were aware. Thus, while people may display a more vulnerable gait when they feel comfortable in their environment, nerve-wracking or dangerous situations may make people more hyper-vigilant to environmental threat cues and subsequently cause natural gait patterns to change.

Accuracy in Selecting Victims

With an understanding of the association between nonverbal cues (e.g., gait) and perceptions of vulnerability, researchers have begun to identify individual variation in the accuracy of these perceptions. In particular, differences in accuracy have been identified between individuals rating high on psychopathy and those rating low (Book, Quinsey, & Langford, 2007; Book et al., 2013; Ritchie et al., 2016; Wheeler et al., 2009). Using assertiveness as a proxy for vulnerability (see Corbin et al., 2001), Book and colleagues (2007) conducted the first study investigating the association between psychopathy and accuracy in perceiving other's vulnerability based on nonverbal cues. A sample of men from the general community and a sample of men federal offenders were asked to view a series of video clips depicting men targets engaged in conversation with a confederate and rate each target's level of assertiveness (Book et al., 2007). All targets provided self-report ratings of assertiveness that were subsequently used to

assess the observers' accuracy. Across both samples, observers scoring higher on psychopathy (specifically Factor 1 psychopathy) were more accurate in their perceptions of the target's assertiveness (Book et al., 2007).

Expanding on this work, Wheeler and colleagues (2009) examined the association between psychopathy and accuracy in perceiving vulnerability through gait cues. Unlike Book et al. (2007), victimization history was used as a proxy for vulnerability to future victimization and observers were asked to rate vulnerability based on videos of men and women students walking down a hallway (Wheeler et al., 2009). Filming was conducted without the walkers' knowledge to capture their natural gait patterns (Wheeler et al., 2009). Each walker was then asked to report the frequency in which they had experienced victimization (i.e., equal to or greater than bullying; Wheeler et al., 2009). The gait of each walker was then coded using the criteria established by Grayson and Stein (1981) to identify walkers with vulnerable and non-vulnerable gait patterns (Wheeler et al., 2009).

The walker videos were then shown to a sample of men students who were asked to rate the walker's vulnerability to being mugged (i.e., an assault with the intent to rob or steal) on a scale from 1 (i.e., not at all vulnerable) to 10 (i.e., completely vulnerable; Wheeler et al., 2009) and provided a justification for each rating. While the observers scoring high on psychopathy (specifically Factor 1) were more accurate in perceiving the walkers' vulnerability to being mugged than those scoring low on psychopathy, they were significantly less likely to list body language or gait as a reason for their vulnerability ratings (Wheeler et al., 2009).

Using the walker videos collected by Wheeler and colleagues (2009), Book et al. (2013) replicated the study with a sample of men federal offenders acting as observers. Consistent with Wheeler et al. (2009), men offenders scoring high on psychopathy (specifically Factor 1) were

more accurate in perceiving the walkers' vulnerability to being mugged than men offenders scoring low on psychopathy (Book et al., 2013). Notably, Factor 2 psychopathy scores were not associated with accuracy in this study, suggesting that Factor 1 traits may facilitate the exploitation and victimization of others (e.g., manipulation), while Factor 2 traits may inhibit accuracy (e.g., impulsivity, irresponsibility). Unlike Wheeler et al. (2009), however, the men offenders scoring high on psychopathy were more likely to report gait cues as a justification for their vulnerability ratings (Book et al., 2013). Book and colleagues (2013) postulate that this discrepancy may reflect differences in experience, where offenders have more experience selecting potential victims than students and are therefore more cognizant of the cues they use to rate other's vulnerability. As Wheeler et al. (2009) and Book et al. (2013) focused exclusively on vulnerability to being mugged, it is unclear whether these results will extend to perceptions of other types of victimization (e.g., sexual and/or violent).

More recently, Ritchie and colleagues (2016) conducted a study examining whether the association between psychopathy and perceptions of vulnerability to victimization was dependent on victimization type (i.e., violent or sexual). With a sample of 12 women walker videos (i.e., 4 non-victims, 4 sexual victims, and 4 violent including sexual victims), undergraduate students viewed and rated each walker's vulnerability to sexual (i.e., defined as sexual abuse or sexual assault) and violent (i.e., defined as sexual abuse, sexual assault, robbery, threats, physical abuse, or stalking) victimization (Ritchie et al., 2016). Compared to those scoring lower on psychopathy, observers scoring high on psychopathy were significantly more accurate in perceiving the walkers' vulnerability to violent victimization. Among perceptions of sexual victimization, however, the accuracy of observers' perceptions was not associated with their level of psychopathy (Ritchie et al., 2016). Notably, the results of this study must be

interpreted with caution, as the definitions of violent and sexual victimization do not allow for a clear separation of these constructs. With this methodological limitation in mind, the results of Ritchie and colleagues (2016) suggest that the association between psychopathy and accuracy may depend on victimization type. To allow for more reliable comparisons, future studies should establish more discrete definitions of these constructs.

The association between psychopathy and accuracy in perceiving others vulnerability is not surprising given the success of psychopathic individuals in victimizing and exploiting others through manipulation, deception, and charm (Hare, 2001). According to Frank (1988) their enhanced ability to select vulnerable individuals for exploitation may be an evolutionarily adaptive quality. As nonverbal behaviour is often one of the first opportunities to make social judgments, social predators, such as psychopathic individuals, should have the ability to accurately perceive nonverbal vulnerability cues (e.g., emotional states, facial expressions, and body language cues) in order to increase their chances of successful victimization (Frank, 1988). For example, Ted Bundy, a prototypical psychopath, once claimed that he could identify vulnerable women based on the way that they walked and the tilt of their head (Holmes & Holmes, 2009). Although the ability to accurately perceive vulnerability in others can be useful when selecting “easy prey”, it may also be adaptive to succeeding in social situations. As the ability to perceive nonverbal cues is thought to be an evolutionarily adaptive trait (McArthur & Baron, 1983), it is possible that other individual differences (e.g., general personality traits) may also be predictive of increased accuracy.

Considering this possibility, Black, Woodworth, and Porter (2014) were the first to explore whether personality characteristics similar to psychopathy influenced accurate perceptions of victimization. In this study, Black and colleagues (2014) explored whether

accuracy differed across Dark Triad traits (i.e., psychopathy, Machiavellianism, and narcissism). Using assertiveness as a proxy for vulnerability, a sample of men and women students observed a series of 15 video clips depicting a man/woman target engaged in conversation with a confederate (Black et al., 2014). Interestingly, those who scored higher scores on the Dark Triad traits displayed a negative person bias, where they viewed everyone as vulnerable to victimization (i.e., low in assertiveness) rather than identifying the most vulnerable targets (Black et al., 2014). Thus, while these individuals may be adept in exploiting others, they tend to view everyone as weak and susceptible to victimization. These individuals also tend to rely on their own intuition rather than specific cues associated with vulnerability (Black et al., 2014). It is possible that those high on Dark Triad traits are deficient in distinguishing emotional states (e.g., Wai & Tiliopoulos, 2012) such as vulnerability in others and therefore see all social information as a sign of weakness.

While these results are inconsistent with previous research (Book et al., 2013; Ritchie et al., 2016; Wheeler et al., 2009), it is important to note that the observers were shown videos of a target engaging in conversation and could not base their judgments on nonverbal behaviours such as gait. Therefore, before concluding that individuals high on Dark Triad traits are deficient in perceiving others' vulnerability to victimization, it would be beneficial for future research to replicate this work by showing observers videos of people walking.

In addition to perceptions of assertiveness or vulnerability, Black and colleagues (2014) explored the observer's general perceptions of the target's personality. Overall, those high on Dark Triad traits had a bias to perceiving all targets as less agreeable, low in self-esteem, and highly neurotic, anxious, and depressed (Black et al., 2014). Across the three Dark Triad traits, psychopathy was associated with a bias in perceiving the targets as low on agreeableness and

high on anxiety, neuroticism, and depression, Machiavellianism was associated with a bias in perceiving the targets as neurotic, anxious, and depressed, and narcissism was associated with a bias in perceiving the targets as boring (i.e., low on openness), irresponsible (i.e., low on conscientiousness), introverted, and depressed (Black et al., 2014). While these ratings generally did not correspond with the target's self-reported personality traits, post-hoc analyses identified higher congruence between the target's self-reported self-esteem and the observer's perceived level of self-esteem than any other trait (Black et al., 2014). Given the association between gait and perceptions of personality (e.g., Wolff, 1943), future studies should consider replicating this work with walker videos. As well, with the recent addition of "everyday sadism" to the Dark Triad, this work should be replicated with the Dark Tetrad traits.

Purpose of the Current Study

The purpose of the current study was twofold. Study 1 (i.e., The "Walkers") sought to examine the characteristics of the walkers and Study 2 (i.e., The "Observers") explored the individual differences in observer's perceptions of vulnerability to victimization.

Study 1: The "Walkers"

In summary, researchers have suggested that body language is a salient factor in perceptions of vulnerability (e.g., Gunns et al., 2002; Grayson & Stein, 1981; Murzynski & Degelman, 1996; Sakaguchi & Hasegawa, 2006). For example, posture and gesturing have been shown to inadvertently signal information on an individual's level of submissiveness (Richards et al., 1991) and assertiveness (e.g., Book et al., 2007); personality traits that have been previously associated with vulnerability (Corbin et al., 2001; Myers et al., 1984). Such a relationship has also been found with gait cues, where individuals who display inconsistent, disjointed, and awkward walking patterns tend to be viewed as more vulnerable than those with a

smooth and fluid gait style (e.g., Grayson & Stein, 1981; Murzynski & Degelman, 1996).

Notably, the relationship between gait and vulnerability persists even when victimization history is used as a proxy for vulnerability to future victimization in place of characteristics such as submissiveness and assertiveness (e.g., Book et al., 2013; Wheeler et al., 2009).

While the association between gait and perceived vulnerability has been consistent across the majority of studies (e.g., Grayson & Stein, 1981; Murzynski & Degelman, 1988), Blaskovits (2015) provided evidence that this association may differ as a function of the type of victimization experienced by the walker. Specifically, while vulnerable gait patterns were associated with violent victimization, no association was identified between gait patterns and sexual victimization (Blaskovits, 2015). Unfortunately, these two groups were not independent, as more than half of the sexual victims in this study had also experienced violent victimization. To more accurately assess this association across victimization type, individuals that have exclusively experienced sexual victimization should be fully separated from individuals that have exclusively experienced violent victimization. Further, Fulham et al. (2016) and Johnston et al. (2004) provide evidence that this association may also depend on the walker's cognitive state. As only two studies have explored the impact of cognitive state on this relationship, replication is warranted. Thus, the aim of Study 1 was to assess the personality characteristics of the walkers and identify whether the association between victimization history and gait is dependent on the type of victimization experienced by the walkers and their cognitive states. Given the summarized literature, the research questions are as follows:

Research Question 1: Do the gait patterns of victims and non-victims map onto the vulnerable gait cues previously identified in the literature? Does this association depend on the type of victimization experienced by the walker (i.e., any victimization, exclusively

violent victimization and exclusively sexual victimization)? Researchers have identified 19 body movements that differ between victims and non-victims (e.g., Grayson & Stein, 1981). These movement cues have subsequently been linked to perceptions of vulnerability (e.g., Murzynski & Degelman, 1996). The current study sought to replicate the relationship between victimization history and vulnerable gait patterns identified by previous researchers. Specifically, those who have experienced any form of victimization were expected to display a greater number of vulnerable gait cues than non-victims.

The available research examining the association between victimization history and gait has either exclusively examined sexual victimization (e.g., Murzynski & Degelman, 1996; Sakaguchi & Hasegawa, 2006) or examined differences in sexual and violent victimization without establishing mutually exclusive or independent categories (Blaskovits, 2015). To more reliably examine differences in the association between victimization history and gait across victimization type, the current study was the first to ensure victimization type was operationalized in an orthogonal manner. Based on previous research (e.g., Murzynski & Degelman, 1996; Sakaguchi & Hasegawa, 2006), it was hypothesized that gait would be associated with sexual victimization. As there had yet to be an exploration of the association between gait and exclusively violent victimization, no hypothesis was made.

Research Question 2: Do gait patterns correlate with victimization history when the walkers were aware that they were being filmed? Do the walkers display fewer vulnerable gait cues when they were aware that they were being filmed compared to when they were unaware? Recently, researchers have identified differences in the association between victimization history and gait as a function of the cognitive state of the walkers (Fulham et al., 2016; Johnston et al., 2004). Specifically, while a significant association has been identified

between victimization history and gait when walkers feel comfortable (i.e., are unaware that they were being filmed), victimization history and gait appear to be unrelated when walkers feel uncomfortable (i.e., are aware that they were being filmed). As evidence of this effect is limited, replication is warranted. Based on the existing literature (Fulham et al., 2016; Johnston et al., 2004), it was expected that the associations identified between gait and victimization history in Research Question 1 will no longer be significant when the walkers are made aware of the camera and discomfort is subsequently elicited. Further, it was hypothesized that walkers would display significantly fewer vulnerable gait cues when aware of the camera than when unaware.

Research Question 3: Are assertiveness and submissiveness appropriate proxies for victimization history (i.e., any victimization, exclusively sexual victimization, and exclusively violent victimization)? In addition to these traits, are other personality traits (i.e., boldness, disinhibition, introversion, and the HEXACO dimensions) associated with victimization history? Although researchers have used perceived levels of submissiveness and assertiveness as proxies for victimization history (e.g., Corbin et al., 2001; Richards et al., 1991), few studies have empirically assessed the association between actual levels of these traits and victimization history. The available research has focused exclusively on sexual victims, providing evidence that victims of sexual assault tend to be more submissive and less powerful (i.e., assertive) in social situations than non-victims (e.g., Amir, 1975; Finkelhor & Brown, 1985; Gidycz et al., 1983; Miller et al., 1978; White & Smith, 2001). Contrary to these findings, Blaskovits (2015) recently found no association between self-reported levels of submissiveness and victimization history. Based on the majority of evidence, it was expected that high submissiveness and low assertiveness would be associated with the walkers' victimization histories. Further, as it is possible that additional personality dimensions will be associated with

the victimization history of walkers, the current study investigated the association between general personality traits (i.e., inhibition, boldness, introversion, and the HEXACO dimensions) and victimization history. Analyses involving the additional personality traits were exploratory.

Research Question 4: Are general personality traits (i.e., assertiveness, submissiveness, boldness, disinhibition, introversion, and the HEXACO dimensions) associated with vulnerable gait patterns? To date, few studies have examined the association between personality and vulnerable body movement. Among the existing research, evidence suggests that vulnerable movement cues are associated with observer impressions of traits such as submissiveness and introversion (e.g., Montepare & Zebrowitz-McArthur, 1988; Richards et al., 1991; Wolff, 1943). Hall and colleagues (2005), however, posit that the association between movement and perceived personality traits should not be used to draw conclusions about the behaviour of individuals at different levels of actual personality traits. Blaskovits (2015) took this into consideration, and examined the association between vulnerable gait cues and actual levels of personality traits under point-light conditions. Contrary to the previous research examining observer perceptions, Blaskovits (2015) reported higher levels of dominance among individuals exhibiting the typical victim gait patterns. The current study sought to further explore this association by examining the relationship between gait and general personality traits (i.e., assertiveness, submissiveness, boldness, disinhibition, introversion, and the HEXACO dimensions). These analyses were exploratory, as the available evidence is mixed and limited.

Method – Study 1: The “Walkers”

Participants

A sample of 100 undergraduate students (65 women and 35 men) were recruited online via an electronic research bulletin board to participate in the current study as “walkers”. To

ensure a range of victimization histories, students that reported prior experiences of violent and sexual victimization as part of a mass testing protocol (see Appendix A) were personally invited to participate in the study. Notably, any student with access to the electronic bulletin board could participate in the study regardless of their mass testing scores. Only those who had previously participated in “*A Kinematic Point-Light Investigation of Memory and Movement*” were not eligible to participate in the current study. This restriction was imposed due to methodological overlap. Those who participated in the study were given \$20.

For the purpose of the current study, only the women walkers were examined. Only women were included in the current study to remain consistent with previous research assessing the association between gait and vulnerability (e.g., Grayson & Stein, 1981). All 65 women participants provided consent for the use of their videos as stimuli. Of the original 65 women participants, 31 participants (48% of the original sample) had videos that were deemed to be appropriate body language stimuli and could be reliably coded. Thus, 62 videos were available for analyses (one for each walker in the unaware and one for each walker in the aware conditions). Walker videos were deemed to be inappropriate if the participant was carrying anything (e.g., cellphone, wallet, coffee), wearing a cast or using crutches, wearing high heels (see Gunns et al., 2002), playing with her hair, reported a physical disability, and/or if another person walked down the hallway or was sitting in the hallway when filming took place. Although the drastic change in sample size may be concerning, it is consistent with previous studies using a similar methodology (Wheeler et al., 2009). Specifically, after collecting a sample of 25 walker videos, Wheeler and colleagues (2009) deemed 12 videos or 48% of the sample to be appropriate to code body language.

In the final sample ($n = 31$), participant age ranged from 17 to 23 ($M = 18.87$, $SD = 1.26$).

While the majority of the sample identified as Caucasian (64.5%), participants also identified as African-Canadian (12.9%), Asian (6.5%), Hispanic/Latino (6.5%), Middle Eastern (6.5%), and other ethnic backgrounds (3.2%). Approximately 77% of the sample ($n = 24$) reported previous experiences of violent and/or sexual victimization. Broken down by victimization type, 10 (32.3%) of participants reported experiences of exclusively sexual victimization, 4 (12.9%) reported experiences of exclusively violent victimization, and 10 (32.3%) of participants reported experiences of both sexual and violent victimization. For the purpose of the current study, analyses included any victimization, exclusively sexual victimization, and exclusively violent victimization, but not both sexual and violent victimization. The remaining 22.6% of participants ($n = 7$) reported no experiences of victimization over the past five years.

Measures

Demographic Questionnaire. A demographic questionnaire was administered to collect information on the participant's gender, age, and ethnicity (see Appendix B).

Victimization History Questionnaire. Adapted from Wheeler et al. (2009), the Victimization History Questionnaire was used to assess participants' past experiences of non-sexual violent and sexual victimization (see Appendix C), the impact of this victimization, and participants' self-rated vulnerability to future victimization.

Participants were first asked to indicate the frequency in which they had experienced non-sexual violent and sexual victimization or attempted non-sexual violent and attempted sexual victimization in the past five years². Non-sexual violent victimization was defined as

² Participants were also asked to rate the impact of their prior victimization experiences on a scale from 1 (*no impact*) to 10 (*very impactful*) and rate their vulnerability to future sexual and violent victimization on a scale from 1 (*not vulnerable*) to 10 (*very vulnerable*). Although research should examine the association between the walkers' gait, self-reported vulnerability, and perceived impact of victimization, the current study focused exclusively on past experiences of victimization to remain consistent with previous research (e.g., Book et al., 2013).

physical abuse, assaults, threats, and/or armed robbery, and sexual victimization was defined as sexual abuse and/or sexual assault. Four dichotomized variables were created based on these responses. The first variable was created to distinguish between individuals who had experienced any form of victimization (whether violent or sexual) and non-victims, where 1 was indicative of ‘*any victimization*’ and 0 was indicative ‘*no victimization*’. The second variable was created to distinguish between individuals who had exclusively experienced violent victimization and non-victims, where 1 was indicative of ‘*violent victimization*’ and 0 was indicative of ‘*no victimization*’. Finally, the third variable was created to distinguish individuals who had exclusively experienced sexual victimization and non-victims, where 1 was indicative of a ‘*sexual victimization*’ and 0 was indicative of ‘*no victimization*’³.

The Brief Triarchic Psychopathy Measure (The Brief TriPM; Patrick, 2010). The Brief TriPM is a 58-item personality inventory developed to measure boldness, meanness, and disinhibition as distinct constructs and components of psychopathy (see Appendix E). Of the 58 items, 19 reflect the boldness subscale, 20 reflect the disinhibition subscale, and 19 reflect the meanness subscale. Participants were asked to rate how accurately each statement described them on a 4-point Likert scale, where 1 was indicative of the statement being “*true*” and 4 was indicative of the statement being “*false*”. Although three distinct scores (i.e., boldness, meanness, and disinhibition) can be calculated by summing the responses associated with each domain, only the boldness and disinhibition constructs were computed for the purpose of the current study. Both the disinhibition and boldness domains have been moderately correlated with total scores on the PCL-R, as well as total scores on self-report measures of psychopathy (e.g., PPI, SRP-III) in offender and student samples, respectively (Patrick, 2010).

³ A fourth variable was also created to distinguish individuals who had experienced both violent and sexual victimization from non-victims, however, this variable was not analyzed in the current study.

Rathus Assertiveness Schedule (RAS; Rathus, 1973). The RAS is a 30-item self-report measure that was used to assess participants' level of assertiveness (see Appendix F).

Participants were presented with a series of statements and asked to indicate how well each statement described them on a 6-point Likert scale, where -3 was indicative of the statement being '*very much unlike*' the participant and 3 was indicative of the statement being '*very much like*' the participant. Total scores range from -90 to +90, where higher scores reflect more assertive personalities. The RAS has shown moderate to high stability ($r = .78$) of test scores over a 2-month period (Rathus, 1973) and has maintained high reliability, and concurrent and predictive validity across several studies (Kearney, Beatty, Plax, & McCroskey, 1984; Norton & Warnick, 1976; Pearson, 1979).

Revised Interpersonal Adjective Scale-Big Five (IASR-B5; Trapnell & Wiggins, 1990). The IASR-B5 is a 124-item self-report questionnaire combining two well-established structural models of personality (see Appendix G). Specifically, the IASR-B5 measures eight circumplex traits, as well as the Big-Five personality domains. Participants were asked to indicate how accurately each of the 124 adjectives (e.g., kind, dominant, coldhearted) described them as a person on an 8-point Likert scale, where 1 was indicative of the adjective being "*extremely inaccurate*" and 8 was indicative of the adjective being "*extremely accurate*".

Definitions were provided to ensure participants fully understood the meaning of each adjective.

The IASR-B5 is composed of eight scales, referred to as "octants", which correspond to the eight interpersonal circumplex coordinates; (1) assured-dominant, (2) gregarious-extraverted, (3) warm-agreeable, (4) unassuming-ingenuous, (5) unassured-submissive, (6) aloof-introverted, (7) cold-hearted, and (8) arrogant-calculating. Octant scores were obtained by averaging

responses to the eight corresponding personal adjectives⁴. For the purpose of the current study, only the assured-dominant, unassured-submissive, and aloof-introverted octants were examined.

The IASR-B5 maintains moderately high internal consistency, with Cronbach's alphas ranging from .77 to .94 across scales (Horst, 1968; Trapnell & Wiggins, 1990). Researchers (e.g., Goldberg, 1990; McCrae & Costa, 1989; Trapnell & Wiggins, 1990) have also identified promising convergent and discriminate validity between the IASR-B5, NEO-PI (Costa & McCrae, 1985), and the Hogan Personality Inventory (HPI; Hogan, 1986). Although the IASR-B5 is similar to other measures of personality, it provides a highly efficient method of assessing both the Big Five personality domains as well as the interpersonal circumplex traits. Trapnell and Wiggins (1990) argue that efficiency of the IASR-B5 makes it an ideal measure for repeated testing, mass screening, exploratory investigations, and typological classification.

HEXACO-60 (HEXACO-60; Ashton & Lee, 2009). The HEXACO-60 is a 60-item self-report measure assessing six dimensions of personality: (1) honesty-humility, (2) emotionality, (3) extraversion, (4) agreeableness, (5) conscientiousness, and (6) openness to experience (see Appendix H). The HEXACO-60 is a short version of the original 192-item HEXACO Personality Inventory Revised (HEXACO-PI; Lee & Ashton, 2004) and is recommended for use when administration time is limited (Ashton & Lee, 2009). Consistent with the HEXACO-PI, the HEXACO-60 produces six factor scale scores, representing the six dimensions of personality. Each factor scale contains 10 items selected from the original HEXACO-PI based on primary and secondary factor loadings. Participants were asked to rate

⁴ The octants can also be converted into two primary interpersonal circumplex dimensions by weighting the z-scores: (1) agency/dominance/control and (2) communion/love/warmth. These dimensions are thought to be variants of the Big Five extraversion and agreeableness domains, respectively, and were therefore not given independent scales (Trapnell & Wiggins, 1990; Wiggins et al., 1988). The Big Five conscientiousness, neuroticism, and openness to experience domains can also be obtained by averaging responses to the 20 corresponding personal adjectives. These scores, however, were not calculated for the purpose of the current study.

their level of agreement with a series of statements on a 5-point Likert scale, where 1 was indicative of “*strongly disagreeing*” and 5 was indicative of “*strongly agreeing*”. Factor scores were computed by averaging the responses associated with each scale.

The factor structure of the HEXACO-PI and HEXACO-60 has been replicated across student (Ashton & Lee, 2009; Lee & Ashton, 2004) and community (Ashton & Lee, 2009; Lee & Ashton, 2006) samples. High reliability has been reported across self- and peer-ratings on the HEXACO-PI (de Vries, Lee, & Ashton, 2008; Lee & Ashton, 2006). The HEXACO-60 maintains acceptable internal consistency across student and community samples, with Cronbach’s alphas ranging from .73 to .80. Not surprisingly, the internal consistency of the HEXACO-60 is lower than the HEXACO-PI, with Cronbach’s alphas ranging from .87 to .91. Ashton and Lee (2009) attribute this discrepancy to the lower number of items in the HEXACO-60. Supporting the convergent validity of the HEXACO-60, moderate to strong correlations have been identified with the NEO-FFI (Ashton & Lee, 2009).

Movement Code (Grayson & Stein, 1981). Consistent with Wheeler et al. (2009) and Book et al. (2013), the Movement Code (Grayson & Stein, 1981; Wheeler et al., 2009; see Appendix I) was used to determine the number of vulnerable gait cues displayed by each walker when they were unaware (i.e., unaware condition) and aware (i.e., aware condition) of the camera. Table 3 contains a breakdown of the movement cues associated with victims and non-victims according to the literature (e.g., Grayson & Stein, 1981; Wheeler, 2010). In general, non-victims tend to display fluid and synchronous gait patterns, while victims tend to display disjointed and awkward gait patterns. Notably, although a downward gaze has been associated with vulnerability in the past, this cue was removed from the coding guide as walkers were exclusively filmed from behind and gaze could not be accurately determined from that angle.

Table 3

Movement Cues Associated with Victims and Non-Victims

	Movement Cue Category	Victim	Non-Victim
1)	Stride length	Short; Long	Medium
2)	Stride width	Wide	Narrow
3)	Knees	Straight	Bent
4)	Relation to uprightness	Vertical; Horizontal; Sagittal	Neutral
5)	Type of weight shift	Primarily lateral; up/down; forward/back	Three-dimensional
6)	Type of walk	Gestural; Non-specific	Postural
7)	Type of energy	Held; Non-specific	Relaxed
8)	Amount of energy	Low; High	Medium
9)	Use of whole body	Mainly lower moves; Upper vs. lower; Rhythm variations	Continuous
10)	Body movement	Unilateral	Contralateral
11)	Head	Gestural	Undifferentiated
12)	Feet	Lifted	Swung
13)	Left arm type of movement	Other	Swung
14)	Left arm amount of movement	Part	Whole
15)	Left arm hold	Held	Relaxed
16)	Right arm type of movement	Other	Swing
17)	Right arm amount of movement	Part	Whole
18)	Right arm hold	Held	Relaxed

Note. Adapted from “*The Convergence of Psychopathy Self-Reported Vulnerability, and Other-Rated Vulnerability*,” by S. Wheeler, 2010. Unpublished Master’s Dissertation.

Two coders were then asked to independently code the walker videos using the 18 movement categories identified above. Both coders were blind to the purpose of the current study, the movement cues associated with victims and non-victims, and the video conditions (i.e., unaware versus aware). A total of 62 walker videos (i.e., 31 from the unaware and 31 from the aware condition) were coded, where each coder independently coded 31 videos. Twenty videos (i.e., 10 from the unaware and 10 from the aware condition) were used to obtain interrater reliability. A two-way random effects intraclass correlation (ICC) with absolute agreement of .94 was obtained for the total gait scores. Among individual gait cues, percent agreement ranged from 65% to 100%. With acceptable interrater reliability, the remaining 42 videos (i.e., 11 from the unaware and 11 from the aware condition) were divided between the two coders. The first coder was randomly assigned 6 videos from the unaware condition and 5 videos from the aware condition, and the second coder was assigned the remaining 5 videos from the unaware condition and 6 videos from the aware condition.

Once coded, the researcher calculated the total number of vulnerable gait cues displayed by each walker. For each movement cue category, a score of one was given if a walker was coded as displaying a cue prototypical of victims. Conversely, if a walker was coded as displaying a cue prototypical of non-victims, a score of zero was given. This was repeated for each of the 18 movement cue categories. The researcher then summed the scores for each movement cue category, creating a total score out of 18. Higher scores were indicative of more vulnerable gait patterns. Table 4 summarizes the walker gait scores across victimization type. Victims of both sexual and violent victimization were included in this table as they were part of the main “any” victimization group.

Table 4

Summary of the Walker Gait Scores across the Unaware and Aware Conditions

Walker	Victimization History	Unaware Gait	Aware Gait
1	Violent	4	3
2	Violent	10	6
3	Violent	0	1
4	Violent	11	3
5	Sexual	6	1
6	Sexual	8	1
7	Sexual	9	11
8	Sexual	7	6
9	Sexual	5	3
10	Sexual	12	8
11	Sexual	4	0
12	Sexual	10	10
13	Sexual	7	0
14	Sexual	5	10
15	Both	6	6
16	Both	6	2
17	Both	10	12
18	Both	0	0
19	Both	10	13
20	Both	1	2
21	Both	3	2
22	Both	7	1
23	Both	10	3
24	Both	8	8
25	Non-Victim	2	4
26	Non-Victim	0	0
27	Non-Victim	6	11
28	Non-Victim	6	3
29	Non-Victim	5	5
30	Non-Victim	0	1
31	Non-Victim	6	7

Note. Violent = Exclusively violent victim; Sexual = Exclusively sexual victim; Both = Victim of both sexual and violent victimization; Unaware Gait = Gait score from the unaware condition; Aware Gait = Gait score from the aware condition.

Procedure

The Carleton University Research Ethics Board-B approved the current study prior to data collection. A recruitment notice was posted on an electronic research bulletin board

available to undergraduate psychology students at Carleton University (see Appendix J). As deception was necessary to capture the natural gait of individuals, prospective participants were not informed of the true purpose of the study upon recruitment. Instead, the recruitment notice informed prospective participants that they would be asked to complete a series of self-report questionnaires assessing their personality, sexual and violent victimization history, and coping strategies. They were also told that they would be filmed at some point during the study.

Those who signed-up to participate in the current study were individually invited into a laboratory at Carleton University. Each participant completed the study using Qualtrics on a computer located in the laboratory. Qualtrics is an online survey tool that employs multiple layers of security to ensure all data remain private and secure. All Qualtrics accounts are password-protected and Qualtrics employees are unable to access the protected accounts without the expressed permission from the account user.

Participants began the study by reading the informed consent form (see Appendix K). At this time, participants were reminded that the researchers were interested in exploring the relationship between various personality traits (e.g., boldness, disinhibition), coping strategies, and violent and sexual victimization experiences. Participants were also reminded that they would be filmed at some point during the study. Upon obtaining informed consent, participants were told that the filming equipment was located in a separate laboratory room (i.e., laboratory B) down the hall from laboratory A. Participants were asked to leave their personal belongings (e.g. backpack, coffee, phone) in the original laboratory (i.e., laboratory A) and instructed to walk to laboratory B where they would be greeted by a second research assistant for the filming portion of the study. Unbeknownst to the participants, a camera (i.e., GoPro HERO3) hidden in a garbage can outside of laboratory A was recording them from behind as they walked from

laboratory A to laboratory B. Once far enough down the hallway, the researcher would call the participant back to the laboratory under the pretense that the researcher had accidentally skipped a step in the study. Videos collected at this stage of the study comprised the “unaware condition”.

Once back in laboratory A, participants were given a second informed consent form that explained the true purpose of the study and the reason deception was necessary (see Appendix L). The researcher also provided participants with a verbal description of the deception that took place, why it was necessary (see Appendix M), and asked participants whether they were aware of the camera when they walked down the hallway. All participants verbally indicated that they were unaware of the camera at this time. Participants were then given the opportunity to ask questions and view the video of them walking down the hallway before providing consent. Participants were also asked to consent to their video and information being used for future studies (e.g., observed by students and offenders) and educational material. Consent was obtained from all participants.

After obtaining secondary consent, participants were asked to walk down the hallway for a second time while the camera recorded them from behind. Videos collected at this stage of the study comprised the “aware condition”, allowing for a comparison of participants’ gait when they were unaware and aware of being filmed. After walking down the hallway, participants were instructed to return to laboratory A, where they were asked to complete a demographic questionnaire, the victimization history questionnaire, the Brief COPE (Carver, 1997⁵), the Brief TriPM (Patrick, 2010), the RAS (Rathus, 1973), the IASR-B5 (Trapnell & Wiggins, 1990), and the HEXACO-60 (Lee & Ashton, 2004). Once complete, participants were given a debriefing

⁵ The Brief COPE (Carver, 1997), a 28-item self-report version of the COPE Inventory (Carver, Scheier, & Weintraub, 1989), was used to assess participants’ coping strategies since they last experienced victimization (see Appendix D). Although participants were asked to complete the Brief COPE, responses were not analyzed in the current study. Future research should investigate whether coping strategies mediate the association between victimization history and gait.

form (see Appendix N) and \$20 for their participation in the study. After participants had the opportunity to read the debriefing form, it was discussed verbally with the researcher. Contact information for various victimization services was included on the debriefing form, should participants experience any distress after their participation. The entire study took approximately one hour.

Results – Study 1: The “Walkers”

Data Preparation

Missing data. Data were first scanned for missing values. One value was missing from the honesty-humility, emotionality, and extraversion dimensions of the HEXACO, and the TriPM disinhibition. The RASQ assertiveness was missing two values, and the unassured-submissive, assured-dominant, and aloof-introverted octants of the IASR-B5 were missing one to two values. No other variables were missing data. Among the raw scores comprising these key variables, no more than two values were missing from a single participant. For each variable with missing data, a *t*-test was conducted to determine whether the age of participants missing data differed from the age of participants with completed data. No significant differences were identified between the age of participants with missing data and the age of participants with completed data across all variables ($p > .05$), suggesting that any missing data were missing at random. As data were missing a random and the amount of missing data per participant was small, Expectation Maximization (EM) was conducted on raw scores to statistically infer the missing values. EM was conducted separately for each key variable using the raw scores associated with that scale to ensure predictions were based on related items. Although EM has been criticized for not accounting for error when imputing missing data (Graham, Cumsille, & Elek-Fisk, 2003), Tabachnick and Fidell (2013) provide support for EM when the amount of

missing data is small. That said, Tabachnick and Fidell (2013) do suggest that results involving EM methods be interpreted with caution. After conducting EM, the final sample size was 31.

Normality. Data were then screened for normality. According to Tabachnick and Fidell (2013), skewness and kurtosis become a concern when the ratio exceeds ± 3.29 . Across all key variables, the skewness and kurtosis ratios fell within the acceptable range (i.e., $< \pm 3.29$), suggesting that the data are normally distributed. To determine whether the data significantly differed from a normal distribution, Kolmogorov-Smirnov and Shapiro-Wilk tests were conducted with key variables. The Kolmogorov-Smirnov and Shapiro-Wilk tests were non-significant, suggesting that the current data does not significantly differ from a normal distribution ($p > .05$). Thus, despite the small sample size ($N = 31$), violations of normality were not a concern in the current study. Notably, the results of these analyses were consistent across the variables with and without missing data.

Outliers. Data were then screened for univariate outliers. No extreme univariate outliers were identified upon visual inspection of boxplots and histograms. To confirm the absence of potential univariate outliers, z-scores were calculated for all key variables (i.e., HEXACO-60 dimensions, TriPM disinhibition and boldness, RASQ assertiveness, and the IASR-B5 octants). According to Tabachnick and Fidell (2013), cases with standardized scores exceeding ± 3.29 are considered potential univariate outliers. No cases had z-scores exceeding this cutoff, indicating that all values fell within an acceptable range and univariate outliers are not a concern in the current data. Data were then screened for multivariate outliers using Mahalanobis distance. No Mahalanobis distance values exceeded the critical value of 32.91 ($p < .001$, $df = 12$), verifying the absence of multivariate outliers in the data (Tabachnick & Fidell, 2013). As no outliers were identified, all 31 cases remained in the dataset.

Descriptive statistics and internal consistency. Descriptive statistics and internal consistencies of self-report measures are presented in Table 5. The HEXACO-60 dimensions, TriPM boldness and disinhibition, RASQ assertiveness, and unassured-submissive, assured-dominant, and aloof-introverted octants of the IASQ-B5 maintained acceptable internal consistency.

Table 5

Means, Standard Deviations, and Internal Consistencies of Self-Report Scales

Scale	Dimension/Octant	<i>M</i>	<i>SD</i>	Reliability (Cronbach's Alpha)
HEXACO-60	Honesty-Humility	3.25	0.67	.71
	Emotionality	3.46	0.74	.78
	Extraversion	3.19	0.78	.86
	Agreeableness	3.20	0.67	.77
	Conscientiousness	3.57	0.68	.81
	Openness	3.37	0.63	.71
TriPM	Boldness	44.42	8.26	.78
	Disinhibition	60.33	10.72	.88
RASQ	Assertiveness	-10.58	30.31	.90
IASR-B5	Assured-dominant	4.47	1.28	.84
	Aloof-introverted	3.14	1.53	.92
	Unassured-submissive	4.17	1.63	.89

Note. TriPM = Brief Triarchic Psychopathy Measure (Patrick, 2010); RASQ = Rathus Assertiveness Questionnaire (Rathus, 1973); IASR-B5 = Interpersonal Adjective Scale (Trapnell & Wiggins, 1990); M = Mean; SD = Standard deviation.

Primary Analyses

Gait and victimization history. A series of Area Under the Receiver Operating Characteristic Curve (AUC) analyses were first conducted to determine whether the display of vulnerable gait cues in the unaware and aware conditions were associated with victimization history, and whether this association was dependent on the type of victimization experienced by the walker (i.e., any, exclusively sexual, and exclusively violent; see Table 6). AUC analyses are recommended over traditional correlational analyses when one of the variables is dichotomous

(i.e., victimization history; Babchishin & Helmus, 2015; Rice & Harris, 2005). An AUC of .56 reflects a small effect size, and AUC of .64 reflects a moderate effect size, and an AUC of .71 reflects a large effect size (Rice & Harris, 2005). An AUC is interpreted as statistically significant when .50 (i.e., chance) is not included in the 95% confidence interval.

In the unaware condition, it was hypothesized that walkers with a history of any victimization would display a greater number of vulnerable gait cues than walkers without a history of any victimization in the unaware condition (e.g., Book et al., 2013; Grayson & Stein, 1981). Based on previous research (Murzynski & Degelman, 1996), it was also expected that gait in the unaware condition would be associated with sexual victimization history (e.g., Murzynski & Degelman, 1996). No hypotheses were made regarding the display of vulnerable gait cues in the unaware condition among exclusively violent victims. When walkers were aware of filming, however, it was hypothesized that victims would be no more likely than non-victims to display vulnerable gait cues when aware of the camera (e.g., Johnston et al., 2004).

The first AUC analysis examined the association between gait in the unaware condition and any victimization history. Consistent with previous research (e.g., Grayson & Stein, 1981), individuals who have experienced any form of victimization were significantly more likely than non-victims to display vulnerable gait cues when unaware of the camera ($AUC = .76, p < .05$). Similarly, individuals who have exclusively experienced sexual victimization were significantly more likely than non-victims to display vulnerable gait cues in the unaware condition ($AUC = .82, p < .05$). Those who have exclusively experienced violent victimization, however, were no more likely than non-victims to display vulnerable gait cues in the unaware condition. Contrary to the association identified between gait and victimization history in the unaware condition and consistent with the hypothesis, victims of any, exclusively sexual, and exclusively violent

victimization were no more likely than non-victims to display vulnerable gait cues when aware of the camera.

Table 6

AUC Analyses of the Associations between Gait in the Unaware and Aware Conditions and Experiences Any, Exclusively Violent, and Exclusively Sexual Victimization

Gait Condition	Victimization Type	AUC	SE	95% CI
Unaware	Any	.76	.09	[0.59, 0.93]
	Violent	.64	.20	[0.24, 1.00]
	Sexual	.82	.10	[0.62, 1.00]
Aware	Any	.50	.12	[0.26, 0.75]
	Violent	.41	.18	[0.06, 0.76]
	Sexual	.51	.15	[0.23, 0.81]

Note. Unaware = Gait condition where walkers were unaware of the camera; Aware = Gait condition where the walkers were aware of the camera; Any = Any victimization experiences; Violent = Exclusively violent victimization experiences; Sexual = Exclusively sexual victimization experiences; AUC = Area Under the Curve; SE = Standard Error; 95% CI = 95% Confidence Interval.

A paired samples *t*-test was then conducted to determine whether the number of vulnerable gait cues displayed by walkers differed across the unaware and aware conditions. Contrary to expectations, results revealed no significant differences between the number of vulnerable gait cues displayed in the unaware ($M = 5.94$, $SD = 3.49$) and the aware ($M = 4.68$, $SD = 3.95$) conditions ($t(30) = 1.96$, $p = .059$, 95% CI [-0.05, 2.57]). Although not significant, walkers did displayed fewer vulnerable gait cues when aware of filming then when unaware.

To determine whether the display of vulnerable gait cues in the unaware and aware conditions differed as a function of the walker's victimization history, a series of paired samples *t*-tests were conducted for each type of victimization (i.e., any, violent, sexual) and for non-victims (see Table 7). As these analyses were exploratory, no hypotheses had been made. Results revealed that individuals who had experienced any victimization displayed significantly more

vulnerable gait cues in the unaware condition ($M = 6.63$, $SD = 3.41$) than in the aware condition ($M = 4.75$, $SD = 4.09$; $t(23) = 2.25$, $p < .05$, 95% CI [0.33, 3.42]). Conversely, no significant differences were identified in the number of vulnerable gait cues displayed in the unaware and aware conditions by exclusively sexual, exclusively violent, and non-victims. It is important to note that, although not statistically significant, exclusively violent and exclusively sexual victims do display a greater number of vulnerable gait cues in the unaware than in the aware condition. It is possible that these differences are not statistically significant due to the small sample size and consequentially low power.

Table 7

Paired Samples T-Tests between Total Gait Scores in the Unaware and Aware Conditions for Victims (Any, Violent, Sexual) and Non-Victims

Victimization Type	Unaware		Aware		t	p	df	95% CI
	M	SD	M	SD				
Any	6.63	3.41	4.75	4.09	2.52	.02	23	[0.33, 3.42]
Violent	6.25	5.19	3.25	2.06	1.53	.22	3	[-3.23, 9.23]
Sexual	7.30	2.50	5.00	4.50	1.87	.09	9	[-0.48, 5.08]
Non-Victim	3.57	2.82	4.43	3.74	-0.94	.38	6	[-3.09, 1.37]

Note. Any = Any victimization experiences; Violent = Exclusively violent victimization experiences; Sexual = Exclusively sexual victimization experiences; M = Mean; SD = Standard deviation; df = Degrees of freedom; 95% CI = 95% Confidence Interval.

Personality and victimization history. A series of AUC analyses were then conducted to determine whether assertiveness and submissiveness are appropriate proxies for victimization (i.e., experiences of any victimization, exclusively violent victimization, and exclusively sexual victimization; see Table 8). Based on previous research (e.g., Corbin et al., 2001; Richards et al., 1991), it was hypothesized that victims (i.e., any, exclusively sexual, and exclusively violent) would be more submissive and less assertive than non-victims.

Contrary to the hypothesis and consistent with Blaskovits (2015), levels of submissiveness and assertiveness did not significantly differ between victims and non-victims in the current study. Similarly, levels of submissiveness and assertiveness among exclusively sexual victims did not significantly differ from levels of submissive and assertiveness among non-victims. While levels of assertiveness did not differ between exclusively violent victims and non-victims, levels of submissiveness were significantly different ($AUC = .11, p < .05$). That is, exclusively violent victims were less likely to display submissive personality traits than non-victims. These results should be interpreted with caution given the small number of violent victims that completed this study ($n = 4$).

Table 8

AUC Analyses of the Association between Victimization, and Assertiveness and Submissiveness

Personality Trait	Victimization Type	AUC	SE	95% CI
Assertiveness	Any	.55	.14	[0.28, 0.81]
	Violent only	.75	.15	[0.45, 1.00]
	Sexual only	.50	.15	[0.20, 0.80]
Submissiveness	Any	.38	.12	[0.15, 0.62]
	Violent only	.11	.11	[0.00, 0.33]
	Sexual only	.42	.15	[0.13, 0.72]

Note. Any = Any victimization experiences; Violent = Exclusively violent victimization experiences; Sexual = Exclusively sexual victimization experiences; AUC = Area Under the Curve; SE = Standard Error; 95% CI = 95% Confidence Interval.

A series of exploratory AUCs were then conducted to identify whether other personality traits (i.e., agreeableness, introversion, dominance, boldness, disinhibition, neuroticism, conscientiousness, and openness) were associated with experiences of any victimization, exclusively violent victimization, and exclusively sexual victimization (see Table 9). Results suggest that levels of boldness, disinhibition, dominance, introversion, and the HEXACO-60 dimensions do not differ between victims and non-victims, even when specific types of

victimization are taken into consideration. Notably, although openness appeared to be related to experiences of violent victimization based on the confidence interval, the associated p -value was greater than .05, suggesting openness was not related to experiences of violent victimization. As the sample size of violent victims was small ($n = 4$), it is possible that a Type II error occurred. To reiterate, these results should be interpreted with caution due to the small sample size.

Table 9

AUC Analyses of the Association between Victimization History and Personality Traits

Personality Trait	Victimization Type	AUC	SE	95% CI
Boldness	Any	.43	.13	[0.18, 0.68]
	Violent only	.27	.17	[0.00, 0.60]
	Sexual only	.41	.16	[0.10, 0.71]
Disinhibition	Any	.34	.16	[0.03, 0.65]
	Violent only	.41	.18	[0.06, 0.76]
	Sexual only	.37	.17	[0.04, 0.71]
Dominance	Any	.58	.13	[0.32, 0.83]
	Violent only	.75	.15	[0.45, 1.00]
	Sexual only	.59	.15	[0.29, 0.88]
Introversion	Any	.44	.14	[0.16, 0.73]
	Violent only	.25	.22	[0.00, 0.67]
	Sexual only	.55	.16	[0.24, 0.86]
Honesty-humility	Any	.49	.13	[0.23, 0.75]
	Violent only	.27	.16	[0.00, 0.58]
	Sexual only	.51	.15	[0.22, 0.80]
Emotionality (Neuroticism)	Any	.65	.14	[0.38, 0.92]
	Violent only	.47	.19	[0.10, 0.83]
	Sexual only	.69	.15	[0.40, 0.99]
Extraversion	Any	.56	.11	[0.34, 0.79]
	Violent only	.71	.20	[0.32, 1.00]
	Sexual only	.54	.15	[0.26, 0.83]
Agreeableness	Any	.35	.10	[0.16, 0.55]
	Violent only	.34	.40	[0.00, 0.73]
	Sexual only	.25	.12	[0.01, 0.49]
Conscientiousness	Any	.32	.13	[0.07, 0.57]
	Violent only	.38	.18	[0.03, 0.72]
	Sexual only	.30	.14	[0.02, 0.58]
Openness	Any	.64	.11	[0.42, 0.86]
	Violent only	.86	.12	[0.63, 1.00]
	Sexual only	.56	.15	[0.27, 0.84]

Note. Any = Any victimization experiences; Violent = Exclusively violent victimization experiences; Sexual = Exclusively sexual victimization experiences; AUC = Area Under the Curve; SE = Standard Error; 95% CI = 95% Confidence Interval.

Personality and gait. With evidence of an association between perceived levels of personality traits (e.g., submissiveness and introversion; Montepare & Zebrowitz-McArthur, 1988; Richards et al., 1991; Wolff, 1943), a series of bivariate correlations were conducted to

determine whether the display of vulnerable gait cues was associated with self-reported or actual levels of personality traits (see Table 10). Although Blaskovits (2015) reported higher levels of dominance among individuals exhibiting the typical victim gait pattern, no hypotheses were formed, as the evidence of an association was limited.

Interestingly, despite prior evidence of an association between perceived levels of personality traits and the display of vulnerable gait cues (e.g., Montepare & Zebrowitz-McArthur, 1988), no associations were identified between self-reported personality traits and the display of vulnerable gait cues when walkers were unaware of the camera. When walkers were aware of the camera, however, a moderate positive association was identified between vulnerable gait cues and aloof-introverted personality ($r = .38, p < .05, 95\% \text{ CI } [0.03, 0.65]$). That is, individuals higher on introversion displayed significantly more vulnerable gait cues when aware of the camera. Not surprisingly given the association between introversion and gait, a moderate negative association was identified between extraversion and the display of vulnerable gait cues ($r = -.40, p < .05, 95\% \text{ CI } [-0.66, -0.05]$), where individuals higher on extraversion displayed significantly fewer vulnerable gait cues when they were aware that filming was taking place. It is important to note that some of the non-significant correlations reported below may have been significant had the sample size been larger.

Table 10

Bivariate Correlations between Personality Traits and the Display of Vulnerable Gait Cues in the Unaware and Aware Conditions

Personality Trait	Gait Conditions	
	Unaware	Aware
Introversion	.26	.38*
Submissiveness	.07	.29
Dominance	-.09	-.24
Assertiveness	-.08	-.15
Boldness	.13	.35
Disinhibition	.15	.16
Honesty-humility	-.16	.19
Emotionality (Neuroticism)	.02	-.02
Extraversion	-.26	-.40*
Agreeableness	-.30	-.09
Conscientiousness	.19	.33
Openness	.06	-.14

* $p < .05$.

Discussion – Study 1: The “Walkers”

The purpose of Study 1 was to replicate the association between victimization history and gait (e.g., Grayson & Stein, 1981), and identify whether this association was dependent on the type of victimization experienced by the walkers and their cognitive states. Additionally, Study 1 also sought to examine the personality characteristics of the walkers by exploring the association between personality and victimization history, as well as the association between personality and the display of vulnerable gait cues.

Gait and Victimization History

In the unaware condition, the results of the current study replicated the association between victimization history and gait that has been identified throughout the literature (e.g., Blaskovits, 2015; Book et al., 2013; Grayson & Stein, 1981). That is, victims (i.e., of any form of

victimization) displayed significantly more vulnerable gait cues (e.g., short or long stride, lifted feet) than non-victims. Not only does this provide further support for the association between victimization history and gait, but it also suggests that gait may be a valid indicator of one's vulnerability to future victimization.

The current study was the first to examine the association between victimization history and gait across distinct victimization types. While previous research has examined the association between perceptions of vulnerability to sexual victimization and gait (i.e., Murzynski & Degelman, 1996; Sakaguchi & Hasegawa, 2006), to date there has been no research examining the association between actual experiences of exclusively sexual victimization, exclusively violent victimization, and gait patterns. Although researchers have attempted to examine the effect of victimization type (i.e., violent and sexual) on this association (Blaskovits, 2015), the categories were not operationalized in a mutually exclusive manner, making it difficult to draw conclusions about the relationship between gait and one form of victimization versus another. In the current study, victimization type was separated into three orthogonal categories: (1) experiences of exclusively sexual victimization, (2) experiences of exclusively violent victims, and (3) no previous experiences of victimization (i.e., non-victims). This ensured that the victimization variables were independent and did not overlap, as individuals with a history of victimization were placed in one victimization category only.

Interestingly, while exclusively sexual victims were more likely to display vulnerable gait cues than non-victims, those who exclusively experienced violent victimization were not. Mean scores for movement cues among violent victims were, however, in the right direction, where those who had experienced violent victimization displayed more vulnerable movement cues than non-victims when unaware of the camera. Although these findings are inconsistent with

Blaskovits (2015) – who reported an association between gait and violent victimization but not between gait and sexual victimization – they provide additional support for the association between vulnerable gait patterns and perceived vulnerability to sexual victimization (e.g., Murzynski & Degelman, 1996; Sakaguchi & Hasegawa, 2006). It is, however, unclear whether the inconsistency with Blaskovits (2015) is the result of low power, differences in the operationalization of the victimization type constructs, or the method in which gait was measured (i.e., point-light versus normal conditions). Notably, as the sample size across victimization type was small, these findings should be interpreted with caution until replicated with a larger sample. Assuming the results of the current study are reliable, gait may be a valid indicator of vulnerability to sexual victimization, but not violent victimization. These results also highlight the importance of establishing mutually exclusive victimization categories.

Gait and Cognitive State

With limited evidence that the association between gait and victimization may be dependent on the cognitive state of the walker (Fulham et al., 2016; Johnston et al., 2004), the current study sought to further explore this possibility. Specifically, the cognitive state of each walker was manipulated by changing the filming conditions. Under the first condition, the walkers were unaware of the camera and felt comfortable. Under the second condition, the walkers were informed of the camera and asked to walk down the hallway again. Informing walkers of the camera was believed to elicit a state of discomfort. While some participants confirmed their discomfort verbally, it may be beneficial for future studies to include a measure assessing cognitive state prior to filming each walking condition.

As previously stated, victims of any victimization and those who exclusively experienced sexual victimization displayed significantly more vulnerable gait cues than non-victims in the

unaware condition. This association disappeared in the aware condition, however, where display of vulnerable gait cues was unrelated to every category of victimization assessed. Upon further exploration, walkers were found to display fewer vulnerable gait cues in the aware condition than in the unaware condition, although this difference was not significant. When examined across victimization type, individuals who had experienced any form of victimization displayed significantly more vulnerable gait cues in the unaware condition than in the aware condition, while no differences were found among non-victims. Among exclusively sexual and exclusively violent victims, no significant differences were identified across conditions. Upon reviewing the means, differences were noted, where, across the victimization categories, victims tended to display significantly more vulnerable gait cues when unaware of the camera than when aware of the camera. It is therefore possible that the sample size was not large enough to detect a significant difference and a Type II Error occurred. The results of these analyses should therefore be interpreted with caution and replicated with a large sample size in the future.

It is important to note that, although gait appears to be a significant indicator of vulnerability to victimization based on past victimization experiences, the direction of this association remains unknown. That is, it is unclear whether vulnerable gait cues were displayed prior to the initial victimization experience or whether the initial victimization led to the display of vulnerable gait cues. While it may not be feasible to conduct a longitudinal study given the nature of this research, examining the stability of gait patterns over a few time periods may provide some insight into the impact that minor stressors can have on gait patterns and contribute to our understanding of the gait stability.

Personality, Victimization History, and Gait

As it is also possible that the association between victimization history and gait is a

reflection of the personality traits prototypical of victims, the current study sought to examine the personality characteristics of the walkers in relation to their victimization history and gait style. Although previous research suggests that victims tend to be more submissive and less assertive than non-victims (e.g., Corbin et al., 2001; Richards et al., 1991), the current study identified no differences in the levels of assertiveness among victims and non-victims, even after specific types of victimization were considered. Submissiveness, however, was significantly associated with violent victimization but was not associated with experiences of any victimization or exclusively sexual victimization. Contrary to what was expected, violent victims were significantly *less likely* to self-report submissive personality traits than non-victims. This may reflect a difference in socialization, where dominant individuals may spend more time in situations that incite violence or violent reactions (e.g., arguing) than submissive individuals. Although this has not been studied directly, dominance has previously been associated with a greater frequency of arguments among couples (e.g., Ponzi, Klimczuk, Traficante, & Maestripieri, 2015) and domestic violence (e.g., Straus, 2008). In addition to assertive and submissive traits, the current study also explored whether boldness, disinhibition, dominance, introversion, and the HEXACO dimensions were associated with victimization history. Interestingly, victims did not differ from non-victims on any of these personality traits, even after taking specific types of victimization into consideration. Notably, as the sample size was small, these results should be interpreted with caution.

In addition to examining the association between personality and victimization history, the current study also examined the association between personality and gait. With previous evidence of an association between perceived levels of personality traits like submissiveness and the display of vulnerable gait cues (e.g., Montepare & Zebrowitz-McArthur, 1988), researchers

generally assumed that vulnerable gait patterns are an extension of actual levels of personality traits like submissiveness. The results of the current study, however, suggest that this may not be true. Specifically, no significant associations were identified between personality and gait when walkers were unaware of the camera, suggesting that any differences in vulnerable gait patterns cannot be explained by personality. While it is possible that other explanations for gait differences have yet to be identified, the lack of association between gait and personality identified in the current study provides further support for the association between gait and victimization history by eliminating personality as a possible mediator (Baron & Kenny, 1986).

Among gait patterns identified when participants were aware of the camera, however, personality was in fact associated with vulnerable gait patterns. Specifically, individuals low on extraversion (or high on introversion) displayed significantly more vulnerable gait cues than individuals high on extraversion when aware of the camera. As victimization history was not associated with gait patterns in the aware condition, this finding suggests that personality traits (specifically extraversion) may influence gait patterns when individuals are placed in uncomfortable situations. Overall, these results support Hall and colleagues (2005) recommendation that perceived and actual levels of personality traits should not be used interchangeably but should instead be viewed as distinct constructs.

Limitations

The current study has several limitations that should be noted. Firstly, the sample size ($N = 31$) was small enough to raise concerns about the generalizability and accuracy of the results as the analyses were likely underpowered. Although this is a concern, previous studies examining vulnerable gait cues had similar, if not smaller sample sizes (i.e., ranging from 5 to 31; Blaskovits, 2015; Johnston et al., 2004). The overall results were also consistent with previous

research identifying an association between victimization history (i.e., any experiences of victimization) and gait (e.g., Book et al., 2013). Across victimization type, the sample size became a larger concern, as the number of walkers in each category was less than 10, and in some cases (i.e., exclusively violent victims) was less than five. While the association between exclusively sexual victimization and gait replicates previous research (e.g., Murzynski & Degelman, 1996; Sakaguchi & Hasegawa, 2006), the same cannot be said for exclusively violent victimization as the operationalization of violence in the current study differs from past research (e.g., Blaskovits, 2015). As it is possible that the results of the current study may not be generalizable due to the small sample size, replication is warranted before conclusions can be drawn about the associations, or lack thereof, discussed above. For now, the results should be interpreted with caution.

Concerns about generalizability and low power are further highlighted by the width of the confidence intervals presented throughout the current study, as the majority of confidence intervals are quite wide. Confidence intervals are thought to be indicative of a range in which we can be 95% confident that a true effect exists (Fields, 2012). Thus, wider confidence intervals mean a larger margin for error. As sample size contributes to the width of confidence intervals, it is not surprising that the confidence intervals presented in the current study are less precise. Again, due to the small sample of walkers included in the current study, replication is needed before reliable conclusions can be made.

The results of the current study should also be interpreted with caution as EM was used to impute missing data. Graham et al. (2003) raise concerns regarding the use of EM as error is not added into the imputed dataset, potentially biasing the associated standard errors. Although this was a concern, Tabachnick and Fidell (2013) suggest that EM is less of a concern when the

amount of missing data is small. As this was the case in the current study, the impact of EM data on standard errors was not overly concerning. EM was also conducted with raw scores rather than total scores to ensure the imputed values were predicted from similar items. Further, consistent results were identified between the EM data and original data with missing values, supporting the notion that the use of EM did not inappropriately influence or bias the results.

Finally, the current study was limited by the way in which walkers were filmed. To remain consistent with previous research (e.g., Book et al., 2013), walkers were filmed solely from behind. This meant coders were restricted to observing gait characteristics from one angle, making it difficult to identify movement cues such as stride length. It is possible that the accuracy of coding could be improved if more than one angle of each walker was captured on camera. Future research should consider recoding participants from more than one angle.

Future Directions

In addition to replicating the associations between gait and distinct types of victimization, future research should consider investigating whether this association extends to men as the majority of research in this area has focused on women walkers. Keeping in mind that the original gait coding guide (i.e., Grayson & Stein, 1981) was developed from characteristics of women's walking patterns, it would be necessary to first confirm whether men display similar gait patterns as women. If not, a new, men-specific coding guide would need to be developed.

Given that the association between victimization (i.e., any victimization experiences) and gait has been replicated across a variety of studies (e.g., Blaskovits, 2015; Book et al., 2013; Grayson & Stein, 1981), it may be advantageous to begin exploring potential mediators. Specifically, it is possible that factors such as the impact of victimization or recency of victimization may mediate association between victimization history and gait. Unfortunately the

sample size in the current study was too small for this type of analysis (Fields, 2012). It may also be advantageous for future research to examine differences in gait beyond exclusively violent and exclusively sexual victimization. For example, it is possible that victims who have experienced both violent and sexual victimization display unique gait patterns separate from those who have exclusively experienced one type of victimization.

Implications

Overall, the results of Study 1 suggest that, when individuals feel comfortable, gait inadvertently signals information about vulnerability but not personality. When individuals feel uncomfortable, however, higher levels of introversion are associated with the display vulnerable gait cues but victimization history is not. Further, victims (i.e., of any victimization) tended to display fewer vulnerable gait cues when aware of the camera than when unaware, while no differences were noted amongst non-victims. This suggests that cognitive state may play a greater role in the gait patterns displayed by victims than in the gait patterns displayed by non-victims. The results of the current study therefore support for the notion that gait may be a malleable characteristic (i.e., Book et al., 2016; Johnston et al., 2004).

With evidence that gait patterns can change, it may be possible to reduce the number of vulnerable gait cues displayed by women who have previously experienced victimization through training programs. Although only one study has tested the impact of gait training on the display of vulnerable gait cues, Johnston et al. (2004) identified positive outcomes among women who attended a series of gait training sessions. Specifically, Johnston et al. (2004) suggest that gait training may be beneficial for women who have previously experienced victimization, as those who displayed vulnerable gait patterns prior to training were perceived as significantly less vulnerable by observers post training. While gait training may help women

establish a more confident gait pattern, Johnston and colleagues (2004) do not denounce the benefits of traditional self-defense training in reducing future incidence of victimization.

Study 1 was also the first study to examine the association between gait and vulnerability across distinct types of victimization (i.e., exclusively sexual and exclusively violent victimization). The results of these analyses indicated that exclusively sexual victims tended to display the typical victim gait pattern, while exclusively violent victims did not. Thus, just as gait patterns appear to differ between victims and non-victims, gait patterns may also differ as a function of the specific type of victimization experienced by the walker. Subsequently, gait may influence observers' perceptions of vulnerability to sexual victimization, but not violent victimization. Although replication is needed, these results suggest that gait training may only be advantageous in reducing vulnerability among women who have exclusively experienced sexual victimization but may not be beneficial in reducing vulnerability among women who have exclusively experienced violent victimization.

Conclusion

Overall, Study 1 provides further support for the association between victimization history and gait (e.g., Grayson & Stein, 1981). Study 1 also suggests that gait patterns may be impacted by cognitive state, where women appear to unconsciously alter their walk in a way that makes them seem more confident in uncomfortable situations. Given that gait appears to be a malleable characteristic, Study 1 also supports the potential benefits of gait training in reducing the display of vulnerable gait cues among women. Study 1 does, however, suggest that gait training may only be beneficial for those who have experienced sexual victimization and may not be effective in reducing vulnerability among those who have experienced violent victimization. With evidence that gait may inadvertently signal information about one's vulnerability to

victimization, it is important to identify whether gait actually plays a role in the victim selection process and to identify whether certain individuals are more adept at recognizing and interpreting such non-verbal behaviour.

Study 2: The “Observers”

Using a subsample of the walkers collected in Study 1 (i.e., 16 of the 31 walkers), Study 2 examined individual differences in perceptions of the walker’s vulnerability to victimization and personality traits based on nonverbal cues. As nonverbal cues are often the first opportunity to make socially based judgments, the ability to successfully interpret these cues has been seen as an adaptive quality (McArthur & Baron, 1983). Although this skill could be used in a positive manner, some individuals may use nonverbal cues to identify those who can be easily exploited. For example, research has indicated that individuals high on psychopathy are more accurate in perceiving nonverbal gait cues signaling vulnerability than those low on psychopathy (Book et al., 2013; Ritchie et al., 2016; Wheeler et al., 2009). While Ritchie and colleagues (2016) suggest that accuracy may differ as a function of the type of vulnerability being perceived (i.e., violent or sexual), the overlapping definition of these constructs limited the reliability of the results. An exploration of whether accuracy depends on victimization type is therefore warranted.

Furthermore, it is possible that other characteristics are associated with individual differences in accuracy based on gait cues. While Black and colleagues (2014) found no differences in the ability to accurately perceptions of others’ personality characteristics between individuals high on Dark Triad traits and those low on Dark Triad traits, gait cues were not visible to the observers. As everyday sadism was not considered in this study (Black et al., 2014), it is therefore important to explore whether individuals with dark personalities are more accurate in perceiving others’ vulnerability when gait cues are available. In addition to dark

personalities, it is possible that other individual differences may account for additional variance in accuracy scores. For example, as psychopathic personality has previously been characterized by low honesty-humility (e.g., Book et al., 2015), individuals low on honesty-humility may also exhibit an adept ability in perceiving others' vulnerability.

Aside from inadvertently signaling vulnerability, nonverbal behaviours have also been associated with cues signaling personality traits such as submissiveness (e.g., Richards et al., 1991) and powerfulness (Montepare & Zebrowitz-McArthur, 1988). While Montepare and Zebrowitz-McArthur (1988) explored the association between gait and perceptions of powerfulness, individual differences in accuracy were not examined. More recently, Black and colleagues (2014) considered individual differences in perceptions of targets' personality traits based on nonverbal behaviour displayed during conversation (e.g., posture, gesturing). It is therefore of interest to identify whether certain individuals (e.g., psychopathic individuals) are more adept at perceiving others' personality traits from gait cues.

Based on the summarized literature, this study sought to replicate previous research associating psychopathy, personality, and victimization history with accurate perceptions of walkers' vulnerability, and identify whether certain individuals are more accurate in perceiving others' personality traits based on gait cues. The research questions for Study 2 are as follows:

Research Question 1: How are psychopathy, the HEXACO-60 dimensions, and the Dark Tetrad related? The associations between psychopathy, the HEXACO-60 dimensions, and the Dark Tetrad present in the current study were examined as a means of informing the interpretation of subsequent results. Given the inclusion of psychopathy in the Dark Tetrad, a strong positive association was expected between psychopathy, Machiavellianism, narcissism, and everyday sadism (e.g., Porter et al., 2014). Based on the available research, a negative

association was expected between psychopathy and the honesty-humility dimension of the HEXACO-60 (e.g., Ashton et al., 2000; Lee & Ashton, 2005; Lee et al., 2013). A negative association was also expected between psychopathy and the agreeableness and conscientiousness dimensions of the HEXACO-60 (e.g., Ashton & Lee, 2008; Samuels et al., 2004). As the association between psychopathy and the remaining HEXACO-60 dimensions has been somewhat inconsistent throughout the literature, these analyses were exploratory.

Research Question 2: Are individuals higher on psychopathy more accurate in perceiving the walkers' vulnerability to exclusively sexual and/or exclusively violent victimization based on nonverbal cues? Does this association differ across the facets of psychopathy? Recently, researchers have identified a positive association between psychopathy (specifically Factor 1 scores) and accuracy in perceiving others' vulnerability to victimization based on nonverbal cues (Book et al., 2013; Ritchie et al., 2016; Wheeler et al., 2009). These studies, however, operationalized victimization in a way that accuracy in perceiving vulnerability to sexual and violent victimization could not be differentiated. Although Ritchie and colleagues (2016) attempted, their definition of violent victimization encompassed sexual victimization, making it difficult to draw valid conclusions. Despite problems in definition, Ritchie and colleagues (2016) did report distinct differences in accuracy across victimization type, where psychopathic individuals were more accurate in perceiving vulnerability to violent, but not sexual victimization. The current study therefore sought to examine the association between psychopathy and accuracy in perceiving vulnerability to victimization across distinct victimization types (i.e., exclusively sexual and exclusively violent). Based on the findings of Ritchie and colleagues (2016), a positive association was expected between psychopathy (specifically Factor 1) and accuracy in perceiving vulnerability to violent, but not sexual

victimization.

For the first time, the current study also examined whether these associations were consistent across the facets of psychopathy. Although the association across facet scores had yet to be examined, it was expected that higher scores on the facets encompassing Factor 1 psychopathy (i.e., the interpersonal manipulation and callous affect facets) would be more strongly related to accuracy than scores on the erratic lifestyle and antisocial behaviour facets.

Research Question 3: Are certain personality dimensions (i.e., HEXACO-60, Dark Tetrad) associated with more accurate perceptions of vulnerability to exclusively sexual and exclusively violent victimization based on nonverbal cues? With evidence of an association between psychopathy and general personality traits (e.g., Ashton et al., 2000; Ashton & Lee, 2008; Lee & Ashton, 2005; Lee et al., 2013; Porter et al., 2014; Samuels et al., 2004), the current study also investigated whether accuracy in perceiving vulnerability to victimization is associated with personality traits other than psychopathy. As honesty-humility has previously been associated with psychopathy (e.g., Ashton et al., 2000; Lee & Ashton, 2005; Lee et al., 2013), it was expected that individuals scoring low on honesty-humility would be more accurate in perceiving walkers' vulnerability to exclusively violent victimization, but not exclusively sexual victimization (Ritchie et al., 2016). It was also expected that individuals scoring low on conscientiousness and agreeableness would be more accurate in perceiving vulnerability to exclusively violent but not exclusively sexual victimization (e.g., Lee & Ashton, 2005). As the psychopathy has been inconsistently associated with the remaining HEXACO-60 dimensions, these analyses were exploratory.

Additionally, the current study sought to investigate whether scores on the Dark Tetrad were associated with accurate perceptions of vulnerability to exclusively sexual and/or

exclusively violent victimization. Although Black and colleagues (2014) previously examined this association with Dark Triad traits, observers were not able to base their ratings on gait cues and everyday sadism was not measured in the study. As psychopathy has been associated with Machiavellianism, narcissism, and everyday sadism in the past (e.g., Porter et al., 2014), a positive association was expected between the Dark Tetrad traits and accuracy in perceiving vulnerability to exclusively violent but not exclusively sexual victimization when gait cues were available to observers.

Research Question 4: Which factors (i.e., psychopathy, HEXACO-60 dimensions, Dark Tetrad) are most salient to predicting accurate perceptions of walkers' vulnerability to exclusively sexual and exclusively violent victimization based on nonverbal cues? Since the current study sought to investigate the associations between psychopathy, the HEXACO-60 dimensions, the Dark Tetrad traits and accuracy in perceiving vulnerability to exclusively sexual, and/or exclusively violent victimization, it was essential to identify the factors that were most salient to accurate perceptions. All factors significantly associated with accuracy in the above analyses were entered into a regression analysis. Although these analyses are exploratory, the summarized literature suggests that psychopathy (specifically Factor 1 psychopathy; Book et al., 2013) may be a salient predictor of accurate perceptions of vulnerability to victimization.

Research Question 5: Does the use of certain nonverbal cues relate to psychopathy, the HEXACO-60 dimensions, the Dark Tetrad traits, and/or accuracy in perceiving vulnerability to exclusively sexual and/or exclusively violent victimization? Study 2 explored whether the use of certain cues as justifications for vulnerability ratings were associated with psychopathy, the HEXACO-60 dimensions, Dark Tetrad traits, and accuracy scores. While the latter three factors have yet to be explored, research supporting the cues used by psychopathic

individuals has been mixed. Among students, Wheeler and colleagues (2009) report no significant association between psychopathy and the use of gait cues in judgments of walkers' vulnerability. Among offenders, however, Book and colleagues (2013) reported a positive association between psychopathy and using gait cues as a rationale for vulnerability ratings. With an understanding that students may be less cognizant of the cues used to determine vulnerability than offenders (Book et al., 2013), it was expected that the use of gait cues would not be associated with psychopathy scores in the current study. These analyses were conducted across victimization type. No hypotheses were made in regards to the associations between accuracy and scores on Machiavellianism, narcissism, and everyday sadism.

Research Question 6: What factors (i.e., psychopathy, HEXACO-60 dimensions, Dark Tetrad) are associated with accurate perceptions of the walkers' personality traits (i.e., submissiveness, dominance, assertiveness, agreeableness, introversion, boldness, disinhibition, neuroticism, conscientiousness, openness) based on nonverbal cues? Are these factors associated with biased perceptions of the walker's personality traits? Finally, with evidence that nonverbal cues inadvertently signal socially relevant information (e.g., Richards et al., 1991), it is not surprising that Sakaguchi and Hasegawa (2006) suggest gait cues may contain information about personality characteristics. As individuals appear to differ in their perceptions of non-verbal cues signaling vulnerability (e.g., Book et al., 2013), the current study examined whether individuals with certain characteristics (i.e., psychopathy, HEXACO-60 dimensions, Dark Tetrad) were more accurate in perceiving walkers' personality traits. Although this was the first study to explore this phenomenon, a hypothesis was formed based on the results of Study 1. Specifically, due to the lack of association between gait and personality in Study 1, observers in Study 2 were not expected to accurately perceive the walkers' personality traits

based on non-verbal cues.

The current study also sought to identify whether psychopathy, the HEXACO-60 dimensions, and the Dark Tetrad were associated with biased perceptions of the walkers' personality traits. Black and colleagues (2014) previously examined the association between the Dark Triad and biased perceptions of personality among targets engaged in conversation. In this study, Black and colleagues (2014) reported a negative personality bias among individuals higher on the Dark Triad traits. That is, individuals higher on the Dark Triad traits perceived targets engaged in conversation as less agreeable, neurotic, anxious, and depressed. While the current study sought to examine biased perceptions of personality based on gait cues, it was expected that individuals higher on psychopathy and the Dark Tetrad traits, and lower on honesty-humility would perceive the walkers as having more passive personality traits (e.g., introverted, submissive, neurotic, agreeable). In addition to examining biases across all walkers, biases were also examined across victimization type.

Method – Study 2: The “Observers”

Participants

A sample of 151 undergraduate students (50 men, 98 women, 1 genderfluid participant, and 2 participants that did not report their gender) were recruited online via an electronic research bulletin board to participate in the current study as “observers”. All participants were provided with extra credit in their psychology courses for their participation in the study. To ensure a range of psychopathy scores, a personal invitation was sent to students scoring in the top and bottom 20% of a pre-screened measure of psychopathy (i.e., SRP short form; Paulhus et al., 2016) completed as part of a mass testing protocol. Any student with access to the electronic research bulletin board was eligible to participate in the study regardless of that student's mass

testing score. To maintain independence of observation, however, those who had participated as “walkers” in Study 1 were not eligible to participate in Study 2.

Consent was obtained from all 151 participants. Fourteen participants responded incorrectly to at least one of the three attention checks placed randomly throughout the study and were subsequently removed from analyses. The final sample ($N = 137$) consisted of 91 women, 43 men, 1 genderfluid participant, and 2 participants that did not report their gender. Participant age ranged from 17 to 47 ($M = 20.42$, $SD = 5.14$). While the majority of participants identified as Caucasian (56.2%), participants also identified as African-Canadian (16.1%), Asian (8.8%), other ethnicities (6.6%), Middle Eastern (5.8%), East Indian (2.9%), and Aboriginal (2.9%). One participant (0.7%) did not report ethnicity.

Measures

Walker Stimuli. Sixteen of the 31 walker videos from the unaware condition collected for Study 1 were selected as walker stimuli for Study 2. Each walker had previously been made aware of the purpose of Study 2 and had provided consent for the videos to be used as stimuli. To control the base-rate, four videos were randomly selected from the walkers who reported having never been victimized, four videos were randomly selected from the walkers who reported having exclusively experienced non-sexual violent victimization, four videos were randomly selected from the walkers who reported having exclusively experienced sexual victimization, and four videos were randomly selected from the walkers who reported having experienced both sexual and violent victimization. Walker videos were edited to last approximately five seconds. Each observer was asked to view the same 16 walker videos, however, the order in which the videos were presented was randomized. For the purpose of the current study, perceptions of the walkers who reported experiences of both sexual and violent

victimization were not examined.

Walker Vulnerability to Victimization Questionnaire. The Walker Vulnerability to Victimization Questionnaire was used to assess observer perceptions of walkers' vulnerability to victimization (see Appendix O). This questionnaire was adapted from Wheeler et al. (2009) and Book et al. (2013) to assess vulnerability to specific types of victimization (i.e., non-sexual violent and sexual victimization), rather than victimization in general. In the current study, non-sexual violent victimization was defined as physical abuse, assault, threats, and/or armed robbery, and sexual victimization was defined as sexual abuse and/or sexual assault. After viewing each walker video, participants were asked to indicate (yes or no) whether they believed the walker had previously experienced non-sexual violent victimization and/or sexual victimization⁶. Finally, participants were asked to justify their vulnerability ratings in an open-ended question. Participants were asked to complete the Walker Vulnerability to Victimization Questionnaire after viewing each walker video.

Observer ratings on the Walker Vulnerability to Victimization Questionnaire were used to identify observer accuracy in perceiving the walkers' vulnerability to exclusively sexual and exclusively violent victimization. Consistent with Wheeler et al. (2009) and Book et al. (2013), accuracy scores were determined by categorizing observers' vulnerability ratings into correct and incorrect judgments based on the walkers' self-reported history of victimization collected in Study 1. For example, if a walker had previously experienced sexual victimization and the observer had rated the walker as vulnerable to sexual victimization, that observer would receive a score of one for correctly rating the walker's vulnerability. This procedure was repeated across

⁶ Participants were also asked to rate how vulnerable they believed the walker was to experiencing non-sexual violent victimization and/or sexual victimization in the future on a scale from 1 to 10, where 1 was indicative of the walker being "*not at all vulnerable*" and 10 was indicative of the walker being "*completely vulnerable*". This variable was not examined in the current study.

all walker videos. Two accuracy scores were calculated out of 8, by totaling the number of correct and incorrect judgments for the four exclusively violent victims and the four non-victims, and the four exclusively sexual victims and the four non-victims. To remain consistent with previous research (e.g., Book et al., 2013), these scores were then dichotomized into accurate and inaccurate, where 1 was indicative of an “*accurate participant*” and 0 was indicative of an “*inaccurate participant*”. That is, those rated as accurate correctly judged five or more videos, while those rated as inaccurate correctly judged four or fewer videos.

Walker Personality Questionnaire. The Walker Personality Questionnaire was used to assess observer perceptions of walkers’ personality characteristics (see Appendix P). This questionnaire was developed for the purpose of this study based on the personality traits (i.e., dominance, agreeableness, submissiveness, introversion, boldness, disinhibition, neuroticism, conscientiousness, openness) captured by the Brief TriPM, the RAS, the IASR-B5, and the Brief HEXACO-PI that have previously been associated with perceptions of vulnerability (e.g., Black et al., 2014). After watching each walker video, observers were asked to rate the walker on a series of adjectives with a 10-point Likert scale, where 1 was indicative of the adjective being “*not true at all*” and 10 was indicative of the adjective being “*completely true*”. These ratings were used to assess observer accuracy in perceiving the walkers’ personality characteristics and biases in the observer’s perceptions of the walkers. For each of the nine personality traits, an accuracy score was calculated by correlating the walker’s self-reported personality score from Study 1 with the observer’s personality rating. A total of nine accuracy scores were calculated for each observer.

Demographic Questionnaire. A demographic questionnaire was used to collect information on participant’s gender, age, and ethnicity (see Appendix Q).

Attention Check. Three attention check questions were randomly placed throughout the study. These questions asked participants to select “*unlikely*”. Those who did not select unlikely on at least one of the three attention checks were removed from subsequent analyses.

Self-Report Psychopathy Scale (SRP-III; Paulhus et al., in press). The SRP-III is a 64-item self-report version of the PCL-R (Hare, 2003) that was used to assess psychopathic traits (see Appendix R). Participants were asked to rate their level of agreement with a series of statements on a 5-point Likert scale, where 1 was indicative of “*strongly disagreeing*” and 5 was indicative of “*strongly agreeing*” with the statement. The SRP-III has demonstrated a factor structure similar to the PCL-R (Mahmut, Menictas, Stevenson, & Homewood, 2011; Neil & Sellbom, 2012; Williams, Paulhus, & Hare, 2007). Consistent with the PCL-R, the SRP-III produces four facet scores, each derived from the sum of 16-items; (1) interpersonal manipulation, (2) callous affect, (3) erratic lifestyle, (4) antisocial behaviour. Factors scores were calculated by summing the facet scores, where Factor 1 psychopathy was calculated by summing the interpersonal manipulation and callous affect facet scores, and Factor 2 psychopathy was calculated by summing the erratic lifestyle and antisocial behaviour facet scores.

Across student and community adult samples, the SRP-III has maintained acceptable internal consistency, where Cronbach’s alpha ranges from .86 to .92 (Mahmut et al., 2011; Neil & Sellbom, 2012; Williams et al., 2007). The SRP-III has also demonstrated adequate convergent validity, moderately correlating with other self-report measures of psychopathy (Neil & Sellbom, 2012; Williams et al., 2007), including the Psychopathy Personality Inventory (PPI; Lilienfeld & Andrews, 1996), the LSRP (Levenson et al., 1995), and the psychopathy subscale from the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1985). Recently, Vittacco et al. (2014) provided evidence that the SRP-III has fair predictive power when predicting violent

and serious offences occurring within an average follow-up period of three-and-a-half years among community-based men offenders.

HEXACO-60 (HEXACO-60; Ashton & Lee, 2009). The HEXACO-60 was used to assess six dimensions of personality among observers: (1) honesty-humility, (2) emotionality, (3) extraversion, (4) agreeableness, (5) conscientiousness, and (6) openness to experience (see Appendix G). A description of the HEXACO-60 was provided in Study 1.

The Short Dark Triad (SD3; Jones & Paulhus, 2014). The SD3 is a 27-item measure assessing a constellation of three malevolent personality traits: (1) narcissism (i.e., excessive self-love), (2) Machiavellianism (i.e., manipulative attitude), and (3) subclinical psychopathy⁷ (i.e., lack of empathy; see Appendix R). This measure is a short version of the original Dark Triad (Paulhus & Williams, 2002) and is recommended for use when administrative time is limited. Participants were asked to rate their level of agreement with a series of statements on a 5-point Likert scale, where 1 was indicative of “*strongly disagreeing*” with the statement and 5 was indicative of “*strongly agreeing*” with the statement. The SD3 produces three scale scores, each made-up of 9-items, which correspond to narcissism, Machiavellianism, and psychopathy. These scores were calculated by taking the mean of the 9-items within each scale.

The SD3 maintains adequate internal consistency, with Cronbach’s alphas ranging from .70 to .80 in cross-validation community and student samples (Jones & Paulhus, 2014). Paulhus and Jones (2011) report moderate to high (.77 to .84) test-score stability over a two-week period. The SD3 has also demonstrated good convergent validity, correlating with other measures of personality such as the interpersonal circumplex (Jones & Paulhus, 2011) and subscales of the Big Five (e.g., Jones & Paulhus, 2014; Maples, Lamkin, & Miller, 2014; Veselka, Schermer, &

⁷ Notably, the Dark Tetrad psychopathy variable was excluded from all analyses as to avoid redundancy with the SRP psychopathy variable.

Vernon, 2011). Above and beyond the Big Five personality domains, the SD3 has been shown to predict motivation for sex, money, and power (Lee et al., 2013). Not surprisingly, psychopathy has shown the strongest association with aggressive behaviour (Buckels et al., 2013) and narcissism has shown the strongest association with mimicry in high status interactions (Ashton-James & Levordashka, 2013). Machavellianism is the only SD3 trait associated with delay gratification (Jones & Paulhus, 2011).

Comprehensive Assessment of Sadistic Tendencies (CAST; Buckels & Paulhus, 2014). The CAST is an 18-item measure assessing sadistic personality. This measure was included in this study given the recent addition of the “everyday sadism” construct to the constellation of Dark Triad traits, now referred to as the Dark Tetrad (Buckels et al., 2013; Chabrol et al., 2009; see Appendix S). The CAST is recommended over other measures of sadism as it has stronger reliability and better content coverage (Buckels et al., 2014).

Participants were asked to rate their level of agreement with a series of statements on a 5-point Likert scale, where 1 was indicative of “*strongly disagreeing*” with the statement and 5 was indicative of “*strongly agreeing*” with the statement. Although the original CAST asked participants to rate statements on a 7-point Likert scale, a 5-point Likert scale was used in the current study to remain consistent with the SD3 and previous research examining the Dark Tetrad (Buckels et al., 2014). A total everyday sadism score was computed by taking the mean of all 18 items. The CAST maintains good internal consistency, where Cronbach’s alphas range from .80 to .89 (Buckels et al., 2014).

Non-Verbal Cue Coding Guide. Developed for the purpose of the current study, the Non-Verbal Cue coding guide was used to assess observer responses to an open-ended question asking them to justify each of their vulnerability ratings. By examining the non-verbal cues

mentioned across the first 10 participants, the author identified 11 common themes. These themes are described in Table 11. The author and a second coder then independently coded the open-ended responses for each observer using these common themes. Responses from a total of 30 participants were used to assess interrater reliability (30 participants x 16 responses (one for each video) = approximately 480 responses). Across categories, Kappa's ranged from 0.65 to 1.00. With acceptable interrater, the second coder coded the remaining responses. Once coding was complete, the researcher calculated the proportion of times each cue was mentioned by participants.

Table 11

Non-Verbal Cue Coding Guide

Non-Verbal Cue Category	Description
Movement	Any mention of the way the target's walking, posture, speed, pace, arms etc.
Emotional Appearance	Any mention of the way the target appears (e.g., target "looks awkward", "looks nervous", "looks confident").
Physical Appearance	Any mention of the target's attractiveness or weight (e.g., "nice bum", "not attractive", "fat", or "looks strong").
Clothing	Any mention of the target's clothing.
Age	Any mention of the target's age.
Gender	Any mention of the target being a man or woman.
Previous Knowledge	Any mention of having prior knowledge about what makes individuals vulnerable to victimization.
Intuition	Any mention of guessing or "I just knew".
Environment	Any mention of the surrounding environment.
Awareness	Any mention of the target being unaware or aware of their surroundings.
Other	Any cues that cannot be categorized into one of the other categories.

Procedure

Men and women undergraduate students from Carleton University were recruited through an electronic research bulletin board to participate as "observers" in the current study (see Appendix U). To ensure a range of psychopathy scores, students scoring in the top and bottom 20% of a pre-screened measure of psychopathy (i.e., SRP Short Form; Paulhus et al., in press; see Appendix V) completed as part of a mass testing protocol were sent a personal invitation to

participate. Notably, all eligible students with access to the electronic bulletin board were able to participate in the study regardless of their mass testing scores. Those who registered for the study were invited to complete the study in a laboratory at Carleton University. Participants were asked to complete the study on a laboratory computer using Qualtrics. As previously stated, Qualtrics is a password protected online survey tool that employs multiple layers of security to ensure all data remain confidential. A unique ID number was assigned to each participant to ensure anonymity.

Participants were first asked to review an informed consent form outlining the purpose of the study, the task requirements, and any potential risks or benefits associated with participating (see Appendix W). Those who consented were then asked to view a series of 16 walker videos. After each video, participants were asked to rate the walker's personality characteristics, and vulnerability to non-sexual violent victimization and sexual victimization with the Walker Personality Questionnaire and the Walker Vulnerability to Victimization Questionnaire, respectively. Participants were also asked to justify their vulnerability ratings for each walker in an open-ended format. The order in which walker videos were presented to observers was randomized.

After viewing the walker videos, participants were asked to complete a demographic questionnaire, the SRP-III (Paulhus et al., in press), the HEXACO-60 (Lee & Ashton, 2004), the SD3 (Jones & Paulhus, 2014), the CAST (Buckels & Paulhus, 2014), and the Observer Victimization History Questionnaire⁸. The order in which the questionnaires were presented to observers was randomized. Once complete, participants were given a debriefing form explaining the purpose of the study (see Appendix X). Three attention checks were placed throughout the

⁸ The Observer Victimization History Questionnaire was used to assess the frequency in which observers had experienced non-sexual violent and sexual victimization, or attempted non-sexual violent and attempted sexual victimization over the past five years (see Appendix T). This measure was not examined in the current study.

study to identify participants responding at random. The entire study took approximately one hour to complete.

Results – Study 2: The “Observers”

Data Preparation

Missing data. Key variables were first scanned for missing values. No key variables contained complete information. Among the Dark Tetrad variables, Machiavellianism was missing two values, narcissism was missing five values, and everyday sadism was missing 13 values. Across the HEXACO-60, four values were missing from the honesty-humility dimension, five values were missing from the emotionality dimension, five values were missing from the extraversion dimension, six values were missing from the agreeableness dimension, four values were missing from the conscientiousness dimension, and four values were missing from the openness dimension. Among the SRP-III scores, the SRP total was missing 27 values, Factor 1 was missing 20 values, Factor 2 was missing 12 values, the IPM facet was missing 13 values, the CA facet was missing nine values, the ELS facet was missing nine values, and the ASB facet was missing five values. Finally, across the accuracy scores, exclusively sexual accuracy was missing five values and exclusively violent accuracy was missing eight values.

For each key variable, a *t*-test and a chi-square analysis were conducted to determine whether the age and gender of participants missing data differed from the age and gender of participants with completed data. No significant differences were identified between the age of participants with missing data and the age of participants with completed data across all variables ($p > .05$). Similarly, no significant differences were identified between the gender of participants with missing data and the gender of participants with completed data across all variables ($p > .05$). This suggests that any missing data were missing at random.

Missing data were then examined across cases. Six participants were identified as missing more than 50% of their data and were removed from subsequent analyses ($N = 131$). Among the raw scores comprising these Dark Tetrad, HEXACO-60 dimensions, and SRP-III, no more than three values were missing from a single participant. Missing values on these variables were imputed using Expectation Maximization (EM) methods, where EM was conducted separately for each key variable using the raw scores associated with that scale to ensure predictions were based on related items. Although data were missing on the outcome variables (i.e., accuracy in perceiving others' personality and vulnerability to victimization), available case analysis (i.e., pairwise analysis) was used to avoid making assumptions about observers' personal judgments.

Outliers. Data were then examined for univariate outliers. Upon visual inspection of boxplots and histograms, one potential outlier was identified on emotionality, conscientiousness, and the CA, ELS, and ASB facets, two potential outliers were identified on agreeableness, the SRP total, Factor 1, and the IPM facet, three potential outliers were identified on Factor 2 psychopathy and everyday sadism, and four potential outliers were identified on narcissism and honesty-humility. Z-scores were then calculated across cases for all key variables to determine whether any standardized scores exceeded ± 3.29 , indicating the presence of univariate outliers. Consistent with the visual inspection, the standardized scores associated with one participant (i.e., case 61) exceeded the $z = \pm 3.29$ cut off on the IPM, CA, ASB, Factor 1, Factor 2, and SRP total psychopathy variables, and another exceeded the $z = \pm 3.29$ cut off on everyday sadism (i.e., case 59).

For each variable flagged as having potential outliers, leverage and discrepancy values were calculated to determine how far the observed value of each potential outlier was from the

central mean of the predictor variables and to examine the distance between predicted and observed values of the dependent variables. Leverage and discrepancy values suggested that these two cases (i.e., case 61 and case 59) deviated from the mean leverage of the sample, where both cases were almost four times higher than the mean leverage for the sample. For both cases, the global and local influence was examined to identify the extent to which the omnibus results were impacted. Both cases had a large global influence, while only case 61 was identified as having a large local influence. As a result, these two cases were deemed multivariate outliers (i.e., unusual combination of scores on key variables; Tabachnick & Fidell, 2013) and were removed from the dataset. After the two cases were removed, the final sample size was 129.

With the two cases removed, z-scores were rerun and boxplot and histograms were inspected again for potential outliers. No additional outliers were identified.

Normality. Data were screened for normality. As previously stated, skewness and kurtosis are a concern when the ratio exceeds ± 3.29 (Nunes & Herman, 2011). Across all key variables, the skewness and kurtosis ratios fell within the acceptable range (i.e., $< \pm 3.29$), suggesting that the data were normally distributed. Further, normality was not a concern in the current study as the sample size was large enough (> 40) to be robust to violations of normality (Fields, 2012). Notably, the results of these analyses were consistent across the variables with and without missing data.

Descriptive statistics and internal consistency. Table 12 provides information on the descriptive statistics and internal consistencies of self-report measures (i.e., the SRP total, Factors, and facets, the HEXACO-60 dimensions, and the Dark Tetrad). Each variable maintained adequate internal consistency, providing enough evidence to confidently use each measure.

Table 12

Descriptive Statistics and Internal Consistencies of Self-report Measures

Scale	Variable	<i>M</i>	<i>SD</i>	Reliability (Cronbach's Alpha)
SRP-III	SRP Total	2.25	0.51	.92
	Factor 1	2.57	0.61	.89
	Factor 2	2.10	0.48	.85
	IPM	2.50	0.72	.78
	CA	2.32	0.62	.83
	ELS	2.64	0.65	.83
	ASB	1.56	0.47	.72
Dark Tetrad	Machiavellianism	2.99	0.79	.84
	Narcissism	2.97	0.41	.76
	Everyday Sadism	2.18	0.64	.88
HEXACO-60	Honesty-humility	3.25	0.70	.80
	Emotionality	3.39	0.70	.80
	Extraversion	3.24	0.69	.80
	Agreeableness	3.18	0.69	.80
	Conscientiousness	3.50	0.56	.70
	Openness	3.45	0.66	.76

Note. SRP-III = Self-Report Psychopathy Scale (Paulhus et al., in press); SRP Total = Total score for the Self-Report Psychopathy Scale; IPM = Interpersonal manipulation facet; CA = Callous affect facet; ELS = Erratic lifestyle facet; ASB = Antisocial behaviour facet; M = Mean; SD = Standard deviation.

Primary Analyses

Personality and psychopathy. A series of bivariate correlations were first conducted to examine the associations between psychopathy (total, Factors, and facets) and the HEXACO-60 dimensions (see Table 13). Consistent with previous research (e.g., Ashton et al., 2000; Lee & Ashton, 2005; Lee et al., 2013), a strong negative association was identified between honesty-humility and total psychopathy, Factor 1 psychopathy, Factor 2 psychopathy, interpersonal manipulation facet, callous affect facet, erratic lifestyle facet, and antisocial behaviour facet scores. Thus, those who scored higher on psychopathy also scored lower on honesty-humility. As expected (e.g., Ashton & Lee, 2008), small to moderate negative associations were identified between agreeableness and total psychopathy, Factor 1 psychopathy, Factor 2 psychopathy,

interpersonal manipulation facet, callous affect facet, erratic lifestyle facet, and antisocial behaviour facet scores. Similarly, moderate negative associations were also identified between conscientiousness and total psychopathy, Factor 1 psychopathy, Factor 2 psychopathy, interpersonal manipulation facet, callous affect facet, and erratic lifestyle facet scores, while no significant associations were identified between conscientiousness and the antisocial behaviour facet. In general, this suggests low scores on agreeableness and conscientiousness also characterize psychopathy.

Exploratory analyses revealed a moderate to strong negative association between emotionality and total psychopathy, Factor 1 psychopathy, Factor 2 psychopathy, interpersonal manipulation facet, callous affect facet, erratic lifestyle facet, and antisocial behaviour facet scores. This suggests that observers higher on psychopathy scored lower on emotionality. While a small positive association was identified between extraversion and the erratic lifestyle facet of psychopathy, extraversion was unrelated to scores on the SRP total, Factor 1, Factor 2, interpersonal manipulation facet, callous affect facet, and antisocial behaviour facet. Thus, extraversion appears to play a large role in the impulsive characteristics of psychopathy, but not the remaining facets, as observers scoring higher on the erratic lifestyle facet tend to be more extraverted. Finally, small associations were identified between openness and total psychopathy, Factor 1 psychopathy, Factor 2 psychopathy, interpersonal manipulation facet, and erratic lifestyle facet scores, while no significant associations were identified between openness and scores on the callous affect and antisocial behaviour facets. This suggests that high openness may be a key characteristic of psychopathy, but may not be salient to antisocial behaviour.

Table 13

Bivariate Correlations between Psychopathy and the HEXACO-60 Dimensions

HEXACO-60 Dimensions	SRP Total [95% CI]	Factor 1 [95% CI]	Factor 2 [95% CI]	IPM [95% CI]	CA [95% CI]	ELS [95% CI]	ASB [95% CI]
Honesty-Humility	-.72** [-0.79, -0.62]	-.72** [-0.79, -0.62]	-.62** [-0.72, -0.50]	-.70** [-0.78, -0.60]	-.57** [-0.68, -0.44]	-.67** [-0.68, -0.44]	-.48** [-0.60, -0.33]
Emotionality	-.51** [-0.63, -0.37]	-.45** [-0.58, -0.30]	-.34** [-0.48, -0.18]	-.46** [-0.59, -0.31]	-.60** [-0.70, -0.48]	-.33** [-0.48, -0.17]	-.24** [-0.40, -0.07]
Extraversion	.07 [-0.10, 0.23]	.13 [-0.04, 0.29]	.16 [-0.01, 0.32]	.03 [-0.14, 0.20]	-.05 [-0.22, 0.12]	.20* [0.03, 0.36]	.05 [-0.12, 0.22]
Agreeableness	-.38** [-0.52, -0.22]	-.36** [-0.50, -0.20]	-.26** [-0.41, -0.09]	-.41** [-0.54, -0.26]	-.37** [-0.51, -0.21]	-.22** [-0.38, -0.05]	-.23** [-0.39, -0.06]
Conscientiousness	-.37** [-0.51, -0.20]	-.40** [-0.54, -0.24]	-.33** [-0.48, -0.17]	-.32** [-0.47, -0.16]	-.31** [-0.46, -0.24]	-.40** [-0.54, -0.24]	-.13 [-0.29, 0.04]
Openness	.21* [0.04, 0.37]	.27* [0.10, 0.42]	.21* [0.04, 0.37]	.21* [0.04, 0.37]	.10 [-0.07, 0.26]	.26** [0.09, 0.41]	.07 [-0.10, 0.23]

Note. SRP Total = Total score for the Self-Report Psychopathy Scale (Paulhus et al., in press); IPM = Interpersonal manipulation facet; CA = Callous affect facet; ELS = Erratic lifestyle facet; ASB = Antisocial behaviour facet; 95% CI = 95% Confidence Interval.

* $p < .05$; ** $p < .01$.

The next series of bivariate correlations examined the association between psychopathy and the Dark Tetrad (see Table 14). As positive associations have been identified between psychopathy and the Dark Tetrad traits in the past (Porter et al., 2014), the same was expected in the current study. Consistently, results revealed moderate to strong associations between Machiavellianism and total psychopathy, Factor 1 psychopathy, Factor 2 psychopathy, interpersonal manipulation facet, callous affect facet, erratic lifestyle facet, and the antisocial behaviour facet scores. Not surprisingly, this suggests that psychopathy is characterized by Machiavellian traits (i.e., deceitful, manipulative). While a small association was identified between narcissism and scores on interpersonal manipulation facet, no associations were identified between narcissism and total psychopathy, Factor 1 psychopathy, Factor 2 psychopathy, and the callous affect, erratic lifestyle, and antisocial behaviour facets scores. Again, this is not surprising, as the interpersonal manipulation facet of psychopathy accounts for characteristics of grandiosity also seen among narcissists. Finally, moderate to strong associations were identified between everyday sadism and total psychopathy, Factor 1 psychopathy, Factor 2 psychopathy, interpersonal manipulation facet, callous affect facet, erratic lifestyle facet, and the antisocial behaviour facet scores. This suggests that observers higher on psychopathy also scored higher on everyday sadism.

Table 14

Bivariate Correlations between Psychopathy and the Dark Tetrad

Dark Tetrad	SRP Total [95% CI]	Factor 1 [95% CI]	Factor 2 [95% CI]	IPM [95% CI]	CA [95% CI]	ELS [95% CI]	ASB [95% CI]
Machiavellianism	.68** [0.57, 0.76]	.69** [0.59, 0.77]	.46** [0.31, 0.59]	.77** [0.69, 0.83]	.64** [0.53, 0.73]	.44** [0.29, 0.57]	.33** [0.17, 0.48]
Narcissism	.10 [-0.07, 0.26]	.13 [-0.04, 0.29]	.02 [-0.15, 0.19]	.20* [0.04, 0.37]	.06 [-0.11, 0.23]	.02 [-0.15, 0.19]	.01 [-0.16, 0.18]
Everyday Sadism	.79** [0.71, 0.85]	.74** [0.65, 0.81]	.64** [0.53, 0.73]	.72** [0.62, 0.79]	.75** [0.66, 0.82]	.59** [0.46, 0.69]	.50** [0.36, 0.62]

Note. SRP Total = Total score for the Self-Report Psychopathy Scale (Paulhus et al., in press); IPM = Interpersonal manipulation facet; CA = Callous affect facet; ELS = Erratic lifestyle facet; ASB = Antisocial behaviour facet.

* $p < .05$; ** $p < .01$.

Psychopathy and perceptions of vulnerability. A series of AUC analyses were then conducted to determine whether psychopathy (total, Factors, and facets) was related to accuracy in perceiving other's vulnerability to exclusively sexual and/or exclusively violent victimization (see Table 15). Although more distinct victimization categories were used in the current study, it was expected that psychopathy would be associated with greater accuracy in perceiving vulnerability to violent, but not sexual victimization (Ritchie et al., 2016).

Despite differences in the operationalization of victimization, the results of the current study were consistent with Ritchie et al. (2016), where higher total psychopathy scores were associated with greater accuracy in perceiving others' vulnerability to violent victimization ($AUC = .77$). Accuracy in perceiving vulnerability to violent victimization was also associated with higher scores on both Factor 1 ($AUC = .76$) and Factor 2 psychopathy ($AUC = .77$). Further, higher scores on the interpersonal manipulation ($AUC = .72$), callous affect ($AUC = .67$), erratic lifestyle ($AUC = .72$), and antisocial behaviour facets ($AUC = .73$) were associated with greater accuracy in perceiving vulnerability to violent victimization. Consistent with Ritchie and colleagues (2016), no significant associations were identified between psychopathy and accuracy in perceiving others' vulnerability to sexual victimization. Overall, these results suggest that the association between psychopathy and accuracy in perceiving others' vulnerability to victimization is dependent on victimization type.

Table 15

*AUC Analyses of the Association Between Psychopathy and Accuracy in Perceiving**Vulnerability to Sexual and Violent Victimization*

Vulnerability Type	Psychopathy	N	AUC	SE	<i>p</i>	95% CI
Sexual Victimization	SRP Total	126	.45	.07	.58	[0.32, 0.58]
	Factor 1	126	.48	.07	.89	[0.34, 0.61]
	Factor 2	126	.49	.07	.98	[0.36, 0.62]
	IPM	126	.45	.07	.62	[0.32, 0.59]
	CA	126	.41	.06	.26	[0.29, 0.54]
	ELS	126	.51	.07	.79	[0.38, 0.64]
	ASB	126	.44	.07	.46	[0.30, 0.57]
Violent Victimization	SRP Total	123	.77	.05	.00	[0.67, 0.87]
	Factor 1	123	.76	.05	.00	[0.65, 0.86]
	Factor 2	123	.77	.06	.00	[0.67, 0.88]
	IPM	123	.72	.06	.00	[0.61, 0.83]
	CA	123	.67	.06	.01	[0.56, 0.78]
	ELS	123	.72	.06	.00	[0.61, 0.84]
	ASB	123	.73	.05	.00	[0.62, 0.83]

Note. SRP Total = Self-Report Psychopathy Scale Total score; Factor 1 = Factor 1 psychopathy; Factor 2 = Factor 2 psychopathy; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Lifestyle; ASB = Antisocial Behaviour; AUC = Area Under the Curve; SE = Standard Error; 95% CI = 95% Confidence Interval.

HEXACO-60 and perceptions of vulnerability. To determine whether general personality traits (i.e., HEXACO-60) were associated with perceptions of vulnerability to exclusively sexual and/or exclusively violent victimization, a series of AUC analyses were conducted (see Table 16). As a negative association has been identified between psychopathy and honesty-humility, conscientiousness, and agreeableness in the past (e.g., Ashton et al., 2000; Lee & Ashton, 2005; Lee et al., 2013), it was expected that observers scoring lower on honesty-humility, conscientiousness, and agreeableness would be more accurate in perceiving vulnerability to violent, but not sexual victimization (e.g., Ritchie et al., 2016).

As expected, a negative association was identified between honesty-humility and accuracy, where lower scores on honesty-humility were associated with greater accuracy in

perceiving others' vulnerability to violent victimization ($AUC = .30$). No association was identified between honesty-humility and accuracy in perceiving vulnerability to exclusively sexual victimization. Contrary to what was expected, no associations were identified between accuracy and scores on conscientiousness and agreeableness. No associations were identified between accuracy and the remaining HEXACO-60 dimensions.

Table 16

AUC Analyses of the Association Between the HEXACO-60 Dimensions and Accuracy in Perceiving Vulnerability to Sexual and Violent Victimization

Vulnerability Type	HEXACO-60 Dimensions	N	AUC	SE	<i>p</i>	95% CI
Sexual Victimization	Honesty-Humility	126	.46	.07	.42	[0.31, 0.60]
	Emotionality	126	.62	.06	.08	[0.49, 0.74]
	Extraversion	126	.40	.07	.17	[0.26, 0.55]
	Agreeableness	126	.60	.06	.13	[0.48, 0.71]
	Conscientiousness	126	.56	.07	.50	[0.43, 0.70]
	Openness	126	.44	.07	.26	[0.30, 0.58]
Violent Victimization	Honesty-Humility	123	.30	.06	.00	[0.19, 0.42]
	Emotionality	123	.41	.06	.21	[0.29, 0.53]
	Extraversion	123	.51	.06	.79	[0.39, 0.63]
	Agreeableness	123	.44	.07	.40	[0.31, 0.57]
	Conscientiousness	123	.42	.07	.14	[0.28, 0.55]
	Openness	123	.58	.06	.31	[0.46, 0.70]

Note. AUC = Area Under the Curve; SE = Standard Error; 95% CI = 95% Confidence Interval.

Dark Tetrad and perceptions of vulnerability. A series of AUC analyses were then conducted to determine whether the Dark Tetrad traits were associated with accuracy in perceiving others' vulnerability to exclusively sexual and/or exclusively violent victimization (see Table 17). Given the positive association identified between psychopathy and the Dark Tetrad in the past (e.g., Porter et al., 2014), it was hypothesized that higher scores on the Dark Tetrad traits would be associated with greater accuracy in perceiving vulnerability to exclusively violent, but not exclusively sexual victimization (Ritchie et al., 2016).

Surprisingly, while higher scores on Machiavellianism ($AUC = .67$) and everyday sadism ($AUC = .65$) were associated with greater accuracy in perceiving others' vulnerability to violent victimization, narcissism was not associated with accuracy in perceiving vulnerability to violent victimization. As expected, the Dark Tetrad traits (i.e., Machiavellianism, narcissism, and everyday sadism) were not associated with accuracy in perceiving vulnerability to sexual victimization.

Table 17

AUC Analyses of the Association Between the Dark Tetrad and Accuracy in Perceiving Vulnerability to Sexual and Violent Victimization

Vulnerability Type	Dark Tetrad	N	AUC	SE	<i>p</i>	95% CI
Sexual Victimization	Machiavellianism	126	.50	.07	.86	[0.36, 0.64]
	Narcissism	126	.42	.06	.68	[0.30, 0.55]
	Everyday Sadism	126	.47	.07	.82	[0.33, 0.60]
Violent Victimization	Machiavellianism	123	.67	.06	.01	[0.55, 0.79]
	Narcissism	123	.53	.06	.49	[0.41, 0.66]
	Everyday Sadism	123	.65	.06	.01	[0.53, 0.77]

Note. AUC = Area Under the Curve; SE = Standard Error; 95% CI = 95% Confidence Interval.

Factors salient to the prediction of accuracy. With evidence that a number of factors (i.e., psychopathy, honesty-humility, Machiavellianism, and everyday sadism) predict accuracy in perceiving vulnerability to exclusively violent victimization, a binary logistic regression was conducted to identify the factor(s) most salient to the prediction of accurate perceptions. Notably, analyses were not conducted for accuracy in perceiving vulnerability to exclusively sexual victimization as no predictors were identified in the current study.

Variables were included in the binary logistic regression as predictors if they had been significantly associated with accuracy in perceiving vulnerability to violent victimization in previous analyses. Predictors included the total psychopathy, honesty-humility,

Machiavellianism, and everyday sadism. Gender was included in the model as a control variable.

With evidence of normality and an absence of outliers, the only assumption that needed to be checked prior to conducting the regression was multicollinearity. Correlations between predictors (i.e., SRP total, honesty-humility, Machiavellianism, narcissism, and everyday sadism) and variance inflation factors (VIF; where acceptable $VIF < 10$ and the average VIF across predictors < 1 ; Fields, 2012) were examined. Results indicated the multicollinearity was not a concern, as the VIF fell under 10 and the average VIF was less than 1.

Given that previous research has identified psychopathy as a significant predictor of accuracy (e.g., Book et al., 2013), a hierarchical binary logistic regression analysis was conducted, where gender and total psychopathy were entered into Block 1, and the remaining predictors were simultaneously entered into Block 2 (see Table 18). Results indicated that, even after controlling for gender and other factors previously associated with accuracy (i.e., honesty-humility, Machiavellianism, and everyday sadism), total psychopathy was significantly associated with accuracy ($OR = 11.57, p < .01$). Specifically, the odds of accurately perceiving vulnerability to exclusively violent victimization increased 11.57 times per one unit increase in observers' total psychopathy scores. Thus, individuals higher on psychopathy were significantly more accurate in perceiving vulnerability to exclusively violent victimization than individuals lower on psychopathy, after controlling for the influence of honesty-humility, Machiavellianism, and everyday sadism.

Table 18

Binary Logistic Regression Analysis Predicting Accuracy in Perceiving Vulnerability to Violent Victimization from the SRP Total, Honesty-Humility, Machiavellianism, and Everyday Sadism

Block	Predictor	B (SE)	OR	95% CI	χ^2
1	Constant	-6.18 (1.34)	0.00	—	18.89**
	Gender	-0.50 (0.52)	0.61	[0.22, 1.69]	
	SRP Total	2.15 (0.56)**	8.55	[2.84, 25.73]	
2	Constant	-4.85 (3.27)	0.01	—	19.86**
	Gender	-0.34 (0.55)	0.71	[0.24, 2.11]	
	SRP Total	2.45 (0.96)**	11.57	[1.77, 75.67]	
	Honesty-Humility	-0.23 (0.51)	-0.80	[0.29, 2.17]	
	Machiavellianism	-0.08 (0.44)	0.92	[0.39, 2.16]	
	Everyday Sadism	-0.51 (0.58)	0.60	[0.19, 1.88]	

Note. OR = Odds Ratio; 95% CI = 95% Confidence Interval for Odds Ratio; χ^2 = Chi-square.

* $p < .05$; ** $p < .01$.

As psychopathy was identified as the most salient predictor of accuracy, a series of binary logistic regressions were conducted to determine which Factor(s) and facet(s) of psychopathy was most predictive. With previous evidence that Factor 1 psychopathy is a salient predictor of accuracy in perceiving vulnerability to victimization (e.g., Wheeler et al., 2009), a hierarchical binary logistic regression was conducted where Factor 1 was entered first, followed by Factor 2 (see Table 19). Gender was entered as a control variable. Prior to conducting the analysis, predictors were assessed for multicollinearity. Correlations between predictors and the VIF suggested multicollinearity was not a concern in the current analysis as the VIF was less than 10 and the average VIF was less than 1.

Results indicated that Factor 1 psychopathy was a significant predictor in Model 1 (OR = 5.48, $p < .01$). Model 2, however, indicated that Factor 1 psychopathy was no longer significant after controlling for Factor 2 psychopathy and gender (OR = 2.31, $p = .16$). Conversely, Model 2 also indicated that accuracy in perceiving vulnerability to violent victimization was not

significantly predicted by Factor 2 psychopathy after controlling for Factor 1 psychopathy (OR = 3.67, $p = .26$), suggesting that both factors play an important role in accurately perceiving vulnerability to exclusively violent victimization. Although the odds of accurately perceiving vulnerability to violent victimization are higher for Factor 2 than for Factor 1, the 95% confidence intervals overlap suggesting these odds do not significantly differ.

Table 19

Hierarchical Binary Logistic Regression Analysis Predicting Accuracy in Perceiving Vulnerability to Violent Victimization from Factor 1 and Factor 2 Psychopathy

Block	Predictor	B (SE)	OR	95% CI	χ^2
1	Constant	-5.78 (1.25)	0.00	—	18.13**
	Gender	-0.33 (0.50)	0.72	[0.27, 1.93]	
	Factor 1	1.70 (0.45)**	5.48	[2.28, 13.18]	
2	Constant	-6.30 (1.33)	0.00	—	20.18**
	Gender	-0.32 (0.51)	0.73	[0.27, 1.98]	
	Factor 1	0.84 (0.75)	2.31	[0.54, 9.93]	
	Factor 2	1.30 (0.92)	3.67	[0.60, 22.28]	

Note. OR = Odds Ratio; 95% CI = 95% Confidence Interval for Odds Ratio; χ^2 = Chi-square.

* $p < .05$; ** $p < .01$.

With evidence that both Factors were predictive of accuracy in perceiving vulnerability to violent victimization, all four facets of psychopathy were entered into a binary logistic regression model as predictors (see Table 20). Prior to conducting the regression, the predictors were assessed for multicollinearity to ensure the assumptions underlying binary logistic regression were satisfied. Since the VIFs did not exceed 10 and the average VIF approximated 1, multicollinearity did not appear to be an issue in the current analysis.

As there has yet to be an exploration of the association between the facets of psychopathy and accuracy, a stepwise binary logistic regression was conducted to identify the facet(s) most salient to the prediction of accuracy. Contrary to the belief that the facets associated with Factor

1 psychopathy would be the most salient predictors, the final model identified the erratic lifestyle (OR = 2.68, $p < .05$) and antisocial behaviour facets of psychopathy (OR = 3.10, $p < .05$) as the most salient predictors of accuracy in perceiving vulnerability to violent victimization.

Specifically, the odds of accurately perceiving vulnerability to exclusively violent victimization increased 2.68 times per one unit increase in erratic lifestyle scores and 3.10 times per one unit increase in antisocial behaviour scores. The odds ratios associated with the erratic lifestyle and antisocial facets do not appear to significantly differ as the 95% confidence intervals overlapped.

Table 20

Stepwise Binary Logistic Regression Analysis Predicting Accuracy in Perceiving Vulnerability to Violent Victimization from the Psychopathy Facets

Block	Predictor	B (SE)	OR	95% CI	χ^2
1	Constant	-5.10 (1.17)	0.01	—	14.89**
	ELS	1.37 (0.39)**	3.95	[1.83, 8.52]	
2	Constant	-5.89 (1.27)	0.00	—	18.61**
	ELS	0.99 (0.43)*	2.68	[1.15, 6.24]	
	ASB	1.13 (0.57)*	3.10	[1.02, 9.41]	

Note. OR = Odds Ratio; 95% CI = 95% Confidence Interval for Odds Ratio; χ^2 = Chi-square; ELS = Erratic Lifestyle Facet; ASB = Antisocial Behaviour Facet.

* $p < .05$; ** $p < .01$.

Vulnerability cues. With evidence of individual differences in the ability to accurately perceive vulnerability to victimization, the non-verbal cues used by observers to rate each walker's vulnerability were examined. For the purpose of the current study, the proportion of times certain non-verbal cues (i.e., movement, emotional appearance, physical appearance, clothing, age, gender, previous knowledge, intuition, environment, awareness, other) were mentioned by observers was correlated with observers' levels of psychopathy (total, Factors, and facets), honesty-humility, Machiavellianism, and everyday sadism. The proportion of non-verbal cues mentioned was calculated across all walkers, and separately across exclusively violent,

exclusively sexual, and non-victims, as it was possible that the cues used to rate vulnerability differed across victimization type. Notably, the associations between cues mentioned and the remaining HEXACO dimensions and Dark Tetrad traits were also examined, however, this will not be discussed in the current study. These results are presented in Appendix X.1 and X.2 instead. AUCs were conducted to examine the association between the proportion of cues mentioned and accuracy in perceiving vulnerability to exclusively violent and exclusively sexual victimization. These results are presented below.

The first series of bivariate correlations examined the association between psychopathy and the mention of non-verbal cues (see Table 21). Consistent with Wheeler and colleagues (2009), psychopathy (total, Factors, and facets) was unrelated to the mention of movement cues. A small, positive association was however identified between scores on the antisocial behaviour facet and the proportion of times physical appearance was mentioned when rating walker vulnerability ($r = .22, p < .05, 95\% \text{ CI } [0.05, 0.38]$). A small, negative association was also identified between the interpersonal manipulation facet and the mention of previous knowledge when rating walkers' vulnerability to victimization ($r = -.18, p < .05, 95\% \text{ CI } [-0.34, -0.01]$). No other significant associations were identified. Overall, these results suggest that observers scoring higher on antisocial behaviour based their vulnerability judgments on the physical appearance of walkers and observers scoring lower on interpersonal manipulation based their judgments on previous knowledge about victimization.

Table 21

Bivariate Correlations between Psychopathy and the Proportion of Cues Mentioned

Category	<i>n</i>	SRP	F1	F2	IPM	CA	ELS	ASB
Movement	128	-.00	.01	-.03	.03	-.00	-.02	-.03
Emotional Appearance	129	-.11	-.07	-.07	-.11	-.13	-.01	-.13
Physical Appearance	129	.15	.10	.16	.10	.11	.09	.22*
Clothing	129	-.03	-.03	-.06	.04	-.06	-.10	.02
Age	129	-.10	-.09	-.08	-.09	-.10	-.07	-.06
Gender	128	.05	.05	.13	-.02	-.02	.11	.11
Previous Knowledge	129	-.12	-.10	-.03	-.18*	-.14	.00	-.06
Intuition	128	.08	.06	-.00	.11	.14	-.01	.01
Environment	129	.06	.04	.05	.03	.08	.03	.05
Awareness	128	-.07	-.06	-.13	-.02	-.02	-.10	-.13
Other	126	.11	.13	.09	.11	.10	.13	-.00

Note. Total = Self-Report Psychopathy Scale total score; F1 = Factor 1 psychopathy; F2 = Factor 2 psychopathy; IPM = Interpersonal manipulation facet; CA = Callous affective facet; ELS = Erratic lifestyle facet; ASB = Antisocial behaviour facet.

* $p < .05$.

Bivariate correlations were then conducted to determine whether the associations between psychopathy and the proportion of cues mentioned were dependent on the type of victimization experienced by the walker (see Table 22). Among exclusively violent victims, the callous affect facet was positively associated with the mention of intuition ($r = .23$, $p < .01$, 95% CI [0.06, 0.39]) and the antisocial behaviour facet was positively associated with the mention of the walker's physical appearance ($r = .17$, $p < .05$, 95% CI [0.00, 0.33]). This suggests that observers higher on callous affect and antisocial behaviour based their vulnerability judgments on intuition and the physical appearance of the walkers, respectively.

Among sexual victims, the mention of other cues was positively associated with total psychopathy ($r = .19$, $p < .05$, 95% CI [0.02, 0.35]), Factor 1 psychopathy ($r = .20$, $p < .05$, 95% CI [0.03, 0.36]), and erratic lifestyle facet scores ($r = .18$, $p < .05$, 95% CI [0.01, 0.34]). The mention of awareness and physical appearance were negatively associated with Factor 2

psychopathy ($r = -.20, p < .05, 95\% \text{ CI } [-0.36, -0.03]$; $r = .19, p < .05, 95\% \text{ CI } [0.02, 0.35]$) and antisocial behaviour facet scores ($r = -.18, p < .05, 95\% \text{ CI } [-0.34, -0.01]$). Finally, the mention of physical attractiveness was positively associated with Factor 2 psychopathy ($r = .19, p < .05, 95\% \text{ CI } [0.02, 0.35]$) and antisocial behaviour facet scores ($r = .21, p < .05, 95\% \text{ CI } [0.04, 0.37]$). Thus, while observers higher on Factor 1 psychopathy and the erratic lifestyle facet based their vulnerability judgments on other cues such as whether the target was alone, observers scoring higher on Factor 2 psychopathy and the antisocial behaviour facet used physical appearance more often and awareness less often to judge the walkers' vulnerability to sexual victimization.

Finally, among non-victims, the mention of physical appearance was positively associated with the antisocial behaviour facet ($r = .20, p < .05, 95\% \text{ CI } [0.03, 0.36]$). The mention of awareness was negatively associated with total psychopathy ($r = -.22, p < .05, 95\% \text{ CI } [-0.38, -0.05]$), Factor 1 psychopathy ($r = -.21, p < .05, 95\% \text{ CI } [-0.37, -0.04]$), Factor 2 psychopathy ($r = -.22, p < .05, 95\% \text{ CI } [-0.38, -0.05]$), callous affect facet ($r = -.20, p < .05, 95\% \text{ CI } [-0.36, -0.03]$), and erratic lifestyle facet scores ($r = -.22, p < .05, 95\% \text{ CI } [-0.38, -0.05]$). No other significant associations were identified. Thus, while individuals higher on antisocial behaviour based their vulnerability judgments on the physical appearance of the walkers, those lower on total psychopathy, Factor 1 and 2, callous affect, and the erratic lifestyle facet tended to base their judgments on other cues such as whether the walker was alone. Overall, these results suggest that the cues used by psychopathic individuals to judge vulnerability differ across victimization type.

Table 22

Bivariate Correlations between Psychopathy and the Proportion of Cues Mentioned about Exclusively Violent, Exclusively Sexual, and Non-Victims

Victim Type	Category	<i>n</i>	SRP	F1	F2	IPM	CA	ELS	ASB
Violent	Movement	129	.07	.10	-.01	.15	.09	.02	-.05
	Emot. Ap.	129	-.10	-.05	-.07	-.06	-.13	-.02	-.11
	Physical Ap.	129	.09	.06	.13	.04	.05	.07	.17*
	Clothing	129	-.03	-.04	-.03	.01	-.08	-.09	.06
	Age	129	-.08	-.07	-.08	-.06	-.06	-.06	-.08
	Gender	129	.01	.01	.04	-.01	-.01	.02	.05
	Prev. Know.	129	-.10	-.11	-.02	-.16	-.13	-.03	.01
	Intuition	129	.16	.13	.06	.15	.23**	.06	.03
	Environment	129	.01	-.01	-.02	.03	.01	-.05	.03
	Awareness	129	.05	.05	.03	.05	.04	.03	.02
	Other	129	-.00	.00	-.02	.02	.00	-.01	-.02
Sexual	Movement	129	.04	.04	.02	.05	.05	.02	.01
	Emot. Ap.	129	-.04	-.02	-.02	-.04	-.06	.01	-.05
	Physical Ap.	129	.16	.14	.19*	.12	.09	.13	.21*
	Clothing	129	-.02	-.02	-.07	.06	-.01	-.10	-.02
	Age	129	-.07	-.06	-.06	-.04	-.07	-.07	-.03
	Gender	129	.06	.06	.13	-.01	-.01	.11	.12
	Prev. Know.	129	-.13	-.10	-.06	-.15	-.14	-.01	-.10
	Intuition	129	.11	.09	.02	.15	.17*	.00	.04
	Environment	129	-.07	-.04	-.04	-.06	-.11	-.02	-.05
	Awareness	128	-.14	-.11	-.20*	-.04	-.12	-.16	-.18*
	Other	128	.19*	.20*	.17	.17	.16	.18*	.10
Non-Victims	Movement	129	.01	.04	-.04	.07	.01	.01	-.09
	Emot. Ap.	129	-.05	-.01	.04	-.10	-.10	.09	-.05
	Physical Ap.	129	.12	.07	.12	.08	.12	.03	.20*
	Clothing	129	-.04	-.04	-.06	.00	-.03	-.08	-.01
	Age	129	-.13	-.10	-.05	-.14	-.17	-.03	-.06
	Gender	129	.09	.12	.14	.04	.02	.17	.05
	Prev. Know.	129	-.02	.01	.05	-.08	-.06	.10	-.04
	Intuition	129	.05	.06	-.02	.10	.10	.01	-.05
	Environment	129	.15	.11	.11	.12	.20*	.07	.12
	Awareness	129	-.22*	-.21*	-.22*	-.16	-.20*	-.22*	-.13
	Other	129	.01	.06	.03	-.00	-.00	.10	-.09

Note. Emot. Ap. = Emotional Appearance; Physical Ap. = Physical Appearance; Prev. Know. = Previous Knowledge; Total = Self-Report Psychopathy Scale total score; F1 = Factor 1 psychopathy; F2 = Factor 2 psychopathy; IPM = Interpersonal manipulation facet; CA = Callous affective facet; ELS = Erratic lifestyle facet; ASB = Antisocial behaviour facet.

* $p < .05$; ** $p < .01$.

The next series of bivariate correlations examined the associations between the mention of specific cues when rating walker vulnerability and observers' scores on honesty-humility, Machiavellianism, and everyday sadism (see Table 23). A small negative association was identified between Honesty-Humility and the mention of other cues (e.g., alone; $r = -.19$, $p < .05$, 95% CI [-0.35, -0.02]). Machiavellianism was negatively associated with the mention of previous knowledge ($r = -.18$, $p < .05$, 95% CI [-0.34, -0.01]) and positively associated with the mention of other cues ($r = .23$, $p < .05$, 95% CI [0.06, 0.39]). Finally, everyday sadism was negatively associated with the mention of previous knowledge ($r = -.18$, $p < .05$, 95% CI [-0.34, -0.01]). No other significant associations were identified. Thus, observers lower on honesty-humility and higher on Machiavellianism based their vulnerability judgments on other cues such as whether the walker was alone. Further, observers higher on Machiavellianism and everyday sadism were less likely to base their judgments on previous knowledge about victimization.

Table 23

Bivariate Correlations between the Proportion of Cues Mentioned and Honesty-Humility, Machiavellianism, and Everyday Sadism

Category	<i>n</i>	Honesty-Humility	Machiavellianism	Everyday Sadism
Movement	128	.04	.02	.05
Emotional Appearance	129	.09	-.07	-.12
Physical Appearance	129	-.11	.07	.14
Clothing	129	-.05	.03	.01
Age	129	.11	-.08	-.06
Gender	128	.05	-.05	.05
Previous Knowledge	129	.15	-.18*	-.18*
Intuition	128	-.00	-.01	.13
Environment	129	.02	-.03	.08
Awareness	128	.05	.01	.01
Other	126	-.19*	.23*	.17

* $p < .05$.

Bivariate correlations were then conducted to determine whether the proportion of cues

mentioned and observers' scores on honesty-humility, Machiavellianism, and everyday sadism were dependent on the type of victimization experienced by the walker (see Table 24). Among violent victims, everyday sadism was negatively associated with the mention of emotional appearance ($r = -.20, p < .05, 95\% \text{ CI } [-0.36, -0.03]$) and positively associated with intuition ($r = .18, p < .05, 95\% \text{ CI } [0.01, 0.34]$). Therefore, observers higher on everyday sadism were less likely to base their vulnerability emotional appearance and were more likely to use intuition when rating violent victims. Among exclusively sexual victims, the mention of other cues was negatively associated with scores on honest-humility ($r = -.30, p < .01, 95\% \text{ CI } [-0.45, -0.13]$), and positively associated with scores on Machiavellianism ($r = .22, p < .05, 95\% \text{ CI } [0.05, 0.38]$) and everyday sadism ($r = .20, p < .05, 95\% \text{ CI } [0.03, 0.36]$). Everyday sadism was also positively associated with the mention of physical appearance ($r = .18, p < .05, 95\% \text{ CI } [0.01, 0.34]$) among exclusively sexual victims. This suggests that observers lower on honesty-humility and higher on Machiavellianism and everyday sadism based their judgments of vulnerability to sexual victimization on other cues such as whether the walker was alone. Finally, no significant associations were identified between the proportion of cues mentioned about non-victims and observers' scores on honesty-humility, Machiavellianism, and everyday sadism.

Table 24

Bivariate Correlations between the Proportion of Cues Mentioned about Violent, Sexual, and Non-Victims and Honesty-Humility, Machiavellianism, and Everyday Sadism

Victim Type	Category	<i>n</i>	Honesty-Humility	Machiavellianism	Everyday Sadism
Violent	Movement	129	-.10	.12	.15
	Emot. Ap.	129	.03	-.07	-.20*
	Physical Ap.	129	-.05	.05	.11
	Clothing	129	-.08	-.02	-.03
	Age	129	.15	-.05	-.05
	Gender	129	.07	-.07	.05
	Prev. Know.	129	.16	-.16	-.17
	Intuition	128	-.10	.09	.18*
	Environment	129	.02	.00	.08
	Awareness	129	-.01	.05	.04
	Other	129	-.14	.15	.11
Sexual	Movement	129	-.05	.05	.06
	Emot. Ap.	129	.10	-.05	-.05
	Physical Ap.	129	-.15	.07	.18*
	Clothing	129	-.05	.09	.06
	Age	129	.06	-.07	-.03
	Gender	129	.00	-.02	.05
	Prev. Know.	129	.12	-.16	-.15
	Intuition	129	-.04	.03	.16
	Environment	129	.06	-.08	-.07
	Awareness	128	.01	.04	-.06
	Other	128	-.30**	.22*	.20*
Non-Victims	Movement	129	-.06	.07	.05
	Emot. Ap.	129	.01	-.06	-.09
	Physical Ap.	129	-.11	.07	.09
	Clothing	129	.03	.00	.02
	Age	129	.10	-.10	-.12
	Gender	129	-.05	.02	.06
	Prev. Know.	129	.08	-.10	-.13
	Intuition	129	-.06	.01	.16
	Environment	129	-.05	.06	.13
	Awareness	129	.11	-.07	-.11
	Other	129	.00	.10	.06

Note. Emot. Ap. = Emotional Appearance; Physical Ap. = Physical Appearance; Prev. Know. = Previous Knowledge.

* $p < .05$; ** $p < .01$.

A series of ROC analyses were conducted to examine the association between accuracy in perceiving vulnerability to victimization and the proportion of specific cues mentioned (see Table 25). Results revealed no significant associations between the proportion of cues mentioned and accuracy in perceiving vulnerability to violent and sexual victimization.

Table 25

ROC Analyses between Accuracy and Cues

Accuracy	Cue	N	AUC	SE	95% CI
Violent ACC	Movement	122	.60	.06	[0.48, 0.72]
	Emotional Appearance	123	.53	.06	[0.41, 0.65]
	Physical Appearance	123	.47	.06	[0.35, 0.58]
	Clothing	123	.53	.06	[0.41, 0.65]
	Age	123	.49	.06	[0.37, 0.61]
	Gender	122	.40	.06	[0.29, 0.52]
	Previous Knowledge	123	.42	.06	[0.31, 0.54]
	Intuition	122	.51	.06	[0.38, 0.63]
	Environment	123	.46	.06	[0.34, 0.59]
	Awareness	122	.58	.06	[0.46, 0.69]
	Other	120	.60	.07	[0.47, 0.73]
Sexual ACC	Movement	125	.54	.06	[0.31, 0.66]
	Emotional Appearance	126	.54	.07	[0.41, 0.67]
	Physical Appearance	126	.40	.06	[0.29, 0.52]
	Clothing	126	.55	.07	[0.42, 0.68]
	Age	126	.46	.06	[0.33, 0.58]
	Gender	125	.44	.06	[0.32, 0.56]
	Previous Knowledge	126	.50	.06	[0.38, 0.63]
	Intuition	125	.47	.07	[0.34, 0.60]
	Environment	126	.49	.07	[0.35, 0.62]
	Awareness	125	.58	.07	[0.44, 0.71]
	Other	123	.56	.07	[0.43, 0.69]

Note. Violent ACC = Violent Accuracy; Sexual ACC = Sexual Accuracy; AUC = Area Under the Curve; SE = Standard Error; 95% CI = 95% Confidence Interval.

To clarify the above results, a summary of the significant associations between the proportion of cues mentioned and observers' scores on psychopathy (total, Factor, and facet), honesty-humility, Machiavellianism, and everyday sadism are presented in Table 26.

Table 26

Summary of the Associations between the Proportion of Specific Nonverbal Cues Mentioned and Psychopathy, Honesty-Humility, Machiavellianism, and Everyday Sadism across Victimization Type

Cue	All Walkers		Violent Victim		Sexual Victim		Non-Victim	
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Movement	—	—	—	—	—	—	—	—
Emotional Appearance	—	—	—	—	—	—	—	—
Physical Appearance	5	—	5	10	5, 7, 10	—	5	—
Clothing	—	—	—	—	—	—	—	—
Age	—	—	—	—	—	—	—	—
Gender	—	—	—	—	—	—	—	—
Previous Knowledge	—	2, 9, 10	—	—	—	—	—	—
Intuition	—	—	3, 10	—	—	—	—	—
Environment	—	—	—	—	—	—	—	—
Awareness	—	—	—	—	—	5, 7	—	1, 3, 4, 6, 7
Other	9	8	—	—	1, 4, 6, 9, 10	8	—	—

Note. Pos. = Positive association; Neg. = Negative association; 1 = Self-Report Psychopathy Total; 2 = Interpersonal Manipulation facet; 3 = Callous Affect facet; 4 = Erratic Lifestyle Facet; 5 = Antisocial Behaviour facet; 6 = Factor 1; 7 = Factor 2; 8 = Honesty-Humility; 9 = Machiavellianism; 10 = Everyday Sadism; — = no associations identified.

Individual differences in perceptions of personality. With evidence that individuals differ in the ability to accurately perceive vulnerability to victimization (e.g., Book et al., 2013) and an apparent association between perceived personality and non-verbal cues (e.g., Richards et al., 1991), the current study also sought to determine whether individuals differed in the ability to accurately perceive others' actual personality traits. To explore this possibility, bivariate correlations were conducted to determine whether psychopathy, the Dark Tetrad traits, and the HEXACO-60 dimensions were associated with accuracy in perceiving others' actual (self-reported) personality traits based on non-verbal cues. As the current study was the first to explore this association, no hypotheses were made. For ease of interpretation, the Factors and facets of psychopathy were not examined in the current study. Rather, analyses focused on the psychopathy total score obtained from the SRP-III. These results are reported in conjunction with the Dark Tetrad Machiavellianism, narcissism, and everyday sadism. Psychopathy Factor and facet level analyses are reported in Appendix X.3.

The first set of bivariate correlations investigated the associations between accuracy in perceiving walkers' personality traits and observers' scores on psychopathy, Machiavellianism, narcissism and everyday sadism scores (see Table 27). Given the large number of exploratory correlations conducted, a Bonferonni alpha correction was applied to each column to control for family-wise type I error. In accordance with Keppel and Wickens (2004), the family-wise error rate was evaluated at a per-test rate of $\alpha = \alpha_{fw}/c = .10/10 = .01$. Interestingly, results revealed no significant associations between accuracy in perceiving walkers' personality traits and observer's psychopathy, Machiavellianism, narcissism and everyday sadism scores.

Table 27

Bivariate Correlations between Accuracy in Perceiving Walkers' Personality and Scores on Psychopathy, Machiavellianism, Narcissism, and Everyday Sadism

Personality ACC	<i>n</i>	SRP Total	Machiavellianism	Narcissism	Everyday Sadism
Dominant	127	-.00	.12	-.03	.09
Assertive	127	-.06	.06	.00	.04
Agreeable	120	.04	.02	.09	.09
Submissive	128	.01	.00	-.11	.04
Introverted	129	-.06	-.04	-.04	-.07
Bold	129	.11	.07	.06	.04
Disinhibited	129	.12	.02	.07	.07
Neurotic	109	-.03	.03	.10	-.05
Conscientious	129	-.03	-.05	-.01	-.06
Open	129	.00	.02	-.10	-.03

Note. Correlations were conducted using a Bonferonni alpha correction where the family-wise error rate was evaluated at a per-test rate of $\alpha = .01$; Personality ACC = Personality accuracy; SRP Total = Self-Report Psychopathy Scale Total score.

The second set of bivariate correlations examined whether the HEXACO-60 dimensions were associated with accuracy in perceiving others' personality traits (see Table 28). Again, after applying a Bonferonni alpha correction to each column ($\alpha = \alpha_{fw}/c = .10/10 = .01$), no significant associations were identified between the HEXACO-60 dimensions and accuracy in perceiving walkers' personality traits.

Table 28

*Bivariate Correlations between the HEXACO-60 Dimensions and Accuracy in Perceiving**Personality Characteristics*

Personality ACC	<i>n</i>	HH	Emo	Ext	Agree	Consc	Open
Dominant	127	-.05	.03	-.07	-.06	-.05	-.03
Assertive	127	-.06	.05	-.13	.04	-.02	-.08
Agreeable	120	.04	-.02	-.04	-.09	-.11	.05
Submissive	128	.07	.02	-.12	-.07	.07	.06
Introverted	129	.13	-.01	-.05	.04	.13	.18
Bold	129	-.03	.04	.10	-.02	.02	-.00
Disinhibited	129	-.07	-.18	.20	-.02	.07	.03
Neurotic	109	-.09	-.04	-.10	.07	-.11	-.02
Conscientious	129	-.03	.09	-.07	.02	.13	.07
Open	129	-.07	-.08	-.00	-.12	-.03	-.12

Note. Correlations were conducted using a Bonferroni alpha correction where the family-wise error rate was evaluated at a per-test rate of $\alpha = .01$; Personality ACC = Personality accuracy; HH = Honesty-Humility dimension of the HEXACO-60; Emo = Emotionality dimension of the HEXACO-60; Ext = Extraversion dimension of the HEXACO-60; Agree = Agreeableness dimension of the HEXACO-60; Consc = Conscientiousness dimension of the HEXACO-60; Open = Openness dimension of the HEXACO-60.

Biased perceptions of personality. With evidence that individuals higher on the Dark Triad have a tendency or a bias toward perceiving targets engaged in conversation as exhibiting more passive personality traits (e.g., neurotic, introverted, submissive; Black et al., 2014), a series of bivariate correlations were conducted to determine whether psychopathy, the Dark Tetrad traits, and the HEXACO-60 dimensions were associated with biased perceptions of the walkers' personality traits based on non-verbal cues. It was expected that observers higher on psychopathy, Machiavellianism, narcissism, everyday sadism, and honesty-humility would view the walkers as having more passive personality traits (e.g., neurotic, introverted, submissive). Analyses focused on psychopathy total scores as measured by the SRP-III. Factor and facet scores are presented in Appendix X.4 and X.5. The associations between biased perceptions of personality traits, and psychopathy and the Dark Tetrad traits were reported together. Analyses

were not conducted on the Dark Tetrad psychopathy variable as the SRP total better represents the construct of psychopathy.

The first series of bivariate correlations examined whether psychopathy, narcissism, Machiavellianism, and everyday sadism were associated with biased perceptions of walkers' personality traits (see Table 29). Again, as a large number of exploratory correlations were conducted, a Bonferroni alpha correction was applied to each column to control for family-wise type I error. The family-wise error rate was evaluated at a per-test rate of $\alpha = \alpha_{fw}/c = .10/10 = .01$. Observers' scores on the SRP were positively associated with perceptions of the walkers as neurotic ($r = .26, p < .01, 95\% \text{ CI } [0.09, 0.42]$) and assertive ($r = .23, p < .01, 95\% \text{ CI } [0.06, 0.39]$). Everyday sadism scores were also positively associated with ratings on assertiveness ($r = .27, p < .01, 95\% \text{ CI } [0.10, 0.42]$). Thus, while observers scoring higher on psychopathy and everyday sadism tended to perceive walkers as assertive, those scoring higher on psychopathy also viewed walkers as neurotic. No other significant associations were identified after applying the Bonferroni alpha correction.

Table 29

Bivariate Correlations between Biased Perceptions of Personality Characteristics and Scores on Psychopathy, Machiavellianism, Narcissism, and Everyday Sadism

Biased Perceptions of Personality	<i>n</i>	SRP Total	Machiavellianism	Narcissism	Everyday Sadism
Dominant	129	.20	-.19	.02	.21
Assertive	129	.23*	.14	-.01	.25*
Agreeable	129	.13	.00	-.04	.13
Submissive	129	.20	.11	-.09	.23*
Introverted	129	.19	.11	-.17	.20
Bold	129	.22	.18	.03	.19
Disinhibited	129	.17	.09	-.00	.17
Neurotic	126	.26*	.19	.08	.24*
Conscientious	129	.19	.08	-.08	.13
Open	129	.13	.03	-.01	.06

Note. Correlations were conducted using a Bonferonni alpha correction where the family-wise error rate was evaluated at a per-test rate of $\alpha = .01$; SRP Total = Self-Report Psychopathy Scale total score.

* $p < .01$.

A series of bivariate correlations were then conducted to determine whether the HEXACO-60 dimensions were associated with biased perceptions of walkers' personality traits (see Table 30). After applying a Bonferonni alpha correction to each column ($\alpha = \alpha_{fw}/c = .10/10 = .01$). Honesty-humility scores were negatively associated with ratings on assertiveness ($r = -.19, p < .01, 95\% \text{ CI } [-0.35, -0.02]$). That is, observers scoring high on honesty-humility perceived walkers as less assertive. Finally, observers' scores on conscientiousness were negatively associated with ratings on introversion ($r = -.26, p < .01, 95\% \text{ CI } [-0.41, -0.09]$). No other significant associations were identified.

Table 30

Bivariate Correlations between the HEXACO-60 Dimensions and Biased Perceptions of Personality Characteristics

Biased Perceptions of Personality	<i>n</i>	HH	Emo	Ext	Agree	Consc	Open
Dominant	129	-.21	-.13	.04	-.01	-.15	.03
Assertive	129	-.19	-.11	.02	-.04	-.12	.07
Agreeable	129	-.03	-.10	.11	-.02	-.03	.05
Submissive	129	-.17	-.17	-.01	-.01	-.13	.03
Introverted	129	-.08	-.18	-.12	-.01	-.26*	-.09
Bold	129	-.19	-.12	.03	-.02	-.15	-.03
Disinhibited	129	-.11	-.14	-.01	-.14	-.22	-.09
Neurotic	126	-.17	-.20	.03	-.05	-.23	.06
Conscientious	129	-.09	-.14	-.06	.02	-.12	.15
Open	129	-.00	-.01	.08	.05	-.11	-.05

Note. Correlations were conducted using a Bonferonni alpha correction where the family-wise error rate was evaluated at a per-test rate of $\alpha = .01$; HH = Honesty-Humility dimension of the HEXACO-60; Emo = Emotionality dimension of the HEXACO-60; Ext = Extraversion dimension of the HEXACO-60; Agree = Agreeableness dimension of the HEXACO-60; Consc = Conscientiousness dimension of the HEXACO-60; Open = Openness dimension of the HEXACO-60.

* $p < .01$.

As it was possible that these associations differed across the type of victimization experienced by the walkers, a series of exploratory bivariate correlations were conducted. The first set of bivariate correlations examined the association between biased perceptions across victimization types and observers' scores on psychopathy, Machiavellianism, narcissism, and everyday sadism (see Table 31). Again, a Bonferonni alpha correction was applied to each column to control for family-wise type I error ($\alpha = \alpha_{fw/c} = .10/10 = .01$). Among exclusively violent victims, observers' scores on everyday sadism were positively associated with perceptions of assertive ($r = .25, p < .01, 95\% \text{ CI } [0.08, 0.41]$). After applying the Bonferonni alpha correction, no significant associations were identified among exclusively sexual victims.

Finally, among non-victims, total psychopathy scores, Machiavellianism, and everyday

sadmsim were positively associated with perceptions of dominance ($r_{\text{Psychopathy}} = .24, p < .01$, 95% CI [0.06, 0.40]; $r_{\text{Machiavellianism}} = .26, p < .01$, 95% CI [0.09, 0.42]; $r_{\text{Sadism}} = .25, p < .01$, 95% CI [0.07, 0.41]), where observers scoring higher on psychopathy, Machiavellianism, and everyday sadism perceived walkers without victimization histories as more dominant. Higher everyday sadism scores were also positively associated with perceptions of non-victims as assertive ($r = .25, p < .01$, 95% CI [0.08, 0.41]) and bold ($r = .21, p < .01$, 95% CI [0.03, 0.38]). Specifically, observers higher on everyday sadism viewed non-victims as more dominant and bold. No other significant associations were identified based on the Bonferonni alpha correction.

Table 31

Bivariate Correlations between Biased Perceptions of Personality Across Victimization Types and Scores on Psychopathy, Machiavellianism, Narcissism, and Everyday Sadism

Victim Type	Personality Bias	<i>n</i>	SRP	Machiav.	Narcissism	Everyday Sadism
Violent	Dominant	124	.17	.16	.03	.21
	Assertive	125	.22	.15	.03	.25*
	Agreeable	119	.10	-.03	.03	.11
	Submissive	117	.19	.13	.06	.19
	Introverted	113	.17	.16	-.07	.19
	Bold	123	.14	.10	.05	.13
	Disinhibited	112	.16	.12	.02	.13
	Neurotic	109	.19	.15	.12	.22
	Conscientious	120	.14	.09	-.02	.07
	Open	122	.13	.07	.01	.08
Sexual	Dominant	125	.12	.13	.01	.12
	Assertive	124	.16	.12	-.03	.20
	Agreeable	126	.16	.05	.00	.13
	Submissive	116	.20	.08	-.11	.23
	Introverted	113	.23	.11	-.11	.22
	Bold	121	.14	.10	.09	.09
	Disinhibited	114	.08	.06	-.02	.07
	Neurotic	107	.25	.17	.10	.24
	Conscientious	122	.22	.07	-.06	.14
	Open	127	.06	-.02	-.03	.03
Non-Victim	Dominant	121	.24*	.26*	.04	.25*
	Assertive	125	.23	.17	-.01	.25*
	Agreeable	122	.14	.09	.00	.12
	Submissive	115	.15	.10	-.03	.16
	Introverted	113	.13	.05	-.09	.06
	Bold	119	.24	.23	.01	.21
	Disinhibited	114	.13	.09	.07	.12
	Neurotic	109	.20	.13	.09	.16
	Conscientious	120	.12	.08	.06	.03
	Open	121	.12	.07	-.02	.04

Note. Correlations were conducted using a Bonferonni alpha correction where the family-wise error rate was evaluated at a per-test rate of $\alpha = .01$; SRP = Self-Report Psychopathy Scale Total scores; Machiav. = Machiavellianism.

* $p < .01$.

The next set of bivariate correlations examined the association between biased perceptions across victimization types and observers' scores on the HEXACO-60 dimensions

(see Table 32). Again, a Bonferonni alpha correction was applied to each column due to the large number of correlations conducted ($\alpha = \alpha_{fw}/c = .10/10 = .01$). Among violent victims, observers' scores on honesty-humility were negatively associated with perceptions of dominance ($r = -.25$, $p < .01$, 95% CI [-0.41, -0.08]) and assertiveness ($r = -.26$, $p < .01$, 95% CI [-0.42, -0.09]).

Among sexual victims, observers' scores on conscientiousness were negatively associated with perceptions of neuroticism ($r = -.27$, $p < .01$, 95% CI [-0.44, -0.08]). Finally, among non-victims, observers' scores on the HEXACO-60 honesty-humility dimension were negatively associated with perceptions of dominance ($r = -.24$, $p < .01$, 95% CI [-0.40, -0.06]) and assertiveness ($r = -.26$, $p < .01$, 95% CI [-0.42, -0.09]). Observers' scores on conscientiousness were negatively associated with perceptions of non-victims as introverted ($r = -.25$, $p < .01$, 95% CI [-0.41, -0.07]). No other significant associations were identified.

Table 32

Bivariate Correlations between Biased Perceptions of Personality Across Victimization Types and Scores on the HEXACO-60 Dimensions

Victim Type	Personality Bias	<i>n</i>	HH	Emo	Ext	Agree	Consc	Open
Violent	Dominant	124	-.25*	-.15	.05	.02	-.12	.02
	Assertive	125	-.26*	-.13	.00	.00	-.07	.04
	Agreeable	119	-.03	-.07	.07	.03	-.01	.08
	Submissive	117	-.19	-.15	.00	.01	-.06	.03
	Introverted	113	-.09	-.13	-.18	-.04	-.15	-.03
	Bold	123	-.19	-.09	.02	.02	-.06	-.05
	Disinhibited	112	-.13	-.08	-.09	-.18	-.15	-.12
	Neurotic	109	-.17	-.12	.03	-.03	-.24	.01
	Conscientious	120	-.11	-.02	-.16	.01	-.11	.11
	Open	122	-.08	-.04	.04	.10	-.11	-.03
Sexual	Dominant	125	-.10	-.09	-.04	-.07	-.09	.03
	Assertive	124	-.05	-.06	-.01	-.13	-.04	.01
	Agreeable	126	-.07	-.06	.04	.01	-.04	.01
	Submissive	116	-.14	-.16	-.07	.06	-.10	.03
	Introverted	113	-.12	-.19	-.13	-.00	-.16	.01
	Bold	121	-.12	-.07	-.02	-.05	-.13	-.00
	Disinhibited	114	-.07	-.03	-.09	-.17	-.18	-.17
	Neurotic	107	-.18	-.18	.09	.01	-.27*	.02
	Conscientious	122	-.14	-.20	.01	.09	-.11	.08
	Open	127	.02	.08	.05	-.02	-.06	-.14
Non-Victim	Dominant	121	-.24*	-.16	.02	.02	-.09	-.00
	Assertive	125	-.26*	-.10	-.01	.00	-.09	.09
	Agreeable	122	-.14	-.08	.12	.02	-.03	.02
	Submissive	115	-.17	-.13	.09	.01	-.14	-.01
	Introverted	114	-.09	-.16	-.09	.00	-.25*	-.07
	Bold	119	-.23	-.12	.06	-.01	-.06	-.08
	Disinhibited	114	-.10	-.04	-.01	-.06	-.19	-.13
	Neurotic	109	-.12	-.15	.06	.00	-.18	-.01
	Conscientious	120	-.07	-.06	-.08	.09	-.05	.13
	Open	121	-.05	-.02	.07	.12	-.12	-.12

Note. Correlations were conducted using a Bonferonni alpha correction where the family-wise error rate was evaluated at a per-test rate of $\alpha = .01$; HH = Honesty-Humility dimension of the HEXACO-60; Emo = Emotionality dimension of the HEXACO-60; Ext = Extraversion dimension of the HEXACO-60; Agree = Agreeableness dimension of the HEXACO-60; Consc = Conscientiousness dimension of the HEXACO-60; Open = Openness dimension of the HEXACO-60.

* $p < .01$.

To clarify the above results, Table 33 contains a summary of the significant associations

identified between biased perceptions of walkers' personalities and observers' scores on psychopathy, Machiavellianism, narcissism, everyday sadism, and the HEXACO-60 dimensions.

Table 33

Summary of the Associations between Biased Perceptions of the Walkers' Personality and Observers' scores on Psychopathy, Honesty-Humility, Conscientiousness, Narcissism, Machiavellianism, and Everyday Sadism

Biased Perceptions	All Walkers		Violent Victim		Sexual Victim		Non-Victim	
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
Dominant	—	—	—	2	—	—	1, 4, 5	2
Assertive	1, 5	2	5	2	—	—	5	2
Agreeable	—	—	—	—	—	—	—	—
Submissive	—	—	—	—	—	—	—	—
Introverted	—	3	—	—	—	—	—	3
Bold	—	—	—	—	—	—	5	—
Disinhibited	—	—	—	—	—	—	—	—
Neurotic	1	—	—	—	—	3	—	—
Conscientious	—	—	—	—	—	—	—	—
Open	—	—	—	—	—	—	—	—

Note. Pos. = Positive association; Neg. = Negative association; 1 = Self-Report Psychopathy Total; 2 = Honesty-Humility; 3 = Conscientiousness; 4 = Machiavellianism; 5 = Everyday Sadism; — = no associations identified.

Personality ratings across victimization type. Given the differential biases identified across the victimization type of walkers, a series of paired samples *t*-tests were conducted to examine differences in personality ratings between victims and non-victims. The first series of paired samples *t*-tests examined the mean difference in personality ratings between victims of exclusively violent victimization and non-victims (see Table 34). Interestingly, no significant differences were identified, suggesting observers did not perceive violent victims and non-victims as having distinct personalities.

Table 34

Mean Difference in Personality Ratings between Victims of Violent Victimization and Non-Victims

Ratings	Violent Victim		Non-Victim		<i>t</i>	<i>df</i>	<i>p</i>	95% CI
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>				
Dominance	4.35	1.35	4.40	1.42	-0.42	116	.68	[-0.27, 0.17]
Assertiveness	4.60	1.45	4.57	1.45	0.32	121	.75	[-0.15, 0.21]
Agreeableness	5.09	1.22	5.06	1.29	0.32	115	.75	[-0.12, 0.17]
Submissiveness	4.04	1.42	4.00	1.47	0.35	108	.73	[-0.17, 0.24]
Introversion	4.02	1.31	3.93	1.28	0.79	105	.43	[-0.13, 0.31]
Boldness	4.64	1.47	4.59	1.40	0.45	114	.66	[-0.17, 0.27]
Disinhibition	3.65	1.61	3.73	1.62	-0.89	108	.37	[-0.27, 0.10]
Neuroticism	2.99	1.67	3.04	1.66	-0.57	104	.57	[-0.21, 0.12]
Conscientiousness	4.89	1.53	4.72	1.55	1.56	114	.12	[-0.05, 0.38]
Openness	4.98	1.42	5.04	1.49	-0.70	118	.49	[-0.24, 0.12]

Note. 95% CI = 95% Confidence Interval; M = Mean; SD = Standard Deviation.

A series of paired samples *t*-tests were then conducted to explore the mean differences in personality ratings between exclusively sexual victims and non-victims (see Table 35).

Observers rated exclusively sexual victims ($M = 4.13$) as significantly less dominant than non-victims ($M = 4.37$). Exclusively sexual victims ($M = 4.36$) were also rated as significantly less assertive than non-victims ($M = 4.57$) by observers.

Table 35

Mean Difference in Personality Ratings between Victims of Sexual Victimization and Non-Victims

Ratings	Sexual Victim		Non-Victim		<i>t</i>	<i>p</i>	<i>df</i>	95% CI
	M	SD	M	SD				
Dominance	4.13	1.45	4.37	1.41	-2.42	.02	118	[-0.44, -0.04]
Assertiveness	4.36	1.45	4.57	1.45	-1.97	.05	122	[-0.42, 0.00]
Agreeableness	4.96	1.31	5.06	1.36	-1.51	.13	119	[-0.25, 0.03]
Submissiveness	4.11	1.43	4.02	1.47	0.84	.41	108	[-0.12, 0.30]
Introversion	3.90	1.33	4.02	1.31	-1.08	.28	105	[-0.33, 0.10]
Boldness	4.55	1.46	4.60	1.35	-0.52	.60	114	[-0.27, 0.16]
Disinhibition	3.70	1.68	3.74	1.57	-0.38	.71	108	[-0.23, 0.16]
Neuroticism	3.06	1.80	3.09	1.67	-0.24	.81	104	[-0.20, 0.16]
Conscientiousness	4.64	1.54	4.79	1.54	-1.48	.14	117	[-0.35, 0.05]
Openness	5.02	1.48	5.04	1.48	-0.13	.90	120	[-0.20, 0.18]

Note. 95% CI = 95% Confidence Interval.

Discussion – Study 2: The “Observers”

The current study was the first to examine individual differences in perceptions of vulnerability to distinct forms of victimization and personality based on non-verbal cues. The results indicate that individuals exhibiting lower levels of honesty-humility, and higher levels of psychopathy, everyday sadism, and Machiavellianism are more accurate in perceiving vulnerability to violent victimization based on non-verbal cues. Interestingly, while these individuals were more accurate in perceiving vulnerability to violent victimization, no associations were identified between these traits and accuracy in perceiving vulnerability to sexual victimization and the general personality traits of the walkers. In fact, no factors were identified as correlates of accuracy in perceiving vulnerability to sexual victimization.

Of the factors associated with accuracy in perceiving vulnerability to exclusively violent victimization, psychopathy was identified as the most salient predictor. Although this finding

supports previous research (e.g., Ritchie et al., 2016), the facet level findings were inconsistent. Specifically, while previous research suggests that Factor 1 drives the association between psychopathy and accuracy (e.g., Book et al., 2013; Ritchie et al., 2016), the erratic lifestyle and antisocial behaviour facets of psychopathy were identified as the most salient facets in the current study. These findings will be discussed in more detail below.

Psychopathy and General Personality

The association between psychopathy and general personality (i.e., HEXACO-60 dimensions and the Dark Tetrad) was first examined to gain a better understanding of the relationships between these variables and to aid in the interpretation of the subsequent analyses. As expected, a strong association was identified between psychopathy and honesty-humility, where individuals higher on psychopathy displayed lower levels of honesty-humility (e.g., Ashton et al., 2000; Lee & Ashton, 2005; Lee et al., 2013). This association was consistent across each Factor and facet of psychopathy. Consistent with previous research as well (e.g., Harpur et al., 2002; Jackson & Richards, 2007; Lee & Ashton, 2005; Lynam et al., 2005; Miller & Lynam, 2003; Miller et al., 2001; Widiger & Lynam, 1998; Williams & Paulhus, 2004), higher scores on psychopathy were associated with lower scores on conscientiousness and agreeableness; however, this was not the case for the antisocial behaviour facet of psychopathy.

Results also identified emotionality as a negative correlate of psychopathy across all Factors and facets. Finally, while a positive association was identified between psychopathy and openness, this was only true for the psychopathy total score, Factor 1, Factor 2, and the interpersonal manipulation and erratic lifestyle facets. Among the Dark Tetrad traits, psychopathy was expected to be associated with all three traits examined (i.e., Machiavellianism, narcissism, and everyday sadism). Contrary to this hypothesis, however, only Machiavellianism

and everyday sadism traits were associated with the more comprehensive psychopathy measure. These associations remained consistent across all Factors and facets of psychopathy.

Psychopathy and Vulnerability

With evidence of an association between psychopathy and accuracy in perceiving others' vulnerability to victimization based on non-verbal cues (e.g., Book et al., 2013; Ritchie et al., 2016; Wheeler et al., 2009), the current study sought to further explore this association by better distinguishing victimization types. Until now, researchers in this area focused on perceptions of vulnerability to any form of victimization (e.g., Book et al., 2013), or have attempted to separate these constructs into sexual and violent (including sexual) victimization (Ritchie et al., 2016). As these definitions of victimization overlap, it has not been possible to draw conclusions about accuracy in perceiving one form of victimization versus another. For this reason, the current study ensured all victimization categories were mutually exclusive, separating exclusively violent victims from exclusively sexual victims. This allowed for more reliable inferences about accuracy in perceiving one form of victimization versus another.

As previously stated, observers with higher psychopathy scores were significantly more accurate in perceiving vulnerability to violent victimization. Conversely, psychopathy was unrelated to accuracy in perceiving vulnerability to exclusively sexual victimization. Contrary to previous research reporting an association between accuracy and Factor 1, but not Factor 2 psychopathy (i.e., Book et al., 2013; Wheeler et al., 2009), the associations identified in the current study were consistent across Factor 1 and Factor 2 psychopathy scores. The apparent contribution of both Factors was confirmed through hierarchical binary logistic regression, where both factors were significantly associated with accuracy independently, but not after controlling for the opposing Factor. Upon entering the four facets into a stepwise binary logistic regression,

erratic lifestyle and antisocial behaviour were identified as the most salient predictors of accuracy in perceiving vulnerability to exclusively violent victimization. This suggests that the impulsive traits and diverse criminal experience common among psychopathic individuals may lead them to be more accurate in their perceptions of others' vulnerability to exclusively violent victimization based on non-verbal behaviour.

It is worth noting that, unlike Book et al. (2013), who only had men participants act as observers, the current study included a sample of men and women observers. It is therefore possible that the inconsistency in Factor level findings between the current study and past studies (i.e., Book et al., 2013; Wheeler et al., 2014) may be the result of a disproportionate ratio of women ($n = 98$) to men observers ($n = 50$), where women participants nearly doubled the number of men participants. With evidence of substantial overlap between Factor scores among women but not men (Salekin, Rogers, & Sewell, 1997), it is plausible that the Factors scores in the current study were less variable than had the sample been comprised of all men.

It is also possible that these differential findings are due to discrepancies in the operationalization of victimization history. That is, while Book and colleagues (2013) identified an association between psychopathy and perceptions of vulnerability to any form of victimization, the current study examined the association between psychopathy and perceptions of vulnerability to exclusively violent victimization. Perhaps individuals scoring higher on the antisocial behaviour and erratic lifestyle facets have engaged more often in violent behaviours than those scoring low, and therefore may have a better understanding of the non-verbal cues associated with vulnerability to such victimization. As this is speculative, future research should consider replicating the current study with offenders who have committed exclusively violent and exclusively sex offences to determine whether prior experience in victimizing others

influences accuracy. Regardless, these results provide support for the notion that individual differences exist in the ability to accurately perceive vulnerability based on non-verbal cues (e.g., Book et al., 2013; Wheeler et al., 2009), and suggest that the association between such individual differences and accuracy may vary across distinct types of victimization (Ritchie et al., 2016).

In addition to providing support for the association between psychopathy and accuracy in perceiving vulnerability to victimization based on non-verbal cues, the current study also provides support for Frank's social predator theory (1988). That is, Frank (1988) proposed that successful predators should have the ability to accurately perceive the vulnerability of potential victims by pinpointing vulnerable emotional states, facial expressions, and body language cues. By identifying these cues, Frank (1988) suggested that the likelihood of successful victimization would increase. As social predators, psychopathic individuals are known to be highly successful in manipulating and victimizing others (e.g., Hare, 2001). With Frank's (1988) theory in mind, it seems possible that the success of psychopathic individuals in victimizing others may be a result of their ability to accurately perceive non-verbal cues signaling vulnerability.

Personality and Vulnerability

To examine whether the association between individual differences in perceptions of vulnerability extend beyond individual differences in psychopathy, the current study also investigated differences in accuracy across the HEXACO-60 dimensions and Dark Tetrad. These personality traits were selected as they have previously been shown to correlate with psychopathy (e.g., Ashton et al., 2000; Ashton & Lee, 2008; Lee & Ashton, 2005; Porter et al., 2014). Specifically, traits such as honesty-humility, conscientiousness, agreeableness, Machiavellianism, narcissism, and everyday sadism were expected to associate with accuracy in perceiving vulnerability to victimization in the same way psychopathy has been shown to.

As expected, honesty-humility was negatively associated with accuracy in perceiving vulnerability to violent victimization. That is, individuals scoring lower on honesty-humility were significantly more accurate in perceiving walkers' vulnerability to exclusively violent victimization. Consistent with psychopathy, honesty-humility was not related to accuracy in perceiving vulnerability to exclusively sexual victimization. Although a negative association has been identified between psychopathy and scores on conscientiousness and agreeableness in the past (e.g., Ashton & Lee, 2008; Samuels et al., 2004), these personality traits were not associated with accuracy in perceiving vulnerability to any form of victimization in the current study.

While Black and colleagues (2014) found no evidence of an association between the Dark Triad and accuracy in perceiving vulnerability to victimization, they did not show observers clips of targets walking. Rather, targets were asked to rate vulnerability based on the nonverbal behaviour of women engaged in conversation (Black et al. 2014). As gait cues were not available to observers, the current study reexamined this association with walker videos. Interestingly, when gait cues were available, Machiavellianism and everyday sadism were associated with accuracy in perceiving vulnerability to violent, but not exclusively sexual victimization. Again, this was consistent with the associations between psychopathy and accuracy across victimization type. Although these factors were associated with accuracy, the results of a binary logistic regression revealed psychopathy as the most salient predictor of accuracy in perceiving vulnerability to violent victimization.

Given the association between narcissism and psychopathy in the literature (e.g., Porter et al., 2014), it was initially hypothesized that narcissism would be associated with accuracy in perceiving vulnerability to victimization. Contrary to this prediction, no association was identified between narcissism and accuracy. Going back to the bivariate correlation analyses

conducted between psychopathy and the Dark Tetrad traits, it is clear that narcissism was not associated with psychopathy in the current study. While it is possible that narcissism would have been associated with accuracy had a significant association been identified with psychopathy, this finding could also be a reflection of the nature of narcissists. As narcissism is characterized by extreme grandiosity, self-centeredness, and callousness (Paulhus et al., 2014), it is possible that narcissistic observers viewed all walkers as vulnerable or weaker than they are, as they did in Black et al. (2014). If this is the case, these fundamental characteristics may have hindered their ability to accurately perceive others' vulnerability to victimization.

Notably, although psychopathy is characterized by a grandiose sense of self-worth and callousness, the construct of psychopathy is also made up of a variety of other traits (e.g., manipulation, antisocial behaviour, impulsivity). Thus, accuracy among individuals higher on psychopathy may be a result of features other than grandiosity and callousness. This seems plausible as the erratic lifestyle and antisocial features appeared to drive the association between psychopathy and accuracy in the current study rather than the interpersonal manipulation and callous affect features. Taken together, these results suggest that grandiosity and callousness may hinder the ability to accurately perceive vulnerability.

Further supporting this notion, the traits associated with Machiavellianism (e.g., manipulation), low honesty-humility (e.g., greed), and everyday sadism (e.g., callous disregard) have substantial overlap with the interpersonal manipulative and callous affect facets of psychopathy, but not the erratic lifestyle and antisocial facets. Although Machiavellianism, honesty-humility, and everyday sadism were associated with accuracy, psychopathy was identified as the most salient factor in predicting accuracy after controlling for these traits. This suggests that erratic and antisocial characteristics may aid in the ability to accurately perceive

vulnerability to violent victimization while grandiose and callous traits may not be as vital to accuracy as once thought (e.g., Book et al., 2013). As the current study was conducted with a sample of undergraduate students as observers, however, it is possible that these results may not generalize to a sample of offenders. Specifically, while experience engaging in antisocial behaviour may aid undergraduate observers in accurately judging vulnerability, Factor 1 psychopathy traits (e.g., interpersonal manipulation, callous affect) may play a larger role among offenders, where experience engaging in antisocial behaviour is more prevalent. Replication is therefore warranted before reliable conclusions can be made.

Overall, these results provide further evidence for individual differences in the ability to accurately perceive vulnerability (e.g., Book et al., 2013; Wheeler et al., 2009). Specifically, these results suggest that individual differences extend beyond psychopathy and into the realm of more general personality characteristics. Notably, despite the identification of other individual differences in perceptions of vulnerability, psychopathy was still identified as the most salient predictor of accuracy in perceiving vulnerability to exclusively violent victimization, over and above honesty-humility, Machiavellianism, and everyday sadism. This provides further support for the association between psychopathy and accuracy in perceiving vulnerability (e.g., Book et al., 2013) and suggests that accuracy may depend on victimization type (Ritchie et al., 2016).

Non-Verbal Cues

With evidence that individuals differ in the ability to accurately perceive vulnerability to victimization, the current study sought to identify the non-verbal cues used by observers to rate each walker's vulnerability to violent and sexual victimization. Further, given the distinct differences identified across perceptions of different forms of victimization, it seems plausible that the non-verbal cues used to assess vulnerability may have differed as a function of the type

of victimization being assessed. Thus, bivariate correlations were conducted between the proportion of times observers mentioned each non-verbal cue (i.e., movement, emotional appearance, physical appearance, clothing, age, gender, previous knowledge, intuition, environment, awareness, other) and their scores on psychopathy (i.e., total, Factors, and facets), honesty-humility, and Machiavellianism, everyday sadism, and accuracy in perceiving each type of victimization. These analyses were conducted across all walkers and more specifically across each victimization category (i.e., exclusively violent and exclusively sexual victimization). Notably, accuracy in perceiving vulnerability to violent and sexual victimization was unrelated to the mention of specific non-verbal cues.

As expected, no association was identified between psychopathy (i.e., total, Factor, and facet scores) and the use of movement cues (i.e., Wheeler et al., 2009). This lack of association was consistent across all victimization categories. Given that Book and colleagues (2013) identified a significant association between psychopathy and the use of gait cues among offenders, the lack of association in the current study may reflect a lack of experience in selecting victims among undergraduate students. Due to this lack of experience, it is possible that accurate observers were simply unaware that gait cues influenced their vulnerability judgments and subsequently neglected to report the use of such cues. It is also possible, however, that gait cues did not influence accuracy in perceiving vulnerability, as no association was identified between gait and experiences of violent victimization in Study 1. With evidence from Study 1 that gait patterns may be related to sexual but not violent victimization, observers in Study 2 should have been accurate in perceiving vulnerability to sexual but not violent victimization had their vulnerability judgments been based on differences in gait. As this was not the case in Study 2, it seems plausible that observers did not base their vulnerability judgments on gait cues but

instead based their vulnerability judgments on non-verbal cues other than gait.

Given that gait may not be a salient factor in perceptions of vulnerability to violent victimization among psychopathic individuals, the use of the remaining non-verbal cues was examined. Across all victimization categories, observers higher on the antisocial behaviour facet of psychopathy reported using a walker's physical appearance as a means of judging vulnerability. As the antisocial behaviour facet was identified as one of the most salient factors in the ability to accurately perceive a walker's vulnerability to violent victimization, it is possible that attending to differences in the walkers' physical appearance may have lead to more accurate perceptions. For example, psychopathic individuals may have been more likely to select walkers for violent victimization if they appeared physically weaker. Conversely, attending to cues such as physical appearance when judging the vulnerability of sexual victims may have hindered accuracy among psychopathic individuals. Similarly, the erratic lifestyle facet – the second facet of psychopathy identified as a salient predictor of accuracy in perceiving vulnerability to exclusively violent victimization – was associated with the use of other cues (e.g., the mention of the walker being alone), but only among sexual victims. It is possible that identifying the target as being alone rather than attending to gait cues also hindered accuracy.

Observer scores on honesty-humility, Machiavellianism, and everyday sadism were also examined in relation to the cues mentioned, as these factors were also significantly related to accuracy in perceiving vulnerability to exclusively violent, but not exclusively sexual victimization. The mention of other cues (e.g., the walker being alone) was negatively associated with observer scores on honesty-humility, suggesting that observers scoring lower on honesty-humility reported the use of other cues more often. Interestingly, while these observers used other cues as a means of rating exclusively sexual victims' vulnerability, these cues were not

used to rate the vulnerability of exclusively violent and non-victims. Again, these individuals may not have accurately rated sexual victims' vulnerability, as non-verbal cues other than gait were used to assess vulnerability.

Observers scoring higher on Machiavellianism were also more likely to report the use of other cues across all walkers and were less likely to report the use of previous knowledge. Across the victimization categories, Machiavellianism was associated with the use of other cues when rating the vulnerability of sexual victims and victims of both sexual and violent victimization, but was not associated with the use of specific cues when rating the vulnerability of exclusively violent victims. To reiterate, it seems plausible that Machiavellians were not accurate in perceiving vulnerability to sexual victimization, as gait cues were not used when making vulnerability judgments. While these observers were accurate in perceiving vulnerability to violent victimization, they may simply lack the experience to accurately communicate the cues used to rate vulnerability among these walkers.

Finally, across all walkers, everyday sadism was negatively associated with the mention of previous knowledge, where everyday sadists were less likely to report the use of previous knowledge when rating vulnerability. Across victimization categories, everyday sadism was positively associated with the use of intuition and negatively associated with the use of physical appearance when rating the vulnerability of exclusively violent victims. Conversely, everyday sadism was positively associated with the use of physical appearance and other cues (e.g., the walker was alone) when rating the vulnerability of exclusively sexual victims. No associations were identified between everyday sadism and the use of cues when rating vulnerability to both sexual and violent victimization. It is again possible that observers were not accurate in perceiving vulnerability to sexual victimization, as judgments were not based on gait cues.

Perceptions of Personality

To explore whether individual differences in the ability to accurately perceive others' characteristics extended beyond perceptions of vulnerability, the current study examined whether observers could accurately perceive others' personality traits based on non-verbal cues. Despite the belief that gait may inadvertently signal information about personality (e.g., Richards et al., 1991), accuracy in perceiving the walkers' self-reported personality traits was unrelated to the observers' scores on psychopathy, the Dark Tetrad, and the HEXACO-60 dimensions. Overall, these results suggest that gait cues may not signal information about actual levels of personality.

Black and colleagues (2014) were the first to explore biases in perceptions of others' personalities based on non-verbal cues among observers' Dark Triad scores. In this study, Black et al. (2014) suggested that individuals scoring higher on the Dark Triad had a tendency to perceive all targets as displaying passive personalities traits (e.g., neuroticism, conscientiousness, lack of openness), which they referred to as a "negative person bias". The methodology used in Black et al. (2014) differed from the current study, however, as observers were asked to rate the personality of targets engaged in conversation and gait cues were not available. For this reason, the current study sought to examine whether psychopathy (i.e., total), the Dark Tetrad, and the HEXACO-60 dimensions were associated with biased perceptions of walkers' personality traits. Consistent with Black and colleagues (2014) observers higher on dark personality traits (i.e., psychopathy, Machiavellianism, and everyday sadism) were more likely to view the walkers as neurotic. Contrary to Black and colleagues (2014), however, observers higher on psychopathy and everyday sadism were also more likely to view the walkers as assertive.

Across victimization type, violent victims and non-victims were perceived to be more dominant and/or assertive by individuals higher on psychopathy and everyday sadism. Violent

victims and non-victims were perceived to be more assertive by observers higher on everyday sadism, while sexual victims were not. Observers higher on psychopathy, Machiavellianism, and everyday sadism also perceived non-victims as more dominant, bold, and less introverted.

Among the HEXACO-60 dimensions, observers scoring lower on conscientiousness perceived walkers as more introverted, while those scoring lower on honesty-humility perceived walkers as more assertive. Across the victimization categories, observers scoring lower on honesty-humility rated violent victims as dominant and assertive. Exclusively sexual victims were rated as more neurotic by observers scoring low on conscientiousness. Finally, non-victims were perceived to be more dominant and assertive, and less introverted by observers scoring lower on conscientiousness and honesty-humility.

Overall, these results were somewhat consistent with Black and colleagues (2014), in that the observers scoring higher on psychopathy, Machiavellianism, narcissism, and everyday sadism, and lower on honesty-humility tended to view the walkers as exhibiting more passive personality traits. These observers did, however, also attribute more confident personality characteristics to the walkers, such as dominance and assertiveness. Contrary to Black and colleagues (2014), this suggests that these observers do not necessarily have a “negative person bias” towards others. It is worth noting, however, that observers did not perceive violent victims and non-victims as exhibiting passive personality traits, but rather, identified these walkers as more dominant, assertive, bold, and less introverted overall. In comparison, observers tended to focus on more passive personality traits, such as neuroticism, when describing sexual victims.

Given these differential findings, *t*-tests were conducted to determine whether the average personality rating differed between walkers who had experienced victimization and those who had not. While no differences were identified between victims of exclusively violent

victimization, personality ratings of exclusively sexual victims did differ from non-victims. Consistent with previous research (e.g., Richards et al., 1991; Sakaguchi & Hasegawa, 2006), sexual victims were perceived as significantly less dominant and assertive than non-victims. Thus, while observers tended to perceive sexual victims as more passive than non-victims, perceptions did not differ between violent victims and non-victims. Considering the evidence from previous research suggesting that observers perceive distinct differences in personality traits (e.g., submissiveness) between sexual victims and non-victims based on non-verbal cues (e.g., Richards et al., 1991), it seems reasonable to assume that violent victims and non-victims may not display distinct non-verbal cues informing perceptions of personality. Thus, since a history of violent victimization was not related to gait in Study 1, observers in Study 2 may not have perceived distinct differences in personality between violent victims and non-victims, as gait did not differ between these groups. Conversely, observers may have drawn distinct conclusions about the personality characteristics of sexual victims compared to violent and non-victims due to differences in the display of vulnerable gait cues between these groups. This finding provides supports the notion that observers may base vulnerability judgments on discrete non-verbal cues when rating others' vulnerability to violent and sexual victimization. Future research should replicate previous studies examining perceptions of personality among sexual victims (e.g., Murzynski & Degelman, 1996) with samples of exclusively violent victims before reliable conclusions can be made about these differential associations.

Limitations

Similar to Study 1, the results of Study 2 should be interpreted with caution as EM was used to impute missing data. Although Graham et al. (2003) raise concerns regarding the use of EM as error is not added into the imputed dataset, Tabachnick and Fidell (2013) suggest that EM

is less of a concern when the amount of missing data is small. As this was also the case in Study 2, the impact of EM data on standard errors was not overly concerning. Further, EM values were imputed based on raw scores to ensure the imputed items were predicted from items measuring similar constructs. As well, the use of EM did not appear to bias the results of Study 2 as the findings reported above were similar to the results identified when missing values were included in the dataset. Although EM did not appear to bias the standard errors, replication is warranted.

Another limitation of Study 2 was the use of a convenience sample. Concerns were first raised by Wheeler and colleagues (2009), who believed the results may be limited by the use of an undergraduate student population, as the associations identified may be stronger had a sample of individuals experienced in victim selection (i.e., offenders) been utilized. Although the results of studies using student samples (Ritchie et al., 2016; Wheeler et al., 2009) have been consistent with the results of studies using offender samples (Book et al., 2013), the results of the current study are unique as accuracy was explored across distinct forms of victimization. Future research should replicate the results of the current study in an offender sample to ensure results were not limited by the use of a student sample.

Unlike previous research (e.g., Book et al., 2013), the current study utilized a sample of men and women observers. Unfortunately, the number of women observers nearly doubled the number of men observers, raising concerns about generalizability. Given the low base rate of men, it is possible that the results of the current study better represent the associations between accuracy in perceiving personality and vulnerability, and observers' scores on psychopathy, the HEXACO-60, and the Dark Tetrad among women rather than men. For example, while previous research (e.g., Book et al., 2013) reported no association between Factor 2 psychopathy and accuracy in perceiving vulnerability among exclusively men observers, the current study

identified both Factor 1 and Factor 2 psychopathy as salient predictors of accuracy. This discrepancy suggests that the results of the current study may be generalizable among women but not men. To reduce potential biases, it would be beneficial for future research to include a better ratio of men and women observers.

As gait was not the only non-verbal cue available to observers when making judgments about vulnerability, it is possible that extraneous factors may have influenced accuracy. This is evidence in the analyses of the cues used by observers to make judgments, where, across all victimization categories, accuracy was not associated with the use of gait cues. Nor did individuals scoring higher on accuracy report the use of gait cues when judging others' vulnerability. It therefore seems plausible that factors other than gait had an influence on observers' judgments. Before we can reliably conclude whether or not individual differences in the ability to accurately perceive vulnerability are the result of differences in gait cues among walkers, the current study needs to be replicated under point-light conditions. This methodology will allow for the elimination of extraneous factors other than gait, providing reliable evidence for the role gait plays in the ability to accurately perceive vulnerability to victimization.

Future Directions

With the results of Study 2 in mind, it may be advantageous for future research to examine whether individual differences in the ability to accurately perceive vulnerability among women walkers, extends to perceptions of vulnerability among men walkers. In that same vein, future research should consider whether men and women observers differ in the ability to accurately perceive vulnerability to victimization. Based on the results of the binary logistic regression conducted in the current study, gender does not appear to be associated with accuracy. As previously stated, the current study should also be replicated with a sample of offenders to

determine whether the results are consistent in a population that has more experience selecting potential victims than undergraduate students. Future research should also ask offenders to describe their real-world victim selection techniques, and compare the techniques used by sexual offenders and violent offenders. With evidence that individual differences in the ability to accurately perceive vulnerability depend on the type of victimization being perceived (i.e., sexual versus violent), it may also be advantageous for future research to explore whether individuals differ in the ability to accurately perceive other forms of victimization (e.g., vulnerability to both sexual and violent victimization).

Finally, future research should explore whether the associations discussed above are consistent when observers are asked to rate vulnerability based on point-light videos. Although a consistent association has been identified between psychopathy and perceptions of vulnerability based on nonverbal cues, these studies have failed to take into account the influence of nonverbal cues other than gait (e.g., attractiveness, age, clothing, gender, and environment). Before we can reliably conclude that gait is an important factor in perceptions of vulnerability to victimization, there is a need to explore additional indicators using more rigorous methodological standards (i.e., point-light). If psychopathic individuals remain accurate in perceiving vulnerability to violent victimization when extraneous variables are removed, we may begin to view gait as a factor salient to their success when selecting vulnerable targets. Until then, it remains unclear whether psychopathic individuals are identifying vulnerable targets based on gait cues alone.

Implications

Overall, the results of the current study provide support for the role of non-verbal behaviour in perceptions of personality and vulnerability (McArthur & Baron, 1983). According to the ecological approach to social perceptions theory, observable characteristics such as body

movement provide socially useful information. This information can influence who we choose to interact with and how we choose to act around others. The ability to better perceive these non-verbal cues is thought to increase the success of social interactions. Although most observers in the current study were not able to accurately perceive walkers' actual levels of personality traits, differences were noted in the way observers perceived the walkers' personalities. Specifically, while observers tended to perceive sexual victims as exhibiting more passive personality traits, violent victims were perceived as exhibiting a combination of passive and charismatic personality traits. Conversely, non-victims were perceived as presenting exclusively charismatic traits. Supporting the notion that non-verbal cues may signal socially relevant information, these findings suggest that sexual victims and violent victims display distinct non-verbal cues signaling information to observers.

The current study also furthers our understanding of the cognitive appraisal process of social predators and provides insight into why some individuals may be more successful in exploiting others. Specifically, Study 2 provides support for individual differences in the ability to perceive vulnerability to victimization based on nonverbal cues (e.g., Book et al., 2013). Although psychopathy, Machiavellianism, honesty-humility, and everyday sadism were all identified as predictors of accuracy, psychopathy appeared to be the most salient factor. Upon further analyses, the erratic lifestyle and antisocial behaviour facets of psychopathy were identified as the most salient facets to accuracy. Thus, it is possible that individuals with more experience engaging in deviant behaviour were more adept in perceiving vulnerability compared to individuals with less experience engaging in such behaviour.

In addition to supporting individual differences in perceptions of vulnerability, the results of Study 2 provide evidence that accuracy may also be dependent on the type of victimization

perceived. That is, accuracy appears to differ across perceptions of vulnerability to violent victimization and sexual victimization. While observers higher on psychopathy, everyday sadism, and Machiavellianism, and lower on honesty-humility were able to accurately perceive vulnerability to violent victimization, these traits were not associated with accuracy in perceiving vulnerability to sexual victimization. In fact, no individual differences were identified in the ability to accurately perceive vulnerability to sexual victimization. Consistent with previous research (e.g., Wheeler et al., 2009), psychopathy was not related to the use of gait cues when making vulnerability judgements. Thus, while it is possible that observers in the current study lacked the victim selection experience to accurately communicate the cues being used to judge vulnerability, it is also possible that cues other than gait influenced perceptions of vulnerability.

More generally, the results of the current study raise questions regarding the overlap between high psychopathy scores and low honesty-humility scores. Recently, researchers have suggested that low scores on honesty-humility may be used as a proxy for higher scores on psychopathy (e.g., Book et al., 2015). Although a strong negative association was identified between psychopathy and honesty-humility in Study 2, this association was greater among Factor 1 psychopathy traits than among Factor 2 psychopathy traits. This suggests that, while low honesty-humility may be capturing components of interpersonal and callous behaviour, the erratic lifestyle and antisocial features of psychopathy may not be as well represented by the honesty-humility construct. The distinction between psychopathy and honesty-humility is further highlighted by the results of the first binary logistic regression analysis, where, although both constructs were associated with accuracy in perceiving vulnerability to violent victimization, psychopathy was identified as the most salient factor. Again, this suggests that low scores on honesty-humility may not be fully capturing the psychopathy construct. Further highlighting the

difference between psychopathy and honesty-humility, observers scoring lower on honesty-humility and those scoring higher on psychopathy reported using different non-verbal cues to rate the walkers' vulnerability and made distinct conclusions about the walkers' personality traits. Thus, although a strong association does exist between these two constructs, there are still components of psychopathy that are not captured by honesty-humility, and vice versa.

Conclusion

Overall, Study 2 provides support for the notion that psychopathic individuals are more proficient than non-psychopathic individuals in accurately perceiving others' vulnerability to victimization based on non-verbal cues (e.g., Book et al., 2013). Study 2 does suggest, however, that individual differences in the ability to accurately perceive others' vulnerability to victimization may be dependent on victimization type. That is, while psychopathic individuals are more accurate in identifying walkers' vulnerability to violent victimization, these same individuals appear to be no more accurate than non-psychopathic individuals in identifying walkers' vulnerability to sexual victimization.

With evidence that individuals differ in the ability to accurately perceive others' vulnerability to victimization based on non-verbal cues, it is important to identify the cues used by accurate observers when making vulnerability judgements. The results of Study 2 also highlight the importance of considering victimization type (i.e., violent versus sexual) when examining the cues used by observers, as distinct non-verbal cues were used when rating vulnerability to violent and sexual victimization. Although researchers have previously assumed that psychopathic individuals are more adept at recognizing gait cues signalling vulnerability (e.g., Book et al., 2013), these same researchers have yet to eliminate the influence of extraneous cues such as clothing and attractiveness. Thus, before we can reliably conclude that psychopathic

individuals are more accurate in perceiving others' vulnerability as a result of their adept ability to identify and interpret vulnerable gait cues, more rigorous methodological standards (i.e., point-light) must be utilized when examining this phenomenon.

General Discussion

In summary, Study 1 examined the impact of cognitive state and victimization type (i.e., violent versus sexual) on the association between victimization history and gait. The findings of Study 1 provided support for the association between victimization history and gait, and suggest that this association may depend on the type of victimization experienced by the walkers and their cognitive state. Study 1 also examined the association between personality and gait, as well as the association between personality and victimization history. Despite previous evidence of an association between vulnerable gait cues and personality traits such as submissiveness (Murzynski & Degelman, 1996), the walkers' actual levels of personality traits were not associated with victimization history or gait patterns in the current study. The lack of association between gait and personality identified in Study 1 provides further support for the association between gait and victimization history by eliminating personality as a potential mediator (Baron & Kenny, 1986).

Using a subsample of walkers from Study 1, Study 2 investigated individual differences in observers' perceptions of the walkers' vulnerability to distinct forms of victimization (i.e., violent and sexual) and personality traits based on non-verbal cues. While psychopathy was identified as a salient predictor of accuracy in perceiving vulnerability to violent victimization, no individual differences were identified in the ability to accurately perceive vulnerability to sexual victimization. Similarly, no individual differences in the ability to accurately perceive the walkers' actual personality traits were noted among observers' scores on psychopathy, the Dark

Tetrad, and the HEXACO-60. While previous research (e.g., Murzynski & Degelman, 1996) suggests that this accuracy may be the result of an adept ability to identify and interpret gait cues, alternative explanations should not be ruled out.

As the results of Study 1 may have impacted the results of Study 2, it is imperative that the findings of both studies be considered together before drawing final conclusions. By considering the connections between Study 1 and Study 2, we may begin to identify the non-verbal cues that influence accurate perceptions of vulnerability to victimization and personality.

Perceptions of Personality

As stated, one of the goals of Study 2 was to explore individual differences in perceptions of personality based on non-verbal cues. Considering the fact that gait was unrelated to the walkers' self-reported personality traits in Study 1, it is not surprising that the observers were not able to accurately perceive the walkers' actual personality traits in Study 2. Specifically, observers may not have been accurate, as the walkers' gait patterns did not signal information about their actual personality characteristics. Again, as this was the first study to examine individual differences in perceptions of actual personality traits based on non-verbal cues, replication is needed before these results can be interpreted reliably.

Although the observers were not able to accurately judge the walkers' actual personality traits, Study 2 did reveal differences in observers' perceptions of sexual, violent, and non-victims' personality traits, suggesting that non-verbal cues may lead observers' to make incorrect or biased inferences. Specifically, while observers tended to perceive sexual victims as more passive than non-victims (i.e., less dominant and less assertive), no differences were identified in observers' perceptions of violent victims' and non-victims' personality characteristics. Notably, Study 1 found that sexual victims were significantly more likely to display vulnerable gait cues

than non-victims, while violent victims were not. When considering the results of Study 1, it seems reasonable to assume that observers' judgments were in fact influenced by distinctions in gait, where sexual victims displayed different gait patterns than violent victims and non-victims. Thus, since a history of violent victimization was not related to gait in Study 1, observers in Study 2 may not have perceived distinct differences in personality between violent victims and non-victims, as gait did not differ between these groups. Although previous research has suggested that observers can perceive distinct differences in personality traits (e.g., submissiveness) between sexual victims and non-victims based on gait cues (e.g., Murzynski & Degelman, 1996), this has yet to be tested among violent victims outside of the current study. Replication is therefore warranted before reliable conclusions can be made. These findings do, however, support McArthur and Baron's (1983) theory of social perceptions, as sexual and violent victims appear to display non-verbal cues that signal differential information about personality characteristics to observers.

Perceptions of Vulnerability

As mentioned, no association was identified between psychopathy (i.e., total, Factor, and facet scores) and the use of movement cues (i.e., gait cues) in Study 2. Although offenders higher on psychopathy tend to report the use of movement cues more often than offenders lower on psychopathy (Book et al., 2013), the results of Study 2 were consistent with previous research utilizing an undergraduate sample (Wheeler et al., 2009). The discrepancy between offenders and undergraduate students has previously been thought to reflect the lack of experience in selecting victims among undergraduate students. Based on this notion, Wheeler et al. (2009) and Book et al. (2013) concluded that undergraduate observers likely do use gait cues to judge others' vulnerability to victimization but neglect to report the use of such cues as they lack the victim

selection experience required to be cognizant of the cues that influence their judgments.

Considering the results of Study 1, however, it seems plausible that the undergraduate students are in fact reporting the use of specific non-verbal cues correctly and gait may not be salient to perceptions of walkers' vulnerability among psychopathic individuals.

As a brief reminder, Study 1 identified a significant association between gait and experiences of exclusively sexual victimization but not between gait and experiences of exclusively violent victimization. With this in mind, observers higher on psychopathy may be more accurate in perceiving vulnerability to violent victimization, as they did not base their vulnerability judgments on gait cues. Alternatively, these same observers may not be accurate in perceiving vulnerability to sexual victimization, as gait cues were not considered when making these vulnerability judgments. Taken together, these results suggest that psychopathic individuals (at least among university students) may not have an adept ability to distinguish the gait of victims and non-victims, but are instead focusing on other non-verbal cues.

Implications

Considering the results of Study 1 and Study 2 together, it appears that gait may be salient to perceptions of vulnerability and personality among sexual victims, as these victims tend to display gait patterns that have previously been associated with vulnerability and personality (e.g., submissiveness; Murzynski & Degelman, 1996). Although gait cues do not appear to impact the observers' accuracy in perceiving the walkers' actual levels of personality traits, gait does appear to influence observers' personality ratings among sexual victims. Gait, however, does not appear to be salient to perceptions of vulnerability and personality among violent victims, as no association was identified between gait and experiences of violent

victimization in Study 1. Thus, the non-verbal cues used to make judgments about personality and vulnerability among violent victims remain unclear.

Although Ritchie and colleagues (2016) previously noted that gait training may be advantageous for reducing vulnerability among violent victims but not sexual victims, the results of Study 1 and Study 2 suggest otherwise when considered together. With evidence of an association between gait and sexual victimization history but not gait and violent victimization history, it becomes clear that those accurate in perceiving vulnerability to violent victimization could not have based their judgements on gait cues. This is further supported by the fact that observers higher on psychopathy, Machiavellianism, and everyday sadism, and lower on honesty-humility were inaccurate when judging vulnerability to sexual victimization, as these walkers display significantly different gait patterns in Study 1. Hypothetically, had these observers based their judgements on differences in gait, they should also have been accurate in perceiving vulnerability to sexual victimization. With no evidence of individual differences in the ability to accurately perceive the type of victimization associated with gait (i.e., sexual victimization), it appears that gait training may not be an effective pursuit when the goal is to reduce vulnerability rather than build confidence. It also appears that gait training may not be effective in reducing vulnerability to violent victimization, as gait is not related to this form of victimization and successful predators appear to base their judgements on other non-verbal cues.

While the results of Study 1 and Study 2 identified factors that may place individuals at an increased risk for violent and sexual victimization, these findings certainly should not be interpreted as a means of blaming individuals for their victimization experiences. Without question, the fault for any form of victimization lies solely with the perpetrator. What can be taken from these findings, however, are the characteristics of observers associated with

successful victim selection and the importance of developing effective intervention strategies for those at risk of victimizing others. Notably, the results of the current study speak exclusively to the characteristics and victim selection techniques of those who offend against strangers. This form of victimization is far less common than victimization perpetrated against acquaintances, where, in the United States, the accused was a stranger to the victim in approximately 38% of all nonfatal incidents in 2010 (Harrell, 2012). Although limited, research does suggest that those who offend against strangers are more violent and more opportunistic in their crimes (e.g., Polaschek, Ward, & Hudson, 1997), and are thought to be at a higher risk of reoffending than those who offend against acquaintances (e.g., Davis & Smith, 1981). Thus, if the goal of treatment is to reduce the occurrence of stranger victimization, interventions must be developed to target the unique characteristics of offenders with stranger victims.

With evidence that psychopathic individuals may be adept at identifying vulnerable strangers based on non-verbal cues, the current study highlights the importance of developing and implementing effective interventions aimed at reducing the manifestation of predatory behaviour. While replication, especially with a sample of offenders, is needed before the findings of the current study can guide policy, existing research has begun to identify potential treatment targets for reducing the frequency in which psychopathic individuals offend (e.g., Olver et al., 2013; Yang et al., 2010). Researchers have suggested that, in order to reduce the likelihood of recidivism among psychopathic individuals, treatment programs should target characteristics that have been associated with violent behaviour, also known as criminogenic needs (e.g., antisocial attitudes, cognitions, behaviours; Wong & Hare, 2005; Yang et al., 2010).

Recently, Olver and colleagues (2013) examined the effect of targeting criminogenic needs on therapeutic change and violent recidivism among 152 high-risk psychopathic offenders

who attended a high-intensity violence reduction program. The results of this study suggest that targeting characteristics associated with violence can be effective in terms of encouraging positive therapeutic change and reducing the likelihood of recidivism, even among high-risk psychopathic offenders. Olver and colleagues (2013) also suggest that targeting the callous affective traits of psychopathic individuals during treatment may help to increase therapeutic responsivity and subsequently increase the likelihood of positive therapeutic change. Although more research is needed in this area, the existing literature provides promise that predatory behaviour and the occurrence of stranger victimization can be reduced through the implementation of effective treatment programs.

Conclusion

Overall, the results of Study 1 and Study 2 raise questions about the role gait plays in perceptions of vulnerability and personality. It is essential that future research determine whether gait cues do in fact have an influence on individual differences in the ability to accurately perceive vulnerability across distinct victimization types through replication with point-light methodology. By identifying the non-verbal cues used to select vulnerable victims, we may begin to develop intervention strategies aimed at reducing the likelihood of future victimization. Further, identifying the nonverbal behaviours associated with vulnerability may add to our understanding of why certain individuals become repeat victims. Until then, it remains unclear whether the notorious psychopath, Ted Bundy, was being honest when he claimed to identify vulnerable women based on the way that they walked and the tilt of their head (Holmes & Holmes, 2009).

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Appendix A**Mass Testing Victimization History Questionnaire**

1. In the last five years, have you experienced sexual assault/abuse or attempted sexual assault/abuse?
 - a. Yes
 - b. No

2. In the last five years, have you experienced non-sexual violent victimization or attempted non-sexual violent victimization (e.g., physical abuse/assault, mugged, armed robbery)?
 - a. Yes
 - b. No

Appendix B
Demographic Questionnaire

Please provide the following information:

Note: You may skip any questions you do not wish to answer.

1. Age: _____
2. Are you:
 - a. Male
 - b. Female
 - c. Other: _____
3. What is your racial/ethnic background?
 - a. Aboriginal Canadian/Native Canadian/First Nations
 - b. Asian
 - c. Black/African-Canadian
 - d. East Indian
 - e. Hispanic/Latino
 - f. Middle Eastern
 - g. White/Caucasian
 - h. Other: _____

Victimization History Questionnaire

- _____ times

- _____ times

1	2	3	4	5	6	7	8	9	10	
(Not vulnerable)										(Very vulnerable)

Appendix D

The Brief COPE

Below are some ways you may have been coping with stress in your life since you were victimized or for those not victimized please use the past year. According to the scale, please rate the extent to which you have been doing what each item says, not whether it seems to be working. Try to rate each item truthfully and separately in your mind from the others.

I have been doing this...

1 = not at all 2 = a little bit 3 = a medium amount 4 = a lot

1. turning to work or other activities to take my mind off things.	1	2	3	4
2. concentrating my efforts on doing something about the situation I'm in.	1	2	3	4
3. saying to myself "this isn't real."	1	2	3	4
4. using alcohol or other drugs to make myself feel better.	1	2	3	4
5. getting emotional support from others.	1	2	3	4
6. giving up trying to deal with it.	1	2	3	4
7. taking action to try to make the situation better.	1	2	3	4
8. refusing to believe that it has happened.	1	2	3	4
9. saying things to let my unpleasant feelings escape.	1	2	3	4
10. getting help and advice from other people.	1	2	3	4
11. using alcohol or other drugs to help me get through it.	1	2	3	4
12. trying to see it in a different light, to make it seem more positive.	1	2	3	4
13. criticizing myself.	1	2	3	4
14. trying to come up with a strategy about what to do.	1	2	3	4
15. getting comfort and understanding from someone.	1	2	3	4
16. giving up the attempt to cope.	1	2	3	4
17. looking for something good in what is happening.	1	2	3	4
18. making jokes about it.	1	2	3	4
19. doing something to think about it less (i.e., going to movies, watching TV, reading, daydreaming).	1	2	3	4

20.	accepting the reality of the fact that it has happened.	1	2	3	4
21.	expressing my negative feelings.	1	2	3	4
22.	trying to find comfort in my religion or spiritual beliefs.	1	2	3	4
23.	trying to get advice or help from others about what to do.	1	2	3	4
24.	learning to live with it.	1	2	3	4
25.	thinking hard about what steps to take.	1	2	3	4
26.	blaming myself for things that happened.	1	2	3	4
27.	praying or meditating.	1	2	3	4
28.	making fun of the situation.	1	2	3	4

Appendix E
TriPM (Patrick, 2010)

Directions: This questionnaire contains statements that different people might use to describe themselves.

Each statement is followed by four choices:

☐ 1 = True 2 = somewhat true 3 = somewhat false 4 = False

For each statement, fill in the bubble for the choice that describes you best. There are no right or wrong answers; just choose the answer that best describes you.

Like this: ☒ Not like this: ☐ ☐ ☐

Remember: Fill only one bubble per item. If you make a mistake cross out the incorrect answer with an X and fill in the correct option. Answer all of the items. Please work rapidly and do not spend too much time on any one statement.

1. I'm optimistic more often than not.	1	2	3	4
2. How other people feel is important to me.	1	2	3	4
3. I often act on immediate needs.	1	2	3	4
4. I have no strong desire to parachute out of an airplane.	1	2	3	4
5. I've often missed things I promised to attend.	1	2	3	4
6. I would enjoy being in a high-speed chase.	1	2	3	4
7. I am well-equipped to deal with stress.	1	2	3	4
8. I don't mind if someone I dislike gets hurt.	1	2	3	4
9. My impulsive decisions have caused problems with loved ones.	1	2	3	4
10. I get scared easily.	1	2	3	4
11. I sympathize with others' problems.	1	2	3	4
12. I have missed work without bothering to call in.	1	2	3	4
13. I'm a born leader.	1	2	3	4

14.	I enjoy a good physical fight.	1	2	3	4
15.	I jump into things without thinking.	1	2	3	4
16.	I have a hard time making things turn out the way I want.	1	2	3	4
17.	I return insults.	1	2	3	4
18.	I've gotten in trouble because I missed too much school.	1	2	3	4
19.	I have a knack for influencing people.	1	2	3	4
20.	It doesn't bother me to see someone else in pain.	1	2	3	4
21.	I have good control over myself.	1	2	3	4
22.	I function well in new situations, even when unprepared.	1	2	3	4
23.	I enjoy pushing people around sometimes.	1	2	3	4
24.	I have taken money from someone's purse or wallet without asking.	1	2	3	4
25.	I don't think of myself as talented.	1	2	3	4
26.	I taunt people just to stir things up.	1	2	3	4
27.	People often abuse my trust.	1	2	3	4
28.	I'm afraid of far fewer things than most people.	1	2	3	4
29.	I don't see any point in worrying if what I do hurts someone else.	1	2	3	4
30.	I keep appointments I make.	1	2	3	4
31.	I often get bored quickly and lose interest.	1	2	3	4
32.	I can get over things that would traumatize others.	1	2	3	4
33.	I am sensitive to the feelings of others.	1	2	3	4
34.	I have conned people to get money from them.	1	2	3	4
35.	It worries me to go into an unfamiliar situation without knowing all the details.	1	2	3	4
36.	I don't have much sympathy for people.	1	2	3	4
37.	I get in trouble for not considering the consequences of my actions.	1	2	3	4
38.	I can convince people to do what I want.	1	2	3	4
39.	For me, honesty really is the best policy.	1	2	3	4

40.	I've injured people to see them in pain.	1	2	3	4
41.	I don't like to take the lead in groups.	1	2	3	4
42.	I sometimes insult people on purpose to get a reaction from them.	1	2	3	4
43.	I have taken items from a store without paying for them.	1	2	3	4
44.	It's easy to embarrass me.	1	2	3	4
45.	Things are more fun if a little danger is involved.	1	2	3	4
46.	I have a hard time waiting patiently for things I want.	1	2	3	4
47.	I stay away from physical danger as much as I can.	1	2	3	4
48.	I don't care much if what I do hurts others.	1	2	3	4
49.	I have lost a friend because of irresponsible things I've done.	1	2	3	4
50.	I don't stack up well against most others.	1	2	3	4
51.	Others have told me they are concerned about my lack of self-control.	1	2	3	4
52.	It's easy for me to relate to other people's emotions.	1	2	3	4
53.	I have robbed someone.	1	2	3	4
54.	I never worry about making a fool of myself with others.	1	2	3	4
55.	It doesn't bother me when people around me are hurting.	1	2	3	4
56.	I have had problems at work because I was irresponsible.	1	2	3	4
57.	I'm not very good at influencing people.	1	2	3	4
58.	I have stolen something out of a vehicle.	1	2	3	4

Appendix F

Rathus Assertiveness Scale

Indicate how well each item describes you by using this code: 3 very much like me 2 rather like me 1 slightly like me 1 slightly unlike me 2 rather unlike me 3 very much unlike me 1. Most

-3	-2	-1	1	2	3
Very much unlike me	Rather unlike me	Slightly unlike me	Slightly like me	Rather like me	Very much like me

- _____ 1. Most people seem to be more aggressive and assertive than I am.
- _____ 2. I have hesitated to make or accept dates because of "shyness."
- _____ 3. When the food served at a restaurant is not done to my satisfaction, I complain about it to the waiter or waitress.
- _____ 4. I am careful to avoid hurting other people's feelings, even when I feel that I have been injured.
- _____ 5. If a salesperson has gone to considerable trouble to show me merchandise that is not quite suitable, I have a difficult time saying "No."
- _____ 6. When I am asked to do something, I insist upon knowing why.
- _____ 7. There are times when I look for a good, vigorous argument.
- _____ 8. I strive to get ahead as well as most people in my position.
- _____ 9. To be honest, people often take advantage of me.
- _____ 10. I enjoy starting conversations with new acquaintances and strangers.
- _____ 11. I often don't know what to say to people I find attractive.
- _____ 12. I will hesitate to make phone calls to business establishments and institutions.
- _____ 13. I would rather apply for a job or for admission to a college by writing letters than by going through with personal interviews.
- _____ 14. I find it embarrassing to return merchandise.
- _____ 15. If a close and respected relative were annoying me, I would smother my feelings rather than express my annoyance.
- _____ 16. I have avoided asking questions for fear of sounding stupid.
- _____ 17. During an argument, I am sometimes afraid that I will get so upset that I will shake all over.
- _____ 18. If a famed and respected lecturer makes a comment which I think is incorrect, I will have the audience hear my point of view as well.
- _____ 19. I avoid arguing over prices with clerks and salespeople.
- _____ 20. When I have done something important or worthwhile, I manage to let others know about it.
- _____ 21. I am open and frank about my feelings.
- _____ 22. If someone has been spreading false and bad stories about me, I see him or her as soon as possible and "have a talk" about it.
- _____ 23. I often have a hard time saying "No."
- _____ 24. I tend to bottle up my emotions rather than make a scene.
- _____ 25. I complain about poor service in a restaurant and elsewhere.

- _____ 26. When I am given a compliment, I sometimes just don't know what to say.
- _____ 27. If a couple near me in a theater or at a lecture were conversing rather loudly, I would ask them to be quiet or to take their conversation elsewhere.
- _____ 28. Anyone attempting to push ahead of me in a line is in for a good battle.
- _____ 29. I am quick to express an opinion.
- _____ 30. There are times when I just can't say anything.

Appendix G

Revised Interpersonal Adjective Scale – Big Five

On the front and back of this page are words used to describe people's personal characteristics. Please rate how accurately each word describes you as a person. Judge how accurately each word describes you on the following scale.

1	2	3	4	5	6	7	8
extremely inaccurate	very inaccurate	quite inaccurate	slightly inaccurate	slightly accurate	quite accurate	very accurate	extremely accurate

For example, consider the word "**BOLD**". How accurately does that word describe you as a person? If you think this is a *quite accurate* description of you, you would write the number "6" in the space next to the word BOLD.

6	BOLD
---	------

If you think this word is *slightly inaccurate* as a description of you, you would write the number "4". If it is *very inaccurate* you would write "2", and so on...

It is very important that you do not skip any. If you are uncertain about the meaning of a word, please consult the definitions provided in the IASR-B5 Glossary.

1	2	3	4	5	6	7	8
extremely inaccurate	very inaccurate	quite inaccurate	slightly inaccurate	slightly accurate	quite accurate	very accurate	extremely accurate

- _____ **1. Introverted:** feels more comfortable by oneself; is less interested in other people
- _____ **2. Assertive:** tends to be aggressive and outspoken with others
- _____ **3. Timid:** tends to be fearful or uncomfortable around others
- _____ **4. Unargumentative:** tends to avoid arguments or fights
- _____ **5. Organized:** efficient, planful; maintains order in possessions
- _____ **6. Boastful:** tends to brag
- _____ **7. Soft-hearted:** tends to be easy-going or gentle with others
- _____ **8. Ruthless:** pursues one's own interests regardless of the effect on others
- _____ **9. Kind:** thoughtful and caring for others
- _____ **10. Tense:** edgy; "uptight"; worried
- _____ **11. High-strung:** skittish; easily annoyed or upset; oversensitive

- _____ **12. Cheerful:** happy, usually in good spirits
- _____ **13. Unsparkling:** not lively or entertaining with others
- _____ **14. Tricky:** can be deceiving toward others in order to get something; able to fool others
- _____ **15. Unconventional:** likes to be unusual, "radical", or different from the norm
- _____ **16. Inefficient:** often wastes time; doesn't plan well; easily side-tracked
- _____ **17. Unaggressive:** tends to be mild-mannered, not forceful around others
- _____ **18. Unreflective:** not given to careful pondering of issues
- _____ **19. Relaxed:** calm; easy-going;; not easily bothered or distressed
- _____ **20. Calculating:** tends to use or manipulate others to your own advantage
- _____ **21. Unmoody:** stable moods; even-tempered; rarely gloomy or overexcitable
- _____ **22. Anxious:** apprehensive or worried, tense
- _____ **23. Abstract-thinking:** theoretically minded; likes to reflect about ideas
- _____ **24. Philosophical:** likes to think about profound or "deep" questions about life; abstract
- _____ **25. Tender:** warm and loving with others
- _____ **26. Hard-hearted:** unconcerned and unfeeling toward others
- _____ **27. Unneighbourly:** unfriendly, aloof toward others, avoid contact with others
- _____ **28. Worrying:** tends to dwell on problems or troubles; apprehensive
- _____ **29. Literary:** interested in refined literature and other scholarly writings
- _____ **30. Uncharitable:** dislike helping others; tends to judge others harshly
- _____ **31. Uncunning:** not crafty or sly, tends to be straightforward with others
- _____ **32. Hypersensitive:** abnormally sensitive; overreacts to real or imagined criticism
- _____ **33. Extraverted:** like being with others; outgoing and lively around others
- _____ **34. Unphilosophical:** not troubled by or concerned about serious or abstract questions; unreflective
- _____ **35. At Ease:** relaxed, comfortable, not easily embarrassed
- _____ **36. Orderly:** organized; likes to have everything just so; methodical
- _____ **37. Cocky:** self-centred; conceited; thinks highly of one's own abilities
- _____ **38. Planful:** likes to plan things out or carefully arrange things beforehand
- _____ **39. Dominant:** tends to lead others, like to command, take charge in a group
- _____ **40. Unsearching:** not meditative or reflective; not bothered or concerned with "the meaning of life"
- _____ **41. Antisocial:** dislike the company of others; behavior not affected by social rules
- _____ **42. Perky:** lively, energetic around others
- _____ **43. Forceful:** tends to take charge around others
- _____ **44. Wily:** crafty, cagey, or tricky
- _____ **45. Undisciplined:** lacking self-restraint; easily side-tracked; procrastinating; disorganized
- _____ **46. Sly:** crafty, secretive, or cunning in dealing with others
- _____ **47. Systematic:** likes to do things following a certain routine, or plan; methodical

- _____ **48. Self-conscious:** easily embarrassed; uncomfortable when being observed by others
- _____ **49. Iron-hearted:** tends to be stern or harsh with others
- _____ **50. Thorough:** does tasks carefully and conscientiously; pays close attention to details
- _____ **51. Untidy:** messy, disorganized; sloppy
- _____ **52. Unbold:** not daring or courageous
- _____ **53. Neighbourly:** friendly; likes to get involved with people around you
- _____ **54. Unorderly:** not well organized or arranged; tends to be uncomfortable around others
- _____ **55. Shy:** lacking in self-confidence; tends to be uncomfortable around others
- _____ **56. Undemanding:** doesn't demand or expect much from others
- _____ **57. Meek:** timid, has trouble being assertive or standing up from others
- _____ **58. Reflective:** meditative, introspective, likes to ponder questions carefully; enjoys deep thought
- _____ **59. Inquisitive:** curious; has wide interests; seems interested in everything; likes to ask questions
- _____ **60. Unwily:** not tricky or crafty
- _____ **61. Unsystematic:** does things, haphazardly; doesn't stick to plans or pre-set routine; inefficient
- _____ **62. Self-assured:** confident, certain of oneself
- _____ **63. Dissocial:** doesn't care for the company of others
- _____ **64. Jovial:** cheerful; playful around others
- _____ **65. Domineering:** tends to control or manipulate others
- _____ **66. Neat:** likes to have things in the proper place; tidy, meticulous
- _____ **67. Unabstract:** concrete; thinks in a practical, uncomplicated way
- _____ **68. Tender-hearted:** easily feels love, pity or sorrow for others
- _____ **69. Unworrying:** doesn't dwell on problems; apprehensive
- _____ **70. Unimaginative:** not creative or inventive; not original
- _____ **71. Tidy:** likes to keep things organized and neat; dislikes clutter or disorder
- _____ **72. Warmthless:** has no feeling of pleasure or affection for others
- _____ **73. Unslly:** not tricky or cunning; tends to be genuine; sincere; trusting
- _____ **74. Enthusiastic:** enjoys active involvement with others
- _____ **75. Firm:** steadfast; does not give in easily; gets others to do things your way
- _____ **76. Impractical:** tends to consider unfeasible, or unworkable ideas; talks about things rather than doing them
- _____ **77. Uncalculating:** doesn't try to manipulate others or maximize one's own gain
- _____ **78. Questioning:** information or knowledge-seeking; wants to understand everything; curious
- _____ **79. Accommodating:** obliging, tends to do favours for others
- _____ **80. Uncheery:** not lively or jolly around others
- _____ **81. Uncomplex:** simple, uncomplicated
- _____ **82. Calm:** relaxed, tranquil; takes things in stride
- _____ **83. Conventional:** traditional; tends to stick to mainstream values of a culture
- _____ **84. Individualistic:** unique; independent way of doing things

- _____ **85. Friendly:** open, accepting, warm around others
- _____ **86. Cunning:** crafty, skillful at manipulating others, devious
- _____ **87. Self-confident:** sure of oneself around others, devious
- _____ **88. Unauthoritative:** doesn't try to influence others; goes with others' opinions
- _____ **89. Uncrafty:** not tricky or sly when dealing with others
- _____ **90. Unsympathetic:** not interested or concerned about others' feelings or problems
- _____ **91. Charitable:** generous, like to help others
- _____ **92. Coldhearted:** have little warmth or feelings for others; unfeeling; harsh
- _____ **93. Guilt-prone:** tends to worry about having done something wrong; dwells on mistakes; worrying
- _____ **94. Nervous:** uneasy; apprehensive or worried
- _____ **95. Broadminded:** enjoys a wide diversity of standards of behavior; liberal-thinking
- _____ **96. Distant:** tends to be cold toward others; tends to stay away from others
- _____ **97. Forceless:** not forceful with others; timid or weak, find it hard to be assertive
- _____ **98. Efficient** does things carefully and quickly; doesn't waste time
- _____ **99. Fretful:** agitated, easily distressed; worrying
- _____ **100. Overexcitable:** over-reacts to stress or excitement; overemotional; easily agitated
- _____ **101. Gentle-hearted:** warm or kind to others
- _____ **102. Disorganized:** tends not to do things in a well-planned or orderly way; untidy or inefficient
- _____ **103. Unplanful:** tends not to organize or plan things ahead of time; unsystematic
- _____ **104. Unanxious:** not tense or edgy
- _____ **105. Unselfconscious:** not easily embarrassed; not uncomfortable or nervous
- _____ **106. Unreliable:** Irresponsible; can't always be counted on to do things promised to do; undependable
- _____ **107. Outgoing:** enjoy meeting other people
- _____ **108. Sympathetic:** feel interested or sensitive to the feelings and problems of others
- _____ **109. Boastless:** don't like to brag
- _____ **110. Unnervous:** calm, not anxious or edgy
- _____ **111. Unliterary:** not especially interested in literature or creative writing
- _____ **112. Imaginative:** creative; tends to think of different or original ideas or ways of doing things
- _____ **113. Persistent:** doesn't give up even when others think you are wrong
- _____ **114. Reliable:** responsible; doesn't forget to do things; dependable
- _____ **115. Crafty:** can mislead or manipulate others for one's own purposes
- _____ **116. Unagitated:** not worried or upset
- _____ **117. Stable:** even-tempered; not excitable or overemotional; well-adjusted
- _____ **118. Uninquisitive:** not curious; not especially concerned to know many things
- _____ **119. Unsociable:** doesn't enjoy meeting people or being in the company of others
- _____ **120. Unartistic:** not creative; not imaginative

- _____ **121. Self-disciplined:** good at sustained effort; not easily distracted, not impulsive; tends to work before play
- _____ **122. Forgetful:** scatterbrained or absent-minded; tends to forget appointments, dates
- _____ **123. Cruel:** able to cause pain and suffering to others; unfeeling
- _____ **124. Bashful:** tends to shy away from public attention

Appendix H
HEXACO-60

On the following pages you will find a series of statements about you. Please read each statement and decide how much you agree or disagree with that statement. Then write your response in the space next to the statement using the following scale:

- 5 = Strongly Agree
4 = Agree
3 = Neutral (neither agree nor disagree)
2 = Disagree
1 = Strongly Disagree

Please answer every statement, even if you are not completely sure of your response.

- 1 _____ I would be quite bored by a visit to an art gallery.
- 2 _____ I plan ahead and organize things, to avoid scrambling at the last minute.
- 3 _____ I rarely hold a grudge, even against people who have badly wronged me.
- 4 _____ I feel reasonably satisfied with myself overall.
- 5 _____ I would feel afraid if I had to travel in bad weather conditions.
- 6 _____ I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.
- 7 _____ I'm interested in learning about the history and politics of other countries.
- 8 _____ I often push myself very hard when trying to achieve a goal.
- 9 _____ People sometimes tell me that I am too critical of others.
- 10 _____ I rarely express my opinions in group meetings.
- 11 _____ I sometimes can't help worrying about little things.
- 12 _____ If I knew that I could never get caught, I would be willing to steal a million dollars.
- 13 _____ I would enjoy creating a work of art, such as a novel, a song, or a painting.
- 14 _____ When working on something, I don't pay much attention to small details.
- 15 _____ People sometimes tell me that I'm too stubborn.
- 16 _____ I prefer jobs that involve active social interaction to those that involve working alone.
- 17 _____ When I suffer from a painful experience, I need someone to make me feel comfortable.
- 18 _____ Having a lot of money is not especially important to me.
- 19 _____ I think that paying attention to radical ideas is a waste of time.
- 20 _____ I make decisions based on the feeling of the moment rather than on careful thought.

- 21 _____ People think of me as someone who has a quick temper.
- 22 _____ On most days, I feel cheerful and optimistic.
- 23 _____ I feel like crying when I see other people crying.
- 24 _____ I think that I am entitled to more respect than the average person is.
- 25 _____ If I had the opportunity, I would like to attend a classical music concert.
- 26 _____ When working, I sometimes have difficulties due to being disorganized.
- 27 _____ My attitude toward people who have treated me badly is “forgive and forget”.
- 28 _____ I feel that I am an unpopular person.
- 29 _____ When it comes to physical danger, I am very fearful.
- 30 _____ If I want something from someone, I will laugh at that person's worst jokes.
- 31 _____ I’ve never really enjoyed looking through an encyclopedia.
- 32 _____ I do only the minimum amount of work needed to get by.
- 33 _____ I tend to be lenient in judging other people.
- 34 _____ In social situations, I’m usually the one who makes the first move.
- 35 _____ I worry a lot less than most people do.
- 36 _____ I would never accept a bribe, even if it were very large.
- 37 _____ People have often told me that I have a good imagination.
- 38 _____ I always try to be accurate in my work, even at the expense of time.
- 39 _____ I am usually quite flexible in my opinions when people disagree with me.
- 40 _____ The first thing that I always do in a new place is to make friends.
- 41 _____ I can handle difficult situations without needing emotional support from anyone else.
- 42 _____ I would get a lot of pleasure from owning expensive luxury goods.
- 43 _____ I like people who have unconventional views.
- 44 _____ I make a lot of mistakes because I don’t think before I act.
- 45 _____ Most people tend to get angry more quickly than I do.
- 46 _____ Most people are more upbeat and dynamic than I generally am.
- 47 _____ I feel strong emotions when someone close to me is going away for a long time.
- 48 _____ I want people to know that I am an important person of high status.
- 49 _____ I don’t think of myself as the artistic or creative type.
- 50 _____ People often call me a perfectionist.
- 51 _____ Even when people make a lot of mistakes, I rarely say anything negative.

- 52 _____ I sometimes feel that I am a worthless person.
- 53 _____ Even in an emergency I wouldn't feel like panicking.
- 54 _____ I wouldn't pretend to like someone just to get that person to do favors for me.
- 55 _____ I find it boring to discuss philosophy.
- 56 _____ I prefer to do whatever comes to mind, rather than stick to a plan.
- 57 _____ When people tell me that I'm wrong, my first reaction is to argue with them.
- 58 _____ When I'm in a group of people, I'm often the one who speaks on behalf of the group.
- 59 _____ I remain unemotional even in situations where most people get very sentimental.
- 60 _____ I'd be tempted to use counterfeit money, if I were sure I could get away with it.

Appendix I
Movement Code

Movement Category	Movement Category Code	
	Typical Victim Movement	Typical Non-Victim Movement
Stride Length (i.e., distance measured by a step)	☐ Short ☐ Long	☐ Medium
Type of Weight Shift (i.e., the shift that occurs when transferring weight from one foot to another while walking. Movement usually starts at the pelvis)	☐ Primarily lateral: Weight shifted from side to side ☐ Primarily up/down: Weight shift causes a bounce because body goes up and down ☐ Primarily forward/back: A sagittal	☐ Three-dimensional: Pelvis operates in a spiral and achieves a three dimensional quality
Type of Walk	☐ Postural: Movement activates the whole body	☐ Gestural: Movement activates only part of the body ☐ Non-specific: Other
Body Movement	☐ Unilateral: One side of body or one limb used	☐ Contralateral: Two sides of body move in counterpoint (right arm, left leg then left arm, right leg)
Feet Movement	☐ Lift	☐ Swing

Note. See Grayson and Stein (1981).

Appendix J**SONA Systems Walker Recruitment Notice**

NAME OF RESEARCHERS: Adelle Forth, Mary Ritchie, and Julie Blais

PRINCIPLE RESEARCHERS CONTACT INFORMATION: adelle.forth@carleton.ca

TITLE OF STUDY: ##Personality and Perceptions of Victimization##

BRIEF DESCRIPTION: You will be asked to complete a demographic questionnaire as well as six self-report questionnaires assessing various personality traits, your sexual and violent victimization history, and coping strategies. You will also be filmed at some point during the study. The study will take approximately one hour and you will receive \$20 for your participation. This study has been approved by the Carleton Ethics Committee for Psychological Research.

IS THIS A WEB-BASED STUDY? No.

IS THIS A TWO-PART STUDY? No.

LENGTH OF STUDY: Approximately one hour.

SELECTION CRITERIA: Those who previously participated in *A Kinematic Point-Light Investigation of Memory and Movement* are not eligible to participate in the current study.

ETHICS CLEARANCE NUMBER (REB#): 15-108

Appendix K
Information Sheet and Consent Form #1 (Pre Filming)

This informed consent form is designed to explain to you the study's purpose, the required tasks and additional information to allow you to decide whether or not you wish to participate in the study. Please take the time to read this information carefully.

Project Title: Personality and Perception of Victimization

Research personnel:

Adelle Forth
Department of Psychology Faculty, Carleton University
adelle.forth@carleton.ca
613-520-2600 x 1267

Mary Ritchie
Department of Psychology Graduate Student, Carleton University
maryritchie@cmail.carleton.ca

Julie Blais
Department of Psychology Faculty, Carleton University
Julie.blais@carleton.ca
613-520-2600 x. 1047

Purpose: The goal of this study is to understand the relationship between various personality traits (e.g., boldness, disinhibition), coping strategies, and sexual and violent victimization experiences.

Task requirements: Should you decide to participate, you will be asked to complete a demographic questionnaire as well as six self-report questionnaires assessing various personality traits, coping strategies, and your sexual and violent victimization history. You will also be filmed at some point during the study.

Time required: This study will take approximately one hour of your time.

Remuneration: You will receive \$20.

Right to withdraw: You have the right to withdraw from this study at any point, without penalty. Should you choose to withdraw, we will destroy any data that has already been collected. You will still receive \$20 should you choose to withdraw.

Potential risk and discomfort: You will be asked about your previous victimization history, the impact that your victimization experiences have had on your life, and how vulnerable you feel you are to future victimization. You will also be filmed at some point during the study. Should you feel discomfort at any point during the study, please be reminded that your participation is entirely voluntary, that you may choose not to answer any question, and that you may withdraw from the study at any time without penalty.

Anonymity/confidentiality: The information that you give will in no way be linked to your name, but will be identified with an arbitrary number. Data will be kept in a locked laboratory, and only individuals directly involved with the research project will have access to it. The data from this study will be used for research publications, conference presentations, and/or teaching material. Should you wish to learn of the results of this study, we would be happy to send you a summary of the findings if you give your contact information to the researcher. All information collected will be destroyed five years after the publication of secondary findings.

This study has received clearance by the Carleton University Ethics Committee for Psychological Research (Research Ethics Approval # 15-108).

If you have any ethical concerns about this study please contact, Dr. Shelley Brown (Chair, Carleton University Ethics Committee for Psychological Research) by phone: 613-520-2600, ext. 1505; or by email: shelley.brown@carleton.ca.

Consent. I have read the above form and hereby consent to continue participating in this study. The data in this study will be used for research publications and/or teaching purposes. I am aware that the data collected in this study will be kept strictly confidential and anonymous. By clicking on the box I consent to participate in this study.

By signing below I indicate that I have read the above informed consent and that I am fully aware of any possible risks or consequences of participating in this study.

Participant Signature

Date

Researcher Signature

Date

Appendix L

Information Sheet and Consent Form #2 (Post filming)

The purpose of this informed consent is to ensure that you now understand the true purpose of the study and that you agree to allow your data to be used for research and teaching purposes. Because you were only told of the procedures and not the true purpose of this study at the outset, we are now asking for your consent to allow your data to be used for research and teaching purposes.

Project Title: Personality and Perception of Victimization

Research personnel:

Adelle Forth
Department of Psychology Faculty, Carleton University
adelle.forth@carleton.ca
613-52-2600 x 1267

Mary Ritchie
Department of Psychology Graduate Student, Carleton University
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Julie Blais
Department of Psychology Faculty, Carleton University
Julie.blais@carleton.ca
613-520-2600 x. 1047

Purpose: We told you that the current study was designed to measure how personality impacts understanding of certain life experiences including sexual and violent victimization. In this study, you were videotaped walking through the hallway without your knowledge. This deception was essential to adequately capture natural body language. We were specifically interested in capturing your natural gait as research has suggested individuals who have previously experienced victimization display distinct body language compared to those who have not previously experienced victimization. Interestingly, evidence suggests that this association only exists when individuals are being filmed/watched covertly. Thus, the true purpose of the current study was to:

- Capture participants' natural walk to identify differences in gait among victims and non-victims.
- Determine whether participant's gait differs when they know or do not know they are being filmed. This will allow us to identify whether or not it is necessary to use deception prior to filming individuals' walk in future studies.
- Determine whether natural body language differs as a function of victimization history, personality, and coping strategies. As a small relationship between gait and victimization experiences has only been identified in two studies, it is possible that alternative

characteristics (e.g., personality, coping strategies) account for this association. Given the small association identified in the past, it is also essential to determine whether the relationship between gait and victimization is a true association or a random effect.

It is important to note that this research is correlational and should not be interpreted to mean that victims are to blame for their victimization as a result of their body language, personality, or coping strategies. There is no question that fault for victimization lies solely with the perpetrator.

The videotapes we collected will be coded to:

- (1) Determine if certain body language cues are more common among participants who have experienced victimization in the past. Note, that this has been found in two previous studies, however the correlations were small. Thus, we expect that participants who have experienced past victimization will have different body language cues compared to participants who have not experienced victimization.
- (2) If our hypothesis is confirmed, the videos will be shown to participants in future studies to:
 - Determine if people in the general population with certain personality traits (e.g., psychopathic, agreeable, assertive) are better at identifying individuals who have been victimized previously or who they think would have a higher likelihood of being victimized in the future based on how they walk.
 - Determine if inmates with certain personality traits (e.g., psychopathic, agreeable, assertive) or offence histories (e.g., violent offenders) are better at identifying individuals who have been victimized previously or who they think would have a higher likelihood of being victimized in the future based on how they walk.
- (3) As stated in the original informed consent we are also interested in identifying whether other characteristics play a role in the perceived likelihood of being victimized (e.g., personality, coping strategies). As only two studies have previously identified a small correlation between gait and the perceived likelihood of having been victimized or being victimized in the future, it is possible that this is not a true effect, but rather a random finding. If in fact this is a true effect, however, it is important to identify whether the association can be better explained by other characteristics (e.g., personality, coping).

We are therefore asking you for your consent to have your video used for these purposes in the future now that you are fully aware of the true nature of the study. If you consent for your data to be utilized in further studies, that means that collected videotapes could be shown and rated on personality traits, and perceived likelihood of past and future victimization experiences by student and inmate samples, at a later date. You will be shown the videotape prior to consenting. If you do not provide consent at this time, the video will be deleted in front of you.

Right to withdraw: Given that you are now aware of the true purpose of the study, you have the right to withdraw. Should you choose to withdraw during the remainder of the study, we will destroy any data that has already been collected. You will still receive \$20 should you choose to withdraw.

New Task requirement: Now that you know the true purpose of the study, you will be asked to be video taped for a second time as you return to the other room to collect your personal belongings. Again, this video will be shown to you. The purpose of this video is to identify whether or not covert filming is essential to capture natural gait. Should no differences be identified between the two videos, it will be clear that deception is not necessary when analyzing gait cues in future studies.

Time required: This final portion of the study will take less than five minutes.

Remuneration: You will still receive the initial \$20.

Potential risk and discomfort: There is minimal risk with sharing your data with the research team and allowing your videotape to be used for future research. Notably, the chances of being recognized in the video are very small, though it is possible. Keep this in mind as you decide whether to allow use of your videotape for the following purposes. There will be no indication of your name or any personal information on the videotape. You may consent to have the videotape used only for research purposes or you may choose not to consent to the release of your data.

Anonymity/confidentiality: The information that you give will in no way be linked to your name, but will be identified with an arbitrary number. Data will be kept in a locked laboratory, and only individuals directly involved with the research project will have access to it. The data from this study will be used for future research studies, research publications, conference presentations, and/or teaching material. Should you wish to learn of the results of this study, we would be happy to send you a summary of the findings if you give your contact information to the researcher. All information collected will be destroyed five years after the publication of secondary findings.

This study has received clearance by the Carleton University Ethics Committee for Psychological Research (Research Ethics Approval # 15-108).

If you have any ethical concerns about this study please contact, Dr. Shelley Brown (Chair, Carleton University Ethics Committee for Psychological Research) by phone: 613-520-2600, ext. 1505; or by email: shelley.brown@carleton.ca.

Please note that you will be given up to 48 hours to email maryritchie@cmail.carleton.ca and retract your initial consent should you feel uncomfortable with the use of your data.

Consent. I have read the above form and hereby consent to continue participating in this study. The data in this study will be used for research purposes. I am aware that the data collected in this study will be kept strictly confidential and anonymous.

By signing below I indicate that I have read the above informed consent.

1. I agree to have my video and questionnaire data used for the purpose of the original study.

Signature

Date

2. I agree to have my video rated by undergraduate/graduate students in future studies.

Signature

Date

3. I agree to have my video rated by inmates in a future study.

Signature

Date

4. I agree to have my video used during conferences and for teaching purposes (illustrating body language).

Signature

Date

5. I do not wish to have my video used for any purpose.

Signature

Date

Researcher Signature

Date

Appendix M

Verbal Script

As you walked from [INSERT ROOM] to [INSERT ROOM], you were covertly filmed from behind with a hidden camera that we placed in the hallway. We could not initially disclose when you would be filmed, as we needed to ensure your natural gait was captured on camera. Research has suggested that people walk differently when they are aware of being filmed/watched compared to when they are unaware of being filmed/watched so the deception was necessary to ensure you walked naturally. I have another informed consent form for you to read over which discloses the true purpose of the current study and goes into detail as to why deception was necessary. Once you read over this form I will show you the video clip of you walking before you consent to the current study. We will also ask you to walk down the hall again while we film you for a second time. The second video will be used to identify whether your body language differs when you are aware and unaware of being filmed. The results of this study will inform whether future studies need to use covert filming methods. I will give you a few minutes to read over the informed consent now. Do you have any questions or concerns at this time?

Appendix N

Debriefing Form

Thank you again for your participation in “Personality and Perception of Victimization”, a study looking at associations between body language, personality traits, past victimization experiences, and the perceived likelihood of future victimization. This research was conducted through the Psychology Department at Carleton University and carried out by researchers Dr. Adelle Forth, Mary Ritchie, and Dr. Julie Blais. Any information collected will be retained for five years post publication. This debriefing information is designed to help you understand why we did this study.

What are we trying to learn in this research?

The purpose of this study was to establish a relationship between body language and the likelihood of future victimization. One study has found that victims of crime walk in a different manner from non-victims (e.g., shorter strides, more slowly) and that others associate this walking pattern with a greater likelihood of experiencing victimization in the future. In addition to replicating this finding, the current study sought to determine whether personality traits (e.g., assertiveness and disinhibition) and coping strategies account for the perceived likelihood of future victimization and walking movements. **It is important to recognize that any information collected will not be used in a manner that will blame victims. There is no question that fault for victimization lies solely with the perpetrator.** What can be determined, however, are factors that may be the subject of appropriate defense training against potential victimization. If you did consent to allow your videotape to be used in future studies, we will be asking observers (i.e., students, offenders) to watch the videos to see if they are able to detect differences in walking movements. Observers will also be rating each video on perceived vulnerability to various types of victimization.

Why is this important to psychologists or the general public?

Some research has provided evidence that vulnerability cues can be inadvertently transmitted through body language. If we can distinguish a clear relationship between vulnerability cues and body language, we may be able to better protect against experiences of future victimization in some cases. Certainly, this research is expected to provide valuable insight into the relationship between vulnerability cues and body language, which has potential for yielding therapeutic benefits and preventative measures.

What if I have questions later?

Please note that you will be given up to 48 hours to email maryritchie@cmail.carleton.ca and retract your initial consent should you feel uncomfortable with the use of your data. For identification purposes, please include the date and time that you participated in the current study in your email.

If you wish to discuss this research further feel free to contact Adelle Forth by email: adelle_forth@carleton.ca; Mary Ritchie by email: maryritchie@cmail.carleton.ca; or Julie Blais by email: Julie.blais@carleton.ca.

If you have any ethical concerns about this study please contact Dr. Shelley Brown (Chair, Carleton University Ethics Committee for Psychological Research) by phone: (613) 520-2600 ext. 1505 or by email: shelley_brown@carleton.ca.

This study has received clearance by the Carleton University Ethics Committee for Psychological Research (#15-108). Please refer to this number when contacting the Chair of the Department or the Chair of Carleton University Ethics Committee for Psychological Research.

What can I do if I experience discomfort or distress after participating in this study?

If you find that after participating in this study you feel any sort of emotional, mental, or physical stress or anxiety, please contact Carleton University Health and Counseling Services at 613-520-6674 and/or Carleton Sexual Assault Support Centre at 613-620-1030. If you live in the Ottawa area you can also contact the Distress Center of Ottawa and Region at 613-238-3311, the Ottawa Rape Crisis Centre at 613-562-2333, and/or the Sexual Assault Support Centre of Ottawa at 613-234-2266. If you are not located in the Ottawa area the telephone number for your local Crisis Line can be found at the front of most phone books.

How can I learn more?

If you are interested in learning more about perceptions and cues of victim vulnerability please refer to the following sources:

Book, A., Costello, K., & Camilleri, J. A. (2013). Psychopathy and victim selection: The use of gait as a cue to vulnerability. *Journal of Interpersonal Violence*, 28(11), 1-16. doi: 10.1177/0886260512475315.

Wheeler, S., Book, A., Costello, K. (2009). Psychopathic traits and perceptions of victim vulnerability. *Criminal Justice and Behavior*, 36(6). 635-648. doi: 10.1177/0093854809333958.

Thank you for taking the time to participate in this study!

Your participation is greatly appreciated!

Appendix O**Walker Vulnerability to Victimization Questionnaire**

1. Do you think the subject from the video clip has previously experienced sexual victimization (i.e., sexual abuse and/or assault)?

a. Yes

b. No

2. Do you think the subject from the video clip has previously experienced non-sexual violent victimization (i.e., physical abuse, assault, threats, and/or armed robbery)?

a. Yes

b. No

3. On a scale from 1 (not at all vulnerable) to 10 (completely vulnerable), how vulnerable do you think the subject from the video clip is to the following types of victimization?

a. Sexual victimization (i.e., sexual abuse and/or assault): _____

b. Non-sexual violent victimization (i.e., physical abuse, assault, threats, and/or armed robbery): _____

4. What information did you use in making these decisions?

Appendix P
Walker Personality Questionnaire

On a scale from 1 (not at all true) to 10 (completely true), rate the subject in the clip on the following statements:

1. This person is assertive: _____
2. This person is dominant: _____
3. This person is agreeable: _____
4. This person is submissive: _____
5. This person is introverted: _____
6. This person is bold: _____
7. This person is disinhibited: _____
8. This person is neurotic: _____
9. This person is conscientious: _____
10. This person is open to new experiences: _____

Appendix Q
Demographic Questionnaire

Please provide the following information:

Note: You may skip any questions you do not wish to answer.

1. Age: _____
2. Are you:
 - a. Male
 - b. Female
 - c. Other: _____
3. What is your racial/ethnic background?
 - a. Aboriginal Canadian/Native Canadian/First Nations
 - b. Asian
 - c. Black/African-Canadian
 - d. East Indian
 - e. Hispanic/Latino
 - f. Middle Eastern
 - g. White/Caucasian
 - h. Other: _____

Appendix R
Short Dark Triad

Please rate your agreement or disagreement with each item using the following guidelines.

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Machiavellianism subscale

1. It's not wise to tell your secrets.
2. I like to use clever manipulation to get my way.
3. Whatever it takes, you must get the important people on your side.
4. Avoid direct conflict with others because they may be useful in the future.
5. It's wise to keep track of information that you can use against people later.
6. You should wait for the right time to get back at people.
7. There are things you should hide from other people because they don't need to know.
8. Make sure your plans benefit you, not others.
9. Most people can be manipulated.

Narcissism subscale

1. People see me as a natural leader.
2. I hate being the center of attention. (R)
3. Many group activities tend to be dull without me.
4. I know that I am special because everyone keeps telling me so.
5. I like to get acquainted with important people.
6. I feel embarrassed if someone compliments me. (R)
7. I have been compared to famous people.
8. I am an average person. (R)
9. I insist on getting the respect I deserve.

Psychopathy

1. I like to get revenge on authorities.
2. I avoid dangerous situations. (R)
3. Payback needs to be quick and nasty.
4. People often say I'm out of control.
5. It's true that I can be mean to others.
6. People who mess with me always regret it.
7. I have never gotten into trouble with the law. (R)
8. I enjoy having sex with people I hardly know
9. I'll say anything to get what I want.

Appendix S
Comprehensive Assessment of Sadistic Tendencies (CAST)

1	2	3	4	5
Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree

Direct - Verbal

1. I was purposely mean to some people in high school.
2. I enjoy making jokes at the expense of others.
3. I have purposely tricked someone and laughed when they looked foolish.
4. When making fun of someone, it is especially amusing if they realize what I'm doing.
5. Perhaps I shouldn't have, but I never got tired of mocking certain classmates.
6. I would never purposely humiliate someone. (R)

Direct - Physical

1. I enjoy physically hurting people.
2. I enjoy tormenting people.
3. I have the right to push certain people around.
4. I have dominated others using fear.
5. I enjoy hurting my partner during sex (or pretending to).

Vicarious

1. In video games, I like the realistic blood spurts.
2. I love to watch YouTube clips of people fighting.
3. I enjoy watching cage fighting (or MMA), where there is no escape.
4. I sometimes replay my favorite scenes from gory slasher films.
5. There's way too much violence in sports. (R)
6. I enjoy playing the villain in games and torturing other characters.
7. In professional car-racing, it's the accidents that I enjoy most.

Appendix T**Observer Victimization History Questionnaire**

1. How many times have you experienced sexual victimization (e.g., sexual abuse, sexual assault) or experienced attempted sexual victimization in the past five years?

_____ times

2. How many times have you experienced non-sexual violent victimization (e.g., physical abuse, assault, threats, armed robbery) or experienced attempted non-sexual violent victimization in the past five years?

_____ times

Appendix U**Sona Systems Observer Recruitment Notice**

NAME OF RESEARCHERS: Mary Ritchie & Adelle Forth

PRINCIPAL RESEARCHERS CONTACT INFORMATION:

maryritchie@cmail.carleton.ca; adelle_forth@carleton.ca

TITLE OF STUDY: Easy Prey: Perceptions of Vulnerability and Personality

BRIEF DESCRIPTION: You will be asked to complete a demographic questionnaire as well as five self-report questionnaires. These questionnaires will measure various personality traits (e.g., psychopathic traits) and assess your previous victimization experiences. You will also be asked to watch a series of 15 brief video-clips and rate the vulnerability and personality characteristics of the subject viewed in each clip. Additionally, you will be asked to provide reasoning for your vulnerability ratings. The study will take approximately 1 hour to complete and you will receive 1% bonus for your participation. This study has been approved by the Carleton University Research Ethics Board – B.

IS THIS A WEB-BASED STUDY? No.

IS THIS A TWO-PART STUDY? No.

LENGTH OF STUDY: Approximately 1 hour.

SELECTION CRITERIA: You may have been selected for this study based on your mass testing scores, however, any student with a SONA account is invited to participate. Those who previously participated in *Personality and Perceptions of Victimization* are not eligible to participate in the current study.

ETHICS CLEARANCE NUMBER (REB#): #15-211

Appendix V

Informed Consent

This informed consent form is designed to explain to you the study's purpose, the required tasks and additional information to allow you to decide whether or not you wish to participate in the study. Please take the time to read this information carefully.

Project Title: Easy Prey: Perceptions of Vulnerability and Personality

Research personnel:

Mary Ritchie
Department of Psychology Undergraduate Student, Carleton University
maryritchie@cmail.carleton.ca

Adelle Forth
Department of Psychology Faculty, Carleton University
adelle_forth@carleton.ca

Purpose: In conducting this study, we hope to gain an understanding of whether individuals with certain personality traits and victimization experiences are more accurate in perceiving a target's vulnerability to victimization and personality characteristics based on nonverbal cues.

Task requirements: You will be asked to complete a demographic questionnaire as well as five self-report questionnaires. These questionnaires will measure various personality traits (e.g., psychopathic traits) and assess your previous experiences of victimization. You will also be asked to watch a series of 15 brief video-clips and rate the vulnerability to victimization and personality of the subject viewed in each clip. Additionally, you will be asked to provide reasoning for your vulnerability ratings.

Time required: This study will take approximately 1 hour to complete.

Remuneration: You will receive 1% credit towards your PSYC 1001, 1002, 2001, or 2002 grade for your participation.

Right to withdraw: You have the right to withdraw from this study at any point, without penalty. You will still receive 1% toward your psychology course should you withdraw.

Potential risk and discomfort: If you regularly experience test anxiety, this research may cause slight discomfort. If you should feel discomfort at any point during this study, please be reminded that your participation is entirely voluntary, that you may choose not to answer any question, and that you may withdraw from the study at any time without penalty.

Anonymity/confidentiality: All responses will be strictly confidential. This data will be used for research publications, conference presentations and/or teaching material. All answers will be coded in such a way that participants cannot be identified.

We will collect data through the software Qualtrics, which uses servers with multiple layers of security to protect the privacy of the data (e.g., encrypted websites and pass-word protected storage). Please note that Qualtrics is hosted by a server located in the USA. The United States Patriot Act permits U.S. law enforcement officials, for the purpose of an anti-terrorism investigation, to seek a court order that allows access to the personal records of any person without that person's knowledge. In view of this we cannot absolutely guarantee the full confidentiality and anonymity of your data. With your consent to participate in this study you acknowledge this.

This study has received clearance by the Carleton University Research Ethics Board – B (Research Ethics Approval #15-211).

If you have any ethical concerns about this study please contact, Dr. Shelley Brown (Chair, Carleton University Ethics Committee for Psychological Research) by phone: 613-520-2600, ext. 1505; or by email: shelley.brown@carleton.ca.

Consent. I have read the above form and hereby consent to continue participating in this study. The data in this study will be used for research publications and/or teaching purposes. I am aware that the data collected in this study will be kept strictly confidential and anonymous. By clicking on the box I consent to participate in this study.

☐

By checking this box I indicate that I have read the above informed consent and that I am fully aware of any possible risks or consequences of participating in this study.

Appendix W

Debriefing Form

What are we trying to learn in this research?

The purpose of this study is to investigate whether individuals with certain personality traits and experiences of victimization are more accurate in perceiving a target's vulnerability to victimization and personality characteristics based on non-verbal cues. This study is attempting to discover what factors relate to accurate perceptions of vulnerability to victimization and personality in a university sample.

In this study we measured a range of characteristics including personality traits (i.e., honesty-humility, emotionality, extraversion, agreeableness, conscientiousness, openness, narcissism, and Machiavellianism) and psychopathic traits (i.e., impulsivity, manipulation, lack of remorse, irresponsibility). We also asked you to provide information on your victimization experiences in order to determine whether a history of victimization may increase accuracy in perceiving cues of victimization vulnerability in others. Additionally, this study asked you to rate the vulnerability to victimization of 15 walkers presented in the video-clips on a scale of 1 to 10. You were asked to provide a rationale for your rating in order for us to determine what nonverbal cues influenced your perceptions of vulnerability to victimization.

Why is this important to psychologists or the general public?

In determining the non-verbal cues that make people vulnerable to victimization, we can begin to develop intervention strategies that may help to prevent future incidences of victimization.

What are our hypothesis and predictions?

We predict that individuals with more psychopathic and extraverted traits will be more accurate in their ratings of vulnerability to victimization. We also predict that those with a history of victimization will be more accurate in their ratings of vulnerability to victimization.

How can I learn more?

If you are interested in learning more about perceptions and cues of victim vulnerability please refer to the following sources:

- Book, A., Costello, K., & Camilleri, J. A. (2013). Psychopathy and victim selection: The use of gait as a cue to vulnerability. *Journal of Interpersonal Violence*, XX(X), 1-16. doi: 10.1177/0886260512475315.
- Wheeler, S., Book, A., Costello, K. (2009). Psychopathic traits and perceptions of victim vulnerability. *Criminal Justice and Behavior*, 36(6). 635-648. doi: 10.1177/0093854809333958.

What if I have questions later?

If you wish to discuss this research further feel free to contact Mary Ritchie by email: maryritchie@cmail.carleton.ca; Adelle Forth by email: adelle_forth@carleton.ca

If you have any ethical concerns about this study please contact, Dr. Shelley Brown (Chair, Carleton University Ethics Committee for Psychological Research) by phone: 613-520-2600, ext. 1505; or by email: shelley.brown@carleton.ca.

This study has received clearance by the Carleton University Research Ethics Board – B (#: 15-211). Please refer to this number when contacting the Chair of the Department or the Chair of Carleton University Ethics Committee for Psychological Research.

What can I do if I experience discomfort or distress after participating in this study?

If you find that after participating in this study you feel any sort of emotional, mental, or physical stress or anxiety, please contact Carleton University Health and Counseling Services at 613-520-6674. If you live in the Ottawa area you can also contact the Distress Center of Ottawa and Region at 613-238-3311. If you are not located in the Ottawa area the telephone number for your local Crisis Line can be found at the front of most phone books.

Thank you for taking the time to participate in this study!

Your participation is greatly appreciated!

Appendix X

Tables of Additional Analyses

Table X.1

Bivariate Correlations between Narcissism, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness, and the Proportion of Cues Mentioned

Category	<i>n</i>	N	E	X	A	C	O
Movement	128	-.12	-.05	-.08	.07	.01	.04
Emotional Appearance	129	-.04	.19*	-.07	-.03	.00	-.02
Physical Appearance	129	.04	-.04	.17	-.05	-.07	.03
Clothing	129	.04	-.01	-.01	.14	.08	.14
Age	129	-.00	.18*	-.07	-.10	.07	-.03
Gender	128	.03	.04	.18*	-.06	.03	.02
Previous Knowledge	129	-.01	-.01	.15	-.03	.18*	-.03
Intuition	128	-.07	-.19*	-.05	.01	-.02	.10
Environment	129	-.11	-.07	-.07	-.07	-.05	.01
Awareness	128	.04	.07	-.09	-.02	.00	-.08
Other	126	.06	.04	-.07	-.26**	-.05	-.12

Note. N = Narcissism; E = Emotionality; X = Extraversion; A = Agreeableness; O = Openness.

* $p < .05$; ** $p < .01$.

Table X.2

Bivariate Correlations between Narcissism, Emotionality, Extraversion, Agreeableness, Conscientiousness, Openness, and the Proportion of Cues Mentioned Across Victim Type

Victim Type	Category	<i>n</i>	N	E	X	A	C	O
Violent	Movement	129	-.04	-.01	-.01	-.01	-.05	.07
	Emot. Ap.	129	-.05	.13	-.04	.01	.01	-.11
	Phys. Ap.	129	.05	-.02	.21*	-.09	-.03	.04
	Clothing	129	.07	.07	-.06	.15	.02	.04
	Age	129	-.01	.12	-.11	-.06	.03	-.02
	Gender	129	.02	.05	.05	-.10	.14	-.07
	Pre. Know.	129	.05	.02	.12	-.05	.20*	-.10
	Intuition	129	.01	-.22*	-.10	-.02	-.07	.09
	Enviro.	129	-.09	-.02	-.06	-.04	-.06	-.03
	Awareness	129	-.10	-.05	.00	-.08	-.03	.04
	Other	129	.09	.06	-.08	-.16	-.02	-.15
Sexual	Movement	129	-.15	-.16	-.05	.08	-.02	.03
	Emot. Ap.	129	-.04	.21*	-.09	-.09	.03	.07
	Phys. Ap.	129	.12	.02	.12	-.04	-.14	.04
	Clothing	129	.02	-.05	.04	.04	.02	.08
	Age	129	.03	.15	-.00	-.14	.08	-.05
	Gender	129	-.01	.07	.19*	-.03	.03	.02
	Pre. Know.	129	-.00	.01	.14	-.04	.18*	-.11
	Intuition	129	-.03	-.18*	-.05	-.04	-.01	.11
	Enviro.	129	-.03	.10	-.05	-.03	-.04	-.00
	Awareness	128	.01	.05	-.03	.07	-.01	-.03
	Other	128	.04	-.04	-.07	-.22*	-.15	-.03
Non-Victim	Movement	129	-.10	.00	-.09	.06	-.09	.07
	Emot. Ap.	129	-.06	.20*	.03	-.11	.02	.02
	Phys. Ap.	129	.03	-.09	.17	-.02	-.04	-.02
	Clothing	129	-.05	-.03	.01	.14	.12	.13
	Age	129	-.03	.24**	-.09	-.06	.06	-.01
	Gender	129	.04	.07	.17	-.08	-.01	-.01
	Pre. Know.	129	.05	-.07	.17*	-.02	.10	.04
	Intuition	129	-.06	-.13	-.12	.01	-.02	.09
	Enviro.	129	-.04	-.18*	.01	-.04	-.01	.05
	Awareness	129	.04	.14	-.03	.04	.09	-.06
	Other	129	-.01	.09	-.03	-.13	.01	-.08

Note. Emotional Ap. = Emot. Appearance; Phys. Ap. = Physical Appearance; Pre. Know. = Previous Knowledge; N = Narcissism; E = Emotionality; X = Extraversion; A = Agreeableness; O = Openness.

* $p < .05$; ** $p < .01$.

Table X.3

Bivariate Correlations between Psychopathy and Accuracy in Perceiving Walkers' Personality

Personality ACC	<i>n</i>	F1	F2	IPM	CA	ELS	ASB
Dominance	127	-.02	-.02	.00	.01	-.03	.00
Assertiveness	127	-.03	-.07	-.04	-.04	-.02	-.12
Agreeableness	120	-.00	-.03	.04	.12	-.04	.01
Submissiveness	128	.05	-.00	.05	-.02	.03	-.04
Introversion	129	-.01	-.04	-.01	-.11	-.01	-.07
Boldness	129	.11	.11	.10	.07	.11	.07
Disinhibition	129	.11	.14	.05	.12	.16	.06
Neuroticism	109	-.04	-.07	.02	-.01	-.09	-.02
Conscientiousness	129	-.02	.01	-.06	-.04	.04	-.02
Openness	129	-.01	-.02	-.02	.07	.01	-.05

Note. Factor 1 = Factor 1 psychopathy; Factor 2 = Factor 2 psychopathy; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Lifestyle; ASB = Antisocial Behaviour.

Table X.4

Bivariate Correlations between Psychopathy and Bias Perceptions of Personality

Personality Bias	<i>n</i>	F1	F2	IPM	CA	ELS	ASB
Dominance	129	.22*	.20*	.17	.16	.22*	.09
Assertiveness	129	.26**	.24**	.21*	.15	.25**	.13
Agreeableness	129	.18*	.16	.13	.04	.19*	.05
Submissiveness	129	.23**	.18*	.22*	.11	.18*	.12
Introversion	129	.20*	.14	.22*	.14	.12	.13
Boldness	129	.23**	.18*	.13*	.17	.19*	.11
Disinhibition	129	.18*	.09	.19*	.18*	.13	.01
Neuroticism	126	.28**	.19*	.27**	.24**	.23*	.08
Conscientiousness	129	.23**	.19*	.19*	.11	.21*	.11
Openness	129	.16	.16	.10	.05	.18*	.07

Note. Factor 1 = Factor 1 psychopathy; Factor 2 = Factor 2 psychopathy; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Lifestyle; ASB = Antisocial Behaviour.

* $p < .05$; ** $p < .01$.

Table X.5

*Bivariate Correlations between Psychopathy and Bias Perceptions of Personality**Characteristics Across Victimization Type*

Victim Type	Personality Bias	<i>n</i>	F1	F2	IPM	CA	ELS	ASB
Violent	Dominance	124	.19*	.16	.14	.15	.20*	.04
	Assertiveness	125	.24**	.21*	.20*	.17	.22*	.11
	Agreeableness	119	.14	.09	.14	.03	.11	.04
	Submissiveness	117	.21*	.16	.23*	.11	.15	.12
	Introversion	113	.18	.08	.27**	.12	.05	.11
	Boldness	123	.14	.12	.14	.11	.11	.08
	Disinhibition	112	.17	.05	.23*	.19*	.07	.00
	Neuroticism	109	.23*	.16	.18	.17	.23*	.02
	Conscientiousness	120	.16	.13	.15	.07	.15	.07
	Openness	122	.16	.16	.10	.07	.18*	.07
Sexual	Dominance	125	.13	.13	.08	.09	.15	.06
	Assertiveness	124	.15	.16	.12	.13	.15	.12
	Agreeableness	126	.20*	.17	.16	.07	.19*	.09
	Submissiveness	116	.22*	.16	.25**	.12	.15	.13
	Introversion	113	.22*	.15	.28**	.19*	.11	.15
	Boldness	121	.16	.10	.17	.10	.11	.06
	Disinhibition	114	.09	.03	.10	.10	.05	-.01
	Neuroticism	107	.27**	.21*	.24*	.21*	.25*	.10
	Conscientiousness	122	.23*	.24**	.19*	.13	.22*	.19*
	Openness	127	.09	.11	.02	-.01	.14	.03
Non-Victim	Dominance	121	.23*	.20*	.20*	.23*	.21*	.12
	Assertiveness	125	.25**	.23*	.21*	.15	.24**	.14
	Agreeableness	122	.19*	.15	.14	.06	.20*	.03
	Submissiveness	115	.17	.14	.17	.08	.14	.10
	Introversion	114	.11	.12	.14	.09	.06	.16
	Boldness	119	.24**	.20*	.22*	.21*	.21*	.12
	Disinhibition	114	.15	.08	.15	.12	.12	-.01
	Neuroticism	109	.21*	.17	.18	.18	.19*	.09
	Conscientiousness	120	.15	.08	.16	.10	.10	.03
	Openness	121	.16	.13	.11	.08	.18	.01

Note. SRP Total = Self-Report Psychopathy Scale Total score; Factor 1 = Factor 1 psychopathy; Factor 2 = Factor 2 psychopathy; IPM = Interpersonal Manipulation; CA = Callous Affect; ELS = Erratic Lifestyle; ASB = Antisocial Behaviour.

* $p < .05$; ** $p < .01$.