

**Psychopathic Traits and Impulsivity Subtypes: An Examination of Two Complex,  
Multifaceted Constructs**

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A thesis  
submitted in partial fulfilment  
of the requirements for the degree  
Doctor of Philosophy

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BROCK UNIVERSITY  
St. Catharines, Ontario

December 2017

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## **Dedication**

To my children Hudson and Callie:

Because of you, I know what's truly important in life.

I will love you forever and always

## **Abstract**

Research has demonstrated inconsistent results regarding the relationship between impulsivity and the interpersonal and affective facets of psychopathy. Therefore, the purpose of this work was to clarify and reconcile the variable empirical findings. Generally speaking, the relationship between psychopathic traits and impulsivity was expected to differ based on the psychopathy factor and type of impulsivity under investigation.

Studies 1 and 2 examined psychopathy and impulsivity in on-line and student samples, utilizing the Self-Report Psychopathy Scale and several self-report measures of impulsivity. Study 2 included laboratory-assessed behavioural impulsivity measures. Results indicated that across studies erratic lifestyle was uniquely, positively associated with all self-reported impulsivity measures, but surprisingly unrelated to laboratory-assessed behavioural impulsivity. Interpersonal manipulation was uniquely, negatively associated with lack of premeditation and non-planning, and callous affect was uniquely, negatively associated with urgency across studies.

Studies 3 and 4 examined the psychopathy-impulsivity relationship in youth and on-line samples. Psychopathy was examined using the Antisocial Process Screening Device (youth) and the Self-Report Psychopathy Scale (adults). Impulsivity was approximated via preselected facets of the HEXACO-PI-R and the UPPS Impulsive behavior scale (Study 4 only). Results indicated that the impulsivity (youth) and erratic lifestyle (adults) subscales were uniquely associated with heightened impulsivity. Callous-unemotional traits in youth were also associated with higher levels of impulsivity. In adults, interpersonal manipulation and callous affect were largely

unrelated to impulsivity at the multivariate level (with few exceptions).

Findings demonstrated that the behavioural characteristics of psychopathy contributed to a pervasive tendency towards a variety of impulsive behaviours. This relationship was consistent across the youth, adult, on-line, and student samples. Among adults, the emotional and interpersonal psychopathy traits may be unrelated to impulsivity. Interpersonal manipulation traits may result in a slightly greater tendency to demonstrate premeditated, planned behaviour, whereas callous affect may reflect slightly lower urgency. However, callous-unemotional traits in youth do appear to be related to heightened impulsivity. Findings provide a better understanding of the psychopathy-impulsivity relationship. This is the first set of studies to utilize the HEXACO model to approximate pre-established impulsivity domains. Findings also address the issue of suppression when examining multifaceted constructs, particularly psychopathic traits.

## **Acknowledgements**

To my advisor, Dr. Angela Book: Thank you for your continued support, guidance, and encouragement throughout my academic career. You have been an inspiration since my undergraduate years, and you are a large part of the reason I chose to complete my PhD. I am truly grateful to have you as a mentor and a friend.

To my committee members, Dr. Michael Ashton and Dr. Nancy DeCourville: Thank you for your advice and feedback throughout the course of my degree. Your input and suggestions were instrumental in the successful completion of my thesis work.

To my lab family, Tabitha Jones and Nathalie Gauthier: Thank you for being there for me every step of the way, building me up, and talking me down, and for keeping me from giving up. I am certain I wouldn't have made it through this without you.

To my family: Mom, there are no words to adequately express the love and gratitude I have for you. Thank you for teaching me from the time I was young that I could be and do anything I wanted, for believing in me, supporting me, and encouraging me to persevere. So much of who I am today is because of you. Thank you to my sister for listening to me vent, and helping to ease my fears and anxieties, about school, and life in general. You're my person. Thank you to my brother, for always cheering me on and making me laugh. Dad, I know you're watching over me. I love and miss you. Finally, thank you to my husband for your unwavering love and support. You helped make it possible for me to follow my dreams and I am so lucky to have you in my corner.

They say it takes a village, and in my case, it really did. Thank you so much to my mom, mom-in-law, and sister for helping to care for my babies while I worked my way through my degree. I am so blessed to have so many amazing people in my life.

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## **List of Abbreviations**

APSD	Antisocial Process Screening Device
BAS	Behavioural activation system
BIS	Behavioural inhibition system
BIS 11	The Barratt Impulsiveness Scale: Version 11
EATQ-R sf	The Early Adolescent Temperament Questionnaire - Revised Short Form
FFM	Five Factor Model
HEXACO-PI-R	HEXACO Personality Inventory – Revised
HEXACO-PI-R-60	HEXACO Personality Inventory – Revised 60 Items
PCL-R	Psychopathy Checklist - Revised
SDQ	The Strengths and Difficulties Questionnaire
SKIP	Single Key Impulsivity Paradigm
SRP-4	Self-Report Psychopathy Scale – Version 4
TCIP	Two-Choice Impulsivity Paradigm
UPPS	UPPS Impulsive Behavior Scale

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## **General Introduction: Psychopathy and Impulsivity**

The psychopathic personality consists of a constellation of interpersonal, affective, and behavioural traits, including a tendency towards deceit and manipulation, callousness and lack of empathy, irresponsibility and need for stimulation, and poor behaviour control and antisociality (Hare, 1993; 2016). With respect to the current program of study, it is important to note that impulsivity has also been identified as a defining feature of the construct. Indeed, the vast majority of theoretical and empirical conceptualizations of psychopathy do include or address impulsivity in some capacity. However, various researchers have begun to question the widespread belief that all psychopaths are impulsive (Levenson, 1992; Poythress & Hall, 2011). These concerns are likely warranted given the empirical, and even theoretical, inconsistencies that are apparent in the literature, specifically with respect to the interpersonal and affective features of psychopathy (Anestis, Anestis, & Joiner, 2009; Morgan, Gray, & Snowden, 2011; Ray, Poythress, Weir, & Rickelm, 2009; Snowden & Gray, 2011). The prevailing ideology that psychopathy and impulsivity are two complex, multifaceted constructs further highlights the need to gain a more comprehensive understanding of the relationships among the various psychopathy factors and impulsivity domains. Thus, the general purpose of the program of research presented herein was to acknowledge, address, and potentially reconcile the differential findings in the literature. The primary intent of this chapter is to provide an extensive overview of the theoretical underpinnings of the current conceptualizations of both psychopathy and impulsivity.

### **Psychopathy**

From a historical perspective, two prominent theoretical conceptualizations of the

psychopathic personality were advanced by Hervey Cleckley and Benjamin Karpman. Both Cleckley and Karpman based their definitions of psychopathy on case studies involving prolonged observation of psychiatric/patient populations. Despite the similarities in their approach, the two researchers arrived at different conclusions regarding the role of impulsivity within the construct.

Dr. Hervey Cleckley (1941/1976) is arguably the most historically influential figure in the field of psychopathy. His depiction of the psychopathic personality included a list of 16 defining traits and characteristics, including:

- “1. Superficial charm and good intelligence
2. Absence of delusions and other signs of irrational thinking
3. Absence of ‘nervousness’ or psychoneurotic manifestations
4. Unreliability
5. Untruthfulness and insincerity
6. Lack of remorse or shame
7. Inadequately motivated antisocial behaviour
8. Poor judgment and failure to learn by experience
9. Pathologic egocentricity and incapacity for love
10. General poverty in major affective reactions
11. Specific loss of insight
12. Unresponsiveness in general interpersonal relations
13. Fantastic and uninviting behaviour with drink and sometimes without
14. Suicide rarely carried out
15. Sex life impersonal, trivial, and poorly integrated
16. Failure to follow any life plan” (p. 338-339)

It should be noted that Cleckley did not explicitly include impulsivity as a defining characteristic of the psychopathic personality. However, Cleckley (1976) did include various case studies, several of which did in fact include examples of impulsive behaviour.

In contrast to Cleckley’s view of psychopathy as a unitary construct, Benjamin Karpman (1946; 1948a/1948b) presented a conceptualization of psychopathy in which he identified two distinct subtypes, namely primary/idiopathic psychopathy and

secondary/symptomatic psychopathy. Primary psychopathy was thought to have a biological basis, whereas secondary psychopathy was considered a result of traumatic experiences. Consequently, while secondary psychopathy was thought to be accompanied by a disturbed conscience and therefore a treatable affliction, primary psychopaths were thought to lack a conscience altogether and were therefore untreatable. According to Karpman, both subtypes were characterised by an apparent lack of shame, guilt, and empathy, as well as egocentricity, unreliability, and irresponsibility. Further, both subtypes were thought to lead to an increased tendency to engage in antisocial behaviour. Of note, only secondary psychopathy was characterized by pervasive impulsiveness, while primary psychopaths were thought to be much more calculated in their approach to antisociality. In fact, Karpman has suggested that the primary psychopath's actions are often planned, purposeful, and deliberate, rather than hasty and hot-headed, as would be typical among secondary psychopaths (Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003; see Karpman, 1941, 1948b, 1955).

Following the seminal works of Cleckley and Karpman, several subsequent theoretical conceptualizations have emerged. For example, in keeping with the subtype or typology perspective, Lykken (1995) developed a theoretical model of primary and secondary psychopathy based on Reinforcement Sensitivity Theory (RST; for a review see Gray & McNaughten, 2000). In the context of Lykken's theory, the relevant aspects of the RST include the behavioural inhibition and activation systems (BIS and BAS). The BIS is responsive to punishment and aversive stimuli and is thought to reflect individual differences in anxiety. In contrast, the BAS responds to reward or appetitive stimuli and is indicative of individual differences in impulsivity (Gray & McNaughten, 2000;

Lykken, 1995). According to Lykken's (1995) model, primary psychopathy is characterized by a normal functioning BAS and a weak BIS, whereas an overactive BAS and normal functioning BIS are considered to be characteristic of secondary psychopaths. As such, primary psychopathy was thought to reflect low anxiety and relatively "average" levels of impulsivity, a perspective that is generally known as the low fear hypothesis. In contrast, secondary psychopathy involves "average" levels of anxiety and heightened impulsivity. Thus, as was originally proposed by Karpman (1941), Lykken also implied that impulsivity levels may help to distinguish between primary and secondary psychopaths.

Based on existing theoretical conceptualizations (namely the original depiction presented by Cleckley) as well as extensive empirical work with incarcerated offenders, Hare developed what has become known as the gold standard in psychopathy assessment; the Psychopathy Checklist – Revised (PCL-R; Hare, 1991; Hare, 1993; Hare & Neumann, 2008). This measure is based on a conceptualization of psychopathy as a broad construct that is made up of two higher order factors and four lower order factors or facets. More specifically, Factor 1 represents the emotional/interpersonal features of psychopathy which can be further divided into interpersonal and affective traits. The interpersonal traits include superficial charm, grandiosity, pathological lying, and conning and manipulative behaviour, where the affective traits consist of lack of empathy, guilt and remorse, callousness, and failure to accept responsibility. Factor 2 represents the socially deviant aspects of psychopathy and includes lifestyle and antisocial characteristics. Lifestyle characteristics include irresponsibility, lack of realistic life goals, stimulation seeking, and impulsivity. Finally, the antisocial characteristics



involve poor behaviour control, early behaviour problems, juvenile delinquency, and criminal versatility.

The PCL-R was developed for use with adult offender populations and includes a semi-structured interview as well as a thorough review of institutional files. As the PCL-R is not a viable assessment tool outside of institutionalized settings, several alternative measures been developed for use with other populations of interest, including the Psychopathy Check List: Youth Version (Forth, Kosson, & Hare, 2003), the Psychopathy Checklist: Screening Version (Hart, Cox, & Hare, 1995); the Self-Report Psychopathy Scale – Version 4 (SRP – 4; Paulhus, Neumann, & Hare, 2016), and the Anti-Social Process Screening Device (Frick & Hare, 2001). Extensive work has been conducted validating the factors structure of these measures (Hare & Neumann, 2008; Mahmut, Menictas, Stevenson, & Homewood, 2011; Neal & Sellbom, 2012). Most important with respect to the current work, impulsivity is included as a defining characteristic in the original PCL-R, as well as all other derivatives of the measure. Of note, although the current work relied on the aforementioned theoretical conceptualizations and related measurement tools, there are a number of other theories and measures that are also widely applied in the field.

The current work was based on a more recent theoretical perspective that also addresses the role of impulsivity within the construct of psychopathy. The dual-pathway model developed by Fowles and Dindo (2006/2009) posits that Factor 1 and 2 psychopathy traits follow distinct etiological and developmental pathways. Similar to Lykken's (1995) perspective on primary psychopathy, the dual-pathway model suggests that Factor 1 traits (callous affect and interpersonal manipulation) are associated with low

levels of fear, anxiety, and depression, and high levels of social dominance, achievement orientation, and thrill-seeking. One can imagine that individuals lacking fear and anxiety may be more inclined to engage in risky and/or dangerous activities. Although such behaviour may indeed be perceived as impulsive, this model suggests that this behaviour is perpetrated after consideration of, and in spite of, the possible negative outcomes. On the other hand, Factor 2 characteristics (erratic lifestyle and antisocial behaviour) reflect information processing deficits leading to problems with regulatory control. This may result in impulsive behaviour as a function of poor attentional allocation and a general lack of concern for, or understanding of, potential detrimental consequences. Although both trajectories may culminate in what appears to be impulsive behaviour, only the Factor 2 trajectory is likely to be associated with traditional impulsivity conceptualizations.

Of note, the dual-pathway model does suggest that the distinct Factor 1 and Factor 2 trajectories begin in childhood. Based on research on attention deficit hyperactivity disorder (ADHD), conduct disorder (CD)/oppositional defiant disorder (ODD), and, callous-unemotional traits (CU traits), Frick and Morris (2004) discuss similar pathways at an earlier developmental stage. Similar to the Factor 1 trajectory in the dual-pathway model, the authors suggested that CU traits accompanied by CD/ODD reflect a lack of conscience, low fear, and a greater tendency to exhibit instrumental aggression. Comparable to the Factor 2 pathway, CD/ODD and ADHD symptoms without CU traits were considered to reflect difficulties with emotional regulation (Fowles & Dindo, 2006/2009; Frick & Morris, 2004). The presence of ADHD symptoms in the second pathway indicates that impulsivity is most relevant within this trajectory. Thus, at least

from this perspective, the notion that impulsivity may be situated within the social deviance factor of psychopathy (Factor 2) appears to extend to adolescent populations. The theoretical and measurement models discussed above highlight the role that impulsivity plays within the psychopathic construct. However, the multifaceted nature of impulsivity also contributes to the complexity of the psychopathy-impulsivity relationship, and thus further discussion of the construct of impulsivity is imperative.

### **Impulsivity**

Impulsivity can be broadly defined as an inclination towards unplanned, hasty responses, with little regard for possible consequences (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001; Stanford et al., 2009). However, as previously mentioned, empirical research indicates that impulsivity is a multifaceted construct consisting of several different domains. In fact, this has been the prevailing perspective in the literature for over half a century. Moreover, several researchers have sought to situate impulsivity within broader models of personality. For example, Eysenck (1993a) suggested that in order to obtain a complete understanding of impulsivity, one must consider the construct at the level of sub-traits, traits, and dimensions. In other words, impulsivity was viewed as a trait that could be further divided into sub-traits, but also situated within the broader personality dimensions of extraversion, neuroticism, and psychoticism. Eysenck and Eysenck (1977) originally suggested that trait impulsivity consisted of four sub-traits including narrow impulsiveness, risk taking, non-planning, and liveliness. However, this perspective was later revised by removing the liveliness sub-trait. This resulted in the development of a more specific model that included impulsiveness (which was made up of sub-traits akin to narrow impulsiveness and non-planning) and venturesomeness

(which involved sub-traits that represented risk-taking and sensation-seeking behaviours; Eysenck, 1993b). Further research suggested that trait impulsiveness may be considered more pathological and was mainly associated with elevated levels of psychoticism and neuroticism. Conversely, venturesomeness was primarily associated with high levels of extraversion. This pattern of associations was observed in both youth and adult populations. The authors note that although laypeople may view both impulsiveness and venturesomeness as “impulsivity”, the higher order traits are actually predominantly independent.

Around the same time as Eysenck and Eysenck (1977, 1993a, 1993b) were developing their theoretical depiction of impulsivity, Gray (1987) was also seeking to provide a more complete understanding of the construct. Working from a more biological perspective, Gray introduced the concepts of behavioural inhibition and activation as the underlying mechanisms of personality and thus the subsequent expression of specific traits such as anxiety and impulsivity. As previously mentioned, Gray (1987) suggested that the behavioural inhibition system is sensitive to punishment cues, and the degree of sensitivity is indicative of individual differences in anxiety. Conversely, the behavioural activation system was thought to be responsive to rewarding stimuli and reflects individual differences in impulsivity. Gray (1987) also worked to situate his approach within Eysenck and Eysenck’s broader model of personality by suggesting a rotation of the neuroticism and introversion-extroversion dimensions of personality. This perspective suggests that neuroticism and extroversion are a reflection of the balance between one’s degree of sensitivity to reward and punishment. Impulsivity then is thought to reflect a

high level of susceptibility to reward cues and appears to be associated with high levels of neuroticism and extroversion (Gray, 1987; Gray & McNaughten, 2000).

Whiteside and Lynam (2001) have developed a multidimensional model of impulsivity based on the more recently conceptualized Five Factor Model of personality, which includes the personality dimensions of openness, conscientiousness, extraversion, agreeableness, and neuroticism (FFM; McCrae & Costa, 1992). Utilizing several established measures of general personality and impulsivity, the authors developed a model of impulsivity that yielded four factors including urgency, (lack of) premeditation, (lack of) perseverance, and sensation seeking (the UPPS). Each factor is associated with a specific facet of the FFM model and is thought to represent a discrete psychological process that leads to observable impulsive behaviour. Urgency is defined as a desire to escape or avoid negative affect and is associated with the impulsivity facet of Neuroticism. Lack of premeditation reflects the extent to which one considers behavioural consequences and is related to the (low) deliberation facet of Conscientiousness. Lack of perseverance represents an individual ability (or lack thereof) to avoid distraction and remain engaged in challenging or boring tasks and is associated with the self-discipline facet of Conscientiousness. Lastly, sensation seeking is defined as one's tendency to engage in novel, exciting, and possibly dangerous ventures. This model of impulsivity has been extensively studied and the measure has been found to be valid and reliable in several different populations (Keye, Wilhelm, Oberauer, 2009; Miller, Flory, Lynam, & Leukefeld, 2003; Verdejo-García, Lozano, Moya, Alcázar, & Pérez-García, 2010; Whiteside, Lynam, Miller, & Reynolds, 2005).

Another multifaceted model of impulsivity was conceptualized by Ernest S. Barratt and later refined by Patton, Stanford, and Barratt (1995). The model was driven by Barratt's attempt to differentiate impulsivity from anxiety, risk taking and sensation seeking, and by his attempt to identify the specific sub-traits of impulsivity as he perceived impulsivity to be a multidimensional construct (Stanford et al., 2009). This three-factor model includes attentional, motor, and non-planning impulsivity sub-traits. Attentional impulsivity reflects one's ability to concentrate and remain focused. Motor impulsivity is defined as an individual's propensity towards quick responses that are lacking in forethought. Finally, non-planning involves a "present" orientation, or a general lack of future planning or forethought. The measure designed to assess these impulsivity sub-traits, the Barratt Impulsiveness Scale, is currently in its 11<sup>th</sup> version has been utilized in the impulsivity literature for over 50 years and had been translated into at least 11 languages (BIS 11; Patton, Stanford, & Barratt; Stanford et al., 2009).

In addition to self-report personality based measures of impulsivity, researchers have also devised several measures designed to examine impulsivity from direct observations of behaviour in laboratory tasks. For example, Mathias, Marsh-Richard, and Dougherty (2008) have developed a model of behavioural impulsivity that includes three aspects of behavioural impulsivity. Response initiation represents an individual's tendency to act without thinking or to behave in a way that is not consistent with situational cues. Response inhibition is defined as the extent to which one is able to stop a behaviour that has already been initiated. Finally, consequence sensitivity centers on a person's ability to delay reward. Research generally suggests that self-report and laboratory-assessed behavioural measures of impulsivity are not highly correlated

(Morgan et al., 2011; Swann, Bjork, Moeller, & Daugherty, 2002) and as such it has been suggested that these two approaches assess different forms of impulsivity (Dougherty, Mathias, Marsh, & Jagar, 2005). Self-report measures generally tap into more stable, trait based forms of impulsivity, whereas laboratory behavioural measures are designed to examine situation specific state impulsivity.

### **Psychopathy and Impulsivity: Empirical Findings**

Research regarding the relationship between the psychopathy factors and the impulsivity domains has demonstrated inconsistent results. The association between social deviance psychopathy traits (Factor 2/lifestyle/antisocial characteristics) and the various domains or sub-traits of impulsivity is relatively consistent. However, empirical investigations have demonstrated conflicting findings regarding the relationship between the affective/interpersonal psychopathy traits (Factor 1/callous affect/interpersonal manipulation) and impulsivity. These differential findings appear to be a reflection of what measures of impulsivity were used and what types of analyses were conducted.

As noted, research has consistently demonstrated a positive relationship between impulsivity and the more behavioural (social deviance-related) traits of psychopathy, regardless of the measures that are used and the populations that are under investigation. For example, Anestis, Anestis, and Joiner (2009) examined psychopathic traits and impulsivity, using the UPPS in undergraduate students and found that the social deviance psychopathy traits were positively associated with all impulsivity sub-traits at the bivariate level. Ray and colleagues (2009) reported similar results in an offender sample. Comparable results have been reported when using the BIS 11 to assess impulsivity. More specifically, positive associations have been found between the erratic

lifestyle/impulsive/antisocial features of psychopathy and total impulsivity, as well as the individual impulsivity sub-traits measured by the BIS 11 in community, undergraduate and offender samples (Fields et al., 2015; Hunt, Hopko, Bare, Lejuez, & Robinson, 2015; Morgan et al., 2011; Snowden & Gray, 2011). Research examining impulsivity as assessed via indices of behavioural activation has also indicated positive associations with Factor 2 psychopathy traits, specifically among offender populations (Newman, MacCoon, Vaughn, & Sadeh, 2005; Wallace, Malterer, & Newman, 2009). Of note, research has also demonstrated positive relationships among the social deviance/lifestyle//Factor 2 psychopathy traits and laboratory-based behavioural measures of impulsivity. More specifically, these aspects of psychopathy have been found to be associated with poor response inhibition as measured by a Go/No-Go task in both adult and adolescent offenders (Feilhauer, Cima, Korebrits, & Kunert, 2012; Weidacker, Snowden, Boy, & Johnston, 2017a).

Research examining the relations of impulsivity with the affective and interpersonal features of psychopathy is much more inconsistent. As noted, these differential findings appear to be dependent on what impulsivity measures were used and how the data was analyzed. For example, results of bivariate analyses using the BIS 11 (Patton et al., 1995) has demonstrated that the affective and interpersonal psychopathy features are unrelated to total impulsivity as well as the impulsivity sub-traits in community, undergraduate, and offender populations (Fields et al., 2015; Hunt et al., 2015; Morgan et al., 2011; Snowden & Gray, 2011). Moreover, multivariate analyses have even revealed a negative association between Factor 1 psychopathy traits and non-planning impulsivity in an offender population (Snowden & Gray, 2011).



In contrast, research employing the UPPS impulsive behaviour scale (Whiteside & Lynam, 2001) has shown a different pattern of results. For example, in both an undergraduate and an offender sample, the affective/interpersonal psychopathy traits were found to be positively associated with sensation seeking and lack of premeditation in bivariate analyses (Anestis et al., 2009; Ray et al., 2009). Multivariate analyses with offenders painted a slightly different picture, demonstrating a positive relationship between the interpersonal/affective psychopathy traits and sensation seeking, and a negative association between these traits and lack of perseverance. Overall, it appears that the differential findings in the literature are more heavily influenced by the specific impulsivity measures that are used, as opposed to the populations that are under investigations (i.e., clinical vs. subclinical populations).

Empirical work examining the relationship of the interpersonal and affective psychopathy traits with laboratory-based behavioural indices of impulsivity demonstrates similar patterns in that these traits have been found to be unrelated and/or negatively associated with response inhibition assessed via a Go/No-Go task in both adolescent and adult offenders. Of note, in the adolescent offenders it was the affective features that were found to be negatively associated with response inhibition (Feilhauer et al., 2012), whereas the interpersonal features were negatively related to response inhibition among adult offenders (Weidacker et al., 2017a). It is possible that this pattern of results may be specific to offender populations, as similar research conducted on undergraduate students did not find elevated levels of response inhibition to be associated with the affective and interpersonal psychopathy traits (Weidacker, Whiteford, Boy, & Johnston, 2017b).

### **General Purpose and Goals of Dissertation**

This chapter provided a general background and overview of the current literature concerning psychopathic traits and impulsive behaviour. As evidenced above, both constructs are multifaceted in nature consisting of multiple factors or sub-traits. It is also clear that at least some theoretical conceptualizations of the psychopathic personality indicate that impulsivity should be predominantly associated with the socially deviant/lifestyle aspects of psychopathy, rather than the affective/interpersonal features. Although some empirical research supports this perspective, there does appear to be some inconsistency in the literature, specifically with respect to the relationship of impulsivity with the interpersonal/affective psychopathy features.

It is my contention that the differential empirical findings are a function of the impulsivity measures that were used and the statistical analyses that the conclusions were based on. More specifically, I suggest that general conclusions may differ based on findings obtained with the UPPS, BIS 11, and laboratory-assessed behavioural measures of impulsivity, as well as based on results of bivariate and multivariate analyses. The program of research presented in the following chapters was primarily aimed at assessing whether a consistent pattern of relationships between the factors of psychopathy and the sub-traits of impulsivity would emerge across multiple populations, when the same measures and statistical analyses were used. Thus, all four studies included in chapters two and three of this dissertation were designed to address this issue. As indicated above, the construct of impulsivity has often been situated within broader models of general personality. However, this approach has not been extended to incorporate the most recent model of personality, namely, the HEXACO model (Ashton & Lee, 2009; Lee & Ashton, 2004). As such, a secondary aim of Studies 3 and 4 (Chapter 3) was to assess the extent

to which specific facets of the HEXACO-PI-R could be used to approximate already established measures of impulsivity. The final chapter will highlight the main findings of the current body of research, provide general conclusions, and make specific recommendations concerning future research in the field.

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## **Studies 1 and 2: A Multi-sample Examination of Psychopathic Traits and Impulsivity<sup>1</sup>**

The construct of psychopathy has been associated with an array of negative outcomes, including increased risk taking, substance abuse, aggression, and offending behaviour (Book et al., 2016; Dean et al., 2013; Hosker-Field, Molnar, & Book, 2016; Kastner & Sellbom, 2012; Neumann & Hare, 2008; Swogger, Walsh, Lejuez, & Kosson, 2010; Walsh, Allen, & Kosson, 2007). As the detrimental outcomes associated with psychopathy are well established in the literature, the question becomes, *why* do these individuals engage in such deviant and potentially dangerous activities. Is it due to a lack of understanding or consideration for the potential consequences? Or is it a general lack of concern and a willingness to engage despite awareness of possible negative outcomes? To address this issue, one might consider the role of impulsivity. Impulsivity has long been considered a prominent feature of the psychopathic personality and has also been linked to a number of negative outcomes, including those listed above (Charnigo, et al., 2013; Hoyle, Fejfar, & Miller, 2000; Leeman, Hoff, Krishnan-Sarin, Patock-Petham, & Potenza, 2014; Magid, MacLean, & Colder, 2007; Maneiro, Gómez-Fraguela, Cutrín, & Romero, 2016; White et al., 1994). Given the possible role that impulsivity may play in promoting antisociality, it is imperative to obtain an enhanced understanding of the association between psychopathic traits and impulsive behaviour. This issue becomes even more prominent given the prevailing perspectives that both psychopathy and

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<sup>1</sup>The results of this study were presented at the 7<sup>th</sup> biennial meeting of the Society for the Scientific Study of Psychopathy in Antwerp, Belgium (2017)

impulsivity are multi-faceted constructs. Indeed, several researchers have focused their efforts on examining the psychopathy-impulsivity relationship (Morgan, Gray, & Snowden, 2011; Ray, Poythress, Weir, & Rickelm, 2009). Some have questioned the oversimplified belief that all psychopaths are impulsive (Levenson, 1992; Poythress & Hall, 2011). It appears that the field has yet to reach a consensus on this issue. As such, the aim of the current work was to clarify and reconcile differential findings in the literature. To this end, I sought to examine psychopathic traits and impulsivity across populations, using several established self-report and laboratory-based behavioural indices of impulsivity.

One widely accepted conceptualization of psychopathy (operationalized via the Self-Report Psychopathy Scale: 4<sup>th</sup> Edition in the current work; Paulhus, Neumann, & Hare, 2016) suggests that the construct includes behavioural, affective and interpersonal characteristics that are represented by two overarching factors (Hare, 1993; Hare & Neumann, 2008) and/or four subordinate facets, including interpersonal and affective traits, and lifestyle and antisocial characteristics. Interpersonal traits (SRP 4 interpersonal manipulation subscale) include grandiosity, deceitfulness, conning, and superficial charm. Affective traits (SRP 4 callous affect subscale) involve lack of empathy, guilt and remorse, and shallowness. The lifestyle facet (SRP 4 erratic lifestyle subscale) represents traits such as irresponsibility, stimulation seeking, having a lack of realistic goals, and impulsivity. Finally, antisocial characteristics (SRP 4 antisocial behaviour subscale) include early behaviour problems, juvenile delinquency, and poor behaviour control. The four-factor model of psychopathy is well supported in the literature (Hare & Neumann, 2008/2009; Mahmut, Menictas, Stevenson, & Homewood, 2011; Neal & Sellbom, 2012).

Broadly defined, impulsivity is a propensity towards hasty reactions that lack forethought or planning, accompanied by a general disregard for potential consequences (Moeller, Barratt, Dougherty, Schmitz, & Swann, 2001; Stanford et al., 2009). Several researchers have suggested that, like psychopathy, impulsivity is also a multifaceted construct. Two of the most widely recognized models of impulsivity were proposed by Whiteside and Lynam (2001), and Patton, Stanford, and Barratt (1995). Whiteside and Lynam's (2001) model of impulsivity includes four distinct domains. The Urgency domain reflects behaviours carried out in an effort to escape negative emotion. The (lack of) premeditation domain represents whether or not an individual considers specific behavioural consequences. The (lack of) perseverance domain examines an individual's likelihood of taking part in activities viewed as boring or difficult. Last, sensation seeking denotes one's tendency to enjoy engagement in novel, yet exciting (and possibly dangerous) activities. The validity and reliability of this model and measure has been supported across various populations (Keye, Wilhelm, & Oberauer, 2009; Miller, Flory, Lynam, & Leukefeld, 2003; Verdejo-García, Lozano, Moya, Alcázar, & Pérez-García, 2010; Whiteside, Lynam, Miller, & Reynolds, 2005). In contrast, Patton and colleagues (1995) suggested that impulsivity should be viewed as a three-factor construct consisting of attentional, motor, and non-planning impulsivity. Attentional impulsivity represents one's ability to remain focused and avoid distraction. Motor impulsivity is one's propensity to respond quickly without forethought. Finally, non-planning is one's tendency to be "present" oriented and lack of planning or regard for the future (Patton, Stanford, & Barratt, 1995).

Laboratory-based behavioural measures of impulsivity have also been developed to examine state or situationally based forms of impulsive responding. For example, Mathias, Marsh-Richard, and Dougherty (2008) proposed a behavioural impulsivity model that encompasses three types of impulsive behaviour, including response initiation (acting without thinking or displaying a response that is discordant with situational cues); response inhibition (inability to stop a behaviour that has already been initiated); and consequence sensitivity (ability to delay reward). Research has often indicated that self-report and laboratory-assessed behavioural indices of impulsivity are not highly correlated (Morgan et al., 2011; Swann, Bjork, Moeller, & Daugherty, 2002). Accordingly, it has been suggested that these two approaches tap into different types of impulsivity (Dougherty, Mathias, Marsh, & Jagar, 2005), and thus it is important to include both when considering the association between psychopathy and impulsivity.

The notion that impulsivity is an integral aspect of psychopathy is well supported in the literature. Research has consistently demonstrated that Factor 2 related traits, which include lifestyle and antisocial characteristics, are positively associated with impulsivity across various populations and measures. For example, work with community, undergraduate, and offender samples has shown positive associations between Factor 2 traits and all types and domains of self-reported impulsivity (Anestis, Anestis & Joiner, 2009; Morgan, Gray, & Snowden, 2011; Ray, Poythress, Weir, & Rickelm, 2009; Snowden & Gray, 2011). More specifically, Factor 2 traits have been associated with a general lack of planning, premeditation, and perseverance, an inability to focus or avoid distraction, and a tendency to demonstrate sensation-seeking behaviour. It is unsurprising that Factor 2 traits are associated with measures of impulsivity given that impulsivity is a

defining characteristic of Factor 2, specifically the erratic lifestyle facet. Accordingly, psychopathy measures generally include items that assess impulsivity. Notably, researchers tend to overlook this measurement overlap when examining these two constructs. However, Ray and colleagues (2009) did account for this confound and reported that the associations between Factor 2 psychopathy traits and all types of impulsivity held even after removing impulsivity related items from the psychopathy measure.

The empirical literature regarding the relationship between Factor 1 psychopathy traits, which include callous affect and interpersonal manipulation, and impulsivity is less consistent. For example, research with both community participants (Morgan et al., 2011) and offender samples (Edens & McDermott, 2010; Fields et al., 2015; Snowden & Gray, 2011) has demonstrated that the emotional and interpersonal traits of psychopathy are unrelated to impulsivity. In contrast, Anestis and colleagues (2009) found that Factor 1 traits were associated with lack of premeditation and sensation seeking among university students. A similar pattern was reported by Ray et al. (2009) in an offender sample. Of note, multivariate analyses (approaches accounting for shared variance) with offender samples have revealed a different pattern of associations whereby Factor 1 traits have been found to be negatively related to some forms of impulsivity. More specifically, Factor 1 traits were related to an increased willingness to engage and remain engaged in challenging activities and to take part in future planning (Edens & McDermott, 2010; Ray et al., 2009; Snowden & Gray, 2011). These empirical inconsistencies appear to be contingent on what measures of impulsivity were used, whether bivariate or multivariate analyses were employed, and whether the authors accounted for the shared variance

among the psychopathy factors, all issues that were addressed to some respect in the current work. The empirical research regarding the associations between psychopathy and laboratory-based behavioural measures of impulsivity is somewhat limited and results tend to be inconsistent, however there is some evidence demonstrating that Factors 1 and 2 are differentially related to response inhibition as assessed via a GoNoGo task (Feilhauer, Cima, Korebrits, & Kunert, 2012; Morgan, Grey, & Snowden, 2011; Weidacker, Snowden, Boy, & Johnston, 2017).

Various theoretical perspectives can be highlighted in an effort to explain the differential associations of Factor 1 (interpersonal and affective traits) and Factor 2 (lifestyle and antisocial characteristics) psychopathy traits with impulsivity. For example, in the mid-twentieth century Benjamin Karpman (1946; 1948a/1948b) addressed the role of impulsivity in his conceptualization of psychopathy as consisting of two distinct subtypes, namely primary and secondary. Karpman identified impulsivity as a distinguishing feature of the construct such that only secondary psychopaths were thought to be impulsive, whereas in comparison, primary psychopaths were considered to be calm and calculated. More recently, Fowles and Dindo (2006/2009) have offered a dual-pathway model that may be useful in explaining the link between impulsivity and psychopathy. This perspective suggests that there are two distinct etiological pathways that lead to the development of Factor 1 and Factor 2 traits. Factor 1 traits are thought to reflect low anticipatory fear and lack of anxiety, which may indeed lead to engagement in dangerous or risky behaviours. Although such behaviour may appear impulsive, in this context these behaviours are not the result of a lack *consideration of* potential consequences, but rather a willingness to engage despite awareness of the potential

negative outcomes. Conversely, Factor 2 traits are thought to reflect problems with regulatory dyscontrol resulting from information processing deficits. This suggests that impulsive behaviour may be the result of an inability to attend to and process peripheral situational cues, and a general lack of comprehension of and regard for consequences. This theoretical perspective suggests that while Factor 2 traits are likely to be associated with impulsive behaviour across situations and contexts, Factor 1 traits are unlikely to be associated with traditional conceptualizations of impulsivity.

Careful examination of the traits that are included in each of the four facets of the four-factor model of psychopathy may help to provide an even clearer understanding of the psychopathy-impulsivity relationship. Consistent with both theory (i.e., dual pathway model; Fowles & Dindo, 2006/2009) and research (Anestis et al., 2009; Morgan et al., 2011; Ray et al., 2009; Snowden & Gray, 2011) Factor 2 traits are indeed likely to be associated with all types of impulsivity. However, given that impulsivity is included in the erratic lifestyle facet, it is likely that this facet will be most influential in the psychopathy-impulsivity relationship. Irrespective of this, the remaining traits such as stimulation seeking, irresponsibility, and lack of realistic goals also suggest an impulsive orientation. Also consistent with theory and some previous research (e.g., Edens & McDermott, 2010; Fields et al., 2015; Morgan et al., 2011; Ray et al., 2009; Snowden & Gray, 2011) it is likely that Factor 1 traits may indeed be unrelated or even negatively associated with certain types or domains of impulsivity. More specifically, the traits included in the interpersonal manipulation facet, including deceitfulness, conning and manipulation, glibness and superficial charm, suggest that individuals who exhibit these characteristics may actually demonstrate lower levels of impulsivity, specifically with

respect to planned and premeditated behaviours. In addition, given that callous affect is characterized by a lack of guilt, empathy, and remorse, as well as shallow and callous affect, it seems unlikely that this facet would be associated with impulsive behaviour driven by a desire to escape or avoid negative emotion (i.e., urgency). Indeed the opposite would appear to be even more likely.

In an effort to clarify the psychopathy-impulsivity association, the current work assessed psychopathy and impulsivity across multiple samples (students and community members) using several self-report and laboratory-based behavioural measures of impulsivity, analysed at both the bivariate and multivariate levels. This approach addressed the consistency of the association across populations, as well as whether the existing empirical inconsistencies are a function of the impulsivity measures used, and/or the type of analyses employed. The current work also adds to the existing literature by utilizing the four-factor model of psychopathy, providing a more nuanced understanding of the psychopathy-impulsivity relationship. Based on the previous empirical and theoretical work on both psychopathy and impulsivity, and as well as examination of the specific traits that are subsumed under each of the four psychopathy facets, several hypotheses were examined. In Studies 1 and 2, it was hypothesized that after accounting for interpersonal manipulation, callous affect, and antisocial behaviour, erratic lifestyle would be positively associated with all forms of self-reported impulsivity in both bivariate and multivariate analyses (see Figures 1.1 and 1.2). It was also expected that the associations found in the bivariate analyses would hold even after removing the impulsivity items from the psychopathy measure. It was also expected that after accounting for callous affect, erratic lifestyle, and antisocial behaviour, interpersonal



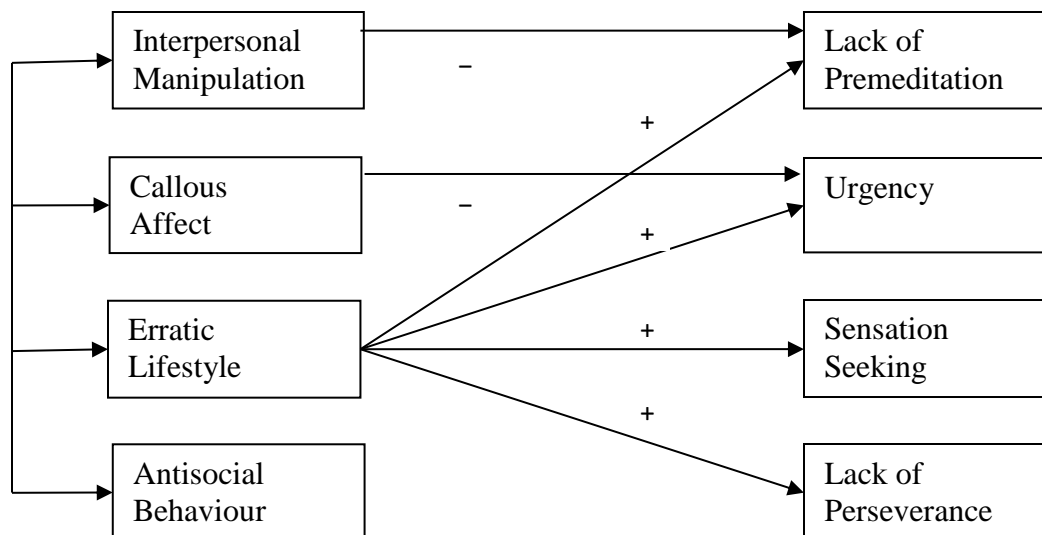


Figure 1.1. Study 1 and 2 hypothesized relationships of the psychopathy facets with the impulsivity subscales of the UPPS

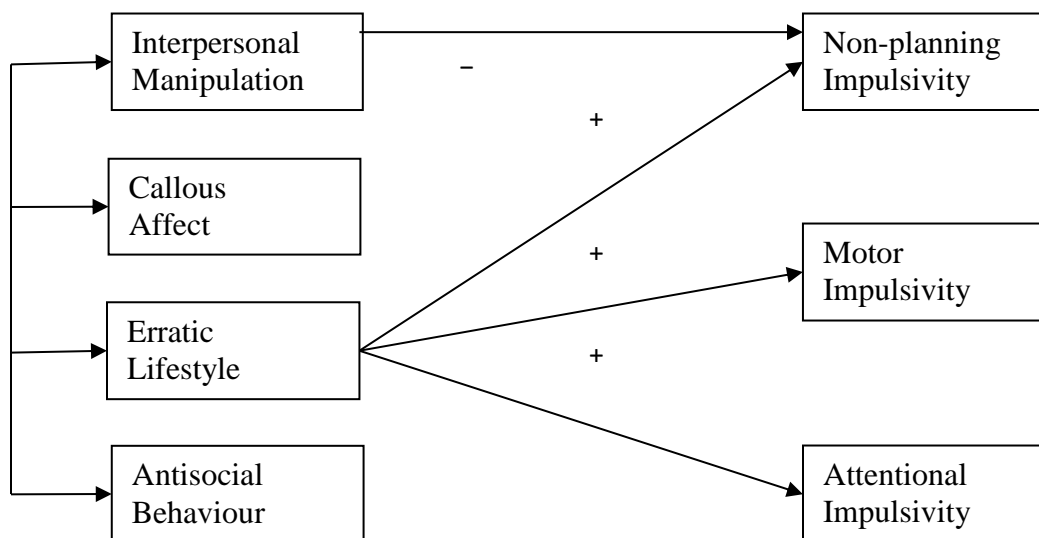
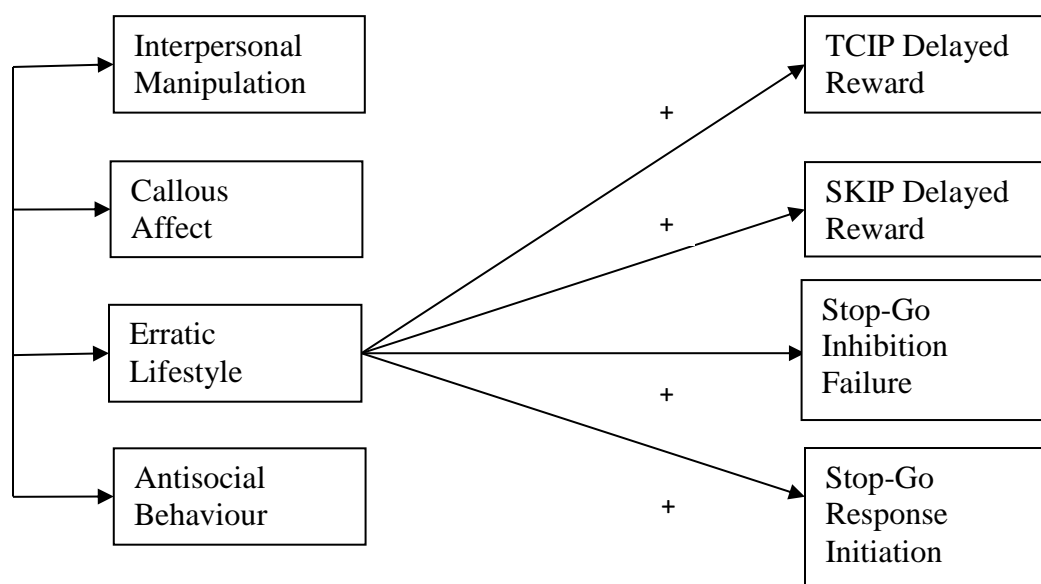


Figure 1.2. Study 1 and 2 hypothesized relationships of the psychopathy facets with the BIS 11 impulsivity subscales

manipulation specifically would be negatively associated with (lack of) premeditation, and non-planning (Figure 1.1 and 1.2). Further, after accounting for interpersonal manipulation, erratic lifestyle, and antisocial behaviour, callous affect specifically was expected to be negatively associated with urgency (Figure 1.1). In addition, as laboratory-based behavioural measures of impulsivity were incorporated, it was also expected that after accounting for the other 3 psychopathy factors, that, erratic lifestyle would be positively associated with all laboratory-based measures of behavioural impulsivity (Figure 1.3). Again, bivariate results were expected to hold even after removing the impulsivity items from the psychopathy measure.



*Figure 1.3.* Study 2 hypothesized relationship of the psychopathy facets with the laboratory-assessed behavioural measures of impulsivity

## Study 1

### Method

**Participants.** The final sample consisted of 294 participants including 119 men (40.5 %) and 173 woman (58.8%; 2 participants did not report sex). Participant age ranged from 18 to 82 ( $M = 34.03$ ,  $SD = 12.19$ ) and the sample was predominantly Caucasian (86.7%,  $n = 255$ ). Most participants were Canadian (36.4%,  $n = 107$ ) or American (55.1%,  $n = 162$ ) and reported having started (32.7%,  $n = 96$ ) or completed (42.9%,  $n = 126$ ) post-secondary education.

**Procedure.** An online survey platform called Survey monkey was used to compile consent forms, questionnaires, and debriefing forms. Study data was collected online utilizing Amazon's Mechanical Turk, which is an online crowdsourcing platform that allows researchers to gather data quickly and efficiently from a large pool of participants (workers) who are paid for their time (see Buhrmester, Kwang, & Gosling, 2011 for a more detailed overview). Participants recruited via MTURK were paid \$1.50. Data was also collected through social networking sites such as Facebook and Twitter.

### Measures.

#### *Psychopathy.*

*Self-Report Psychopathy Scale-Fourth Edition (SRP-4; Paulhus, Neumann, & Hare, 2016).* The SRP-4 was used to examine sub-clinical psychopathy. The measure includes 64 items that can be subdivided into two 32-item subscales which assess the Emotional/Interpersonal (Factor 1) and Social Deviance (Factor 2) traits of psychopathy. The items can be further divided into four 16-item subscales including interpersonal manipulation, callous affect, erratic lifestyle, and antisocial behaviour. Participants were

asked to respond to each item on a 5-point likert scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*) and subscale scores were computed for all participants who responded to at least 80% of the items. Reliabilities for total, Factor 1, and Factor 2 psychopathy scores, were  $\alpha = .95$ ,  $\alpha = .92$ , and  $\alpha = .90$  respectively. Alpha coefficients for the interpersonal manipulation, callous affect, erratic lifestyle, and antisocial behaviour psychopathy facets were  $\alpha = .89$ ,  $\alpha = .84$ ,  $\alpha = .87$ , and  $\alpha = .85$  respectively.

### ***Impulsivity.***

*UPPS Impulsive Behavior Scale (UPPS; Whiteside & Lynam, 2001).* The UPPS impulsive behavior scale was utilized to examine impulsivity. The scale includes 45 items and contains four subscales designed to assess urgency (12 items), (lack of) premeditation (11 items), (lack of) perseverance (10 items), and sensation seeking (12 items). Responses to each item were provided on a likert scale ranging from 1 (*agree strongly*) to 4 (*disagree strongly*). All necessary items were reverse scored such that higher scores represent greater impulsivity. Reliabilities were,  $\alpha = .91$ ,  $\alpha = .90$ ,  $\alpha = .89$ , and  $\alpha = .90$  for the urgency, (lack of) premeditation, (lack of) perseverance, and sensation seeking subscales, respectively.

*The Barratt Impulsiveness Scale: Version 11 (BIS 11; Patton, Stanford & Barratt, 1995).* The BIS 11 was also used to examine self-reported impulsivity. The measure consists of 30 items that can be subdivided into 3 higher-order factors which include attentional (8 items), motor (11 items) and non-planning (11 items). Participants responded to each item on a 4-point likert scale ranging from 1 (*rarely/never*) to 4 (*almost always/always*). All reverse-keyed items were scored such that higher scores

indicate higher levels of impulsivity. Reliabilities for the attentional, motor, and non-planning subscales were  $\alpha = .76$ ,  $\alpha = .69$ , and  $\alpha = .78$ .

**Data Analysis.** Raw data was examined for univariate outliers and values falling *more* than 3 SD above/below the mean were Winsorized (Tukey, 1977) by replacing the extreme values with ones equal to 3 SD from the mean. Data was then analysed using Amos v. 21. The associations among psychopathy and impulsivity were examined via path analysis and separate analyses were carried out for each impulsivity measure. In order to test the most parsimonious model, the a priori hypotheses derived from theoretical conceptualizations were examined. The impulsivity domains (in each measure) were simultaneously regressed onto the predicted psychopathy factors allowing for the estimation of the direct effects of the psychopathy factors on the impulsivity domains and for examination of fit indices. If path model results indicated poor fit, modification indices were examined and additional paths were added in order to obtain good fit. In this case results of both the predicted and adjusted models are presented. Full information maximum likelihood estimation was used to estimate the model parameters.

## **Results**

**Correlations among all model variables.** Means, standard deviations, and bivariate correlations are present in Table 1.1. Results indicated moderate to strong positive correlations among all study variables. Of note, the pattern of associations between erratic lifestyle traits and impulsivity remained unchanged even after removing the erratic lifestyle items believed to be directly assessing impulsivity.

### **Relationships of Psychopathy Facets with Impulsivity Domains.**

**Psychopathy and UPPS.** Results of the predicted path model are presented in

Table 1.2. Examination of global fit indices (RMSEA and CFI) indicated that the model is a relatively good fit to the data, RMSEA = .067, 90% CI [.031, .103],  $p = .188$ , CFI = .99. However, the model  $\chi^2$  indicated poor fit,  $\chi^2 (10) = 23.24$ ,  $p = .01$ . Local fit indices, including the correlation residual matrix, the covariance and standardized covariance residual matrices, and modification indices were examined to assess the extent to which the predicted model accounted for the observed correlations between each of the variables. Large values indicate discrepancies between the model-implied and observed data and provide information concerning model re-specification. Results suggested that the model did not adequately account for the relationship between antisocial behaviour and sensation seeking. This result, coupled with the theoretical tradition of separating impulsivity-related constructs from sensation or thrill-seeking behaviours lends support to the re-specification of the model. As such, an additional path was added and results of the adjusted model are also presented in Table 1.2. Global and local fit indices revealed that the adjusted model was a good fit to the data,  $\chi^2 (9) = 12.93$ ,  $p = .166$ , RMSEA = .039, 90% CI [.000, .082],  $p = .613$ , CFI = .997. A chi square difference test was conducted to determine whether the fit indices for the predicted and modified models were significantly different. Results indicated there was a significant improvement,  $\chi^2 (1) = 10.31$ ,  $p = .01$ . Adjusted model results demonstrated that together the four psychopathy facets accounted for 41%, 37%, 55%, and 15% of the variance in lack of premeditation, urgency, sensation seeking, and lack of perseverance respectively. As predicted, after accounting for the other 3 psychopathy facets, erratic lifestyle scores were positively associated with all four UPPS impulsivity domains. As expected after accounting for callous affect, erratic lifestyle, and antisocial behaviour, interpersonal manipulation was

Table 1.1

*Study 1 Descriptive Statistics and Correlations among the Subscales of the SRP-4, UPPS Impulsive Behavior Scale, and the BIS 11*

	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9	10	11
1. IM	38.09 (10.76)											
2. CA	35.54 (9.33)	.71**										
3. EL	40.71 (11.31)	.63**	.66**									
4. ASB	25.26 (9.07)	.55**	.60**	.57**								
5. EL (adj)	17.09 (5.08)	.62**	.64**	.90**	.56**							
6. Premeditation (lack of)	21.29 (5.84)	.31**	.33**	.63**	.35**	.53**						
7. Urgency	27.50 (7.60)	.43**	.33**	.60**	.35**	.58**	.52**					
8. Sensation Seeking	29.17 (8.00)	.41**	.45**	.73**	.31**	.57**	.47**	.27**				
9. Perseverance (lack of)	19.59 (5.46)	.27**	.28**	.39**	.29**	.41**	.45**	.58**	.11*			
10. Motor	21.87 (4.54)	.43**	.36**	.66**	.40**	.60**	.64**	.56**	.45**	.39**		
11. Non-planning	23.88 (5.49)	.28**	.32**	.56**	.34**	.54**	.66**	.61**	.24**	.62**	.62**	
12. Attentional	16.09 (4.16)	.31**	.29**	.47**	.28**	.48**	.44**	.65**	.21**	.59**	.49**	.61**

*Note.*  $N = 294$ , \* $p \leq .05$ , \*\* $p < .001$ , IM = interpersonal manipulation, CA = callous affect, EL = erratic lifestyle, ASB = antisocial behaviour, EL (adj) = adjusted erratic lifestyle scores (impulsivity items removed).

Table 1.2

*Study 1 Path Model Results: Relationships of Psychopathy Facets with UPPS Impulsivity Domains*

Predictor	Premeditation (lack of)				Urgency				Sensation Seeking				Perseverance (lack of)			
	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$
Predicted Model	.41				.37				.53				.15			
IM		-.09*	.03	-.17												
CA						-.11*	.04	-.14								
EL		.38**	.03	.74		.46**	.04	.69		.51**	.03	.73		.19**	.03	.39
Adjusted Model	.41				.37				.55				.15			
IM		-.10*	.03	-.18												
CA						-.10*	.04	-.12								
EL		.38**	.03	.74		.46**	.04	.68		.57**	.03	.81		.19**	.03	.39
ASB										-.13**	.04	-.15				

*Note.*  $N = 294$ , \* $p < .05$ , \*\* $p \leq .001$ , IM = interpersonal manipulation, CA = callous affect, EL = erratic lifestyle, ASB = antisocial behaviour, antisocial behaviour was included as a covariate in the predicted model.



negatively associated with lack of premeditation. Also as predicted, after accounting for interpersonal manipulation, erratic lifestyle, and antisocial behaviour, callous affect was negatively associated with urgency. Of note, the added path indicated that antisocial behaviour was negatively associated with sensation seeking.

***Psychopathy and BIS 11.*** Results of the path model examining the predicted associations between the psychopathy factors and BIS 11 impulsivity domains are presented in Table 1.3. Global fit indices indicate that the model was a good fit to the data,  $\chi^2(8) = 11.01, p = .201, RMSEA = .036, 90\% CI [.000, .082], p = .633, CFI = .997$ . Local fit indices including the correlation residual matrix, and the covariance and standardized covariance residual matrices also indicated good fit. Together the four psychopathy facets accounted for 32% of the variance in non-planning, 43% of the variance in motor impulsivity and 22% of the variance in attentional impulsivity. As expected after accounting for interpersonal manipulation, callous affect, and antisocial behaviour, erratic lifestyle was positively associated with all three BIS 11 impulsivity domains. Also as anticipated, interpersonal manipulation was negatively associated with non-planning after accounting for the other 3 psychopathy facets.

### **Summary**

Results demonstrated support for the predicted associations between psychopathy and impulsivity. More specifically, after accounting for interpersonal manipulation, callous affect, and antisocial behaviour, erratic lifestyle traits were positively associated with all impulsivity domains (regardless of the measure that was utilized). These relationships were consistent at both the bivariate and multivariate levels. Of note, bivariate associations between erratic lifestyle and impulsivity remained significant, even

Table 1.3

*Study 1 Path Model Results: Relationships of Psychopathy Facets with BIS 11 Impulsivity Domains*

Predictor	Non-Planning				Motor				Attentional			
	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$
Predicted Model	.32				.43				.22			
IM		-.07*	.03	-.14								
EL		.32**	.03	.65		.26**	.02	.66		.17**	.02	.47

*Note.*  $N = 294$ , \* $p < .01$ , \*\* $p < .001$ , IM = interpersonal manipulation, EL = erratic lifestyle, callous affect and antisocial behaviour psychopathy facets were included as covariates.

after removing the impulsivity items from the psychopathy measure. After accounting for callous affect, erratic lifestyle and antisocial behaviour, the interpersonal manipulation traits were negatively associated with lack of premeditation and non-planning. Finally, callous affect was negatively associated with urgency after accounting for the remaining three psychopathy facets. The directional change in the relationships between these variables at the bivariate and multivariate levels suggests that negative suppression is occurring.<sup>2</sup> In general results suggest that erratic lifestyle psychopathy traits are primarily responsible for driving the psychopathy-impulsivity relationship and further that conclusions based on bivariate and multivariate analyses may differ substantially. To determine whether these relationships are consistent across populations and impulsivity measurement approaches, a follow-up study using undergraduate participants and incorporating laboratory-assessed behavioural indices of impulsivity was conducted.

## Study 2

### Method

**Participants.** The total sample consisted of 193 undergraduate students enrolled at a Canadian University. An approximately equal number of men (48.2%,  $n = 93$ ) and woman (51.8%,  $n = 100$ ) took part in the study. Participant age ranged from 18 to 51 ( $M = 20.58$ ,  $SD = 4.85$ ). The sample was predominantly Caucasian (80.8%,  $n = 156$ ) and most students were in their first (57.5%,  $n = 111$ ) or second (23.8%,  $n = 46$ ) year of study.

**Procedure.** A University based research system was used to recruit participants. Each participant was offered 1 research participation credit and was entered in a draw to win a \$50.00 gift certificate to a local coffee shop. After providing written consent,

<sup>2</sup>In three follow-up regressions, results showed that when each facets was included as the only predictor, CA was positively associated with urgency, IM was positively related to (lack of) premeditation, and IM was positively related to non-planning. When EL was included in each of the regressions all three relationships were negative, suggesting that EL may be the suppressor variable in the model.

participants took part in three short computer-based tasks and completed a series of paper/pencil self-report questionnaires. The order in which the participants completed the computer tasks and questionnaires was counterbalanced to avoid order effects.

### **Self-Report Measures**

**Psychopathy.** *Self-Report Psychopathy Scale-Fourth Edition (SRP-4; Paulhus, Neumann, & Hare, 2016)*. To remain consistent with Study 1, the SRP-4 was also used to examine sub-clinical psychopathy in Study 2. Scores were computed for all participants with at least an 80% response rate. Internal consistencies for total, Factor 1, and Factor 2 psychopathy scores were  $\alpha = .90$ ,  $\alpha = .88$ , and  $\alpha = .81$ . Reliability were  $\alpha = .84$ ,  $\alpha = .76$ ,  $\alpha = .80$ , and  $\alpha = .70$  the interpersonal manipulation, callous affect, erratic lifestyle, and antisocial behaviour facets.

**Impulsivity.** *UPPS Impulsive Behavior Scale (UPPS; Whiteside & Lynam, 2001)*. As with Study 1, The UPPS impulsive behavior scale was also used to assess impulsivity in Study 2. Cronbach's alphas for the urgency, (lack of) premeditation, (lack of) perseverance, and sensation seeking subscales were  $\alpha = .85$ ,  $\alpha = .85$ ,  $\alpha = .80$ , and  $\alpha = .83$  respectively.

*The Barratt Impulsiveness Scale: Version 11 (BIS 11; Patton, Stanford & Barratt, 1995)*. Once again, the BIS 11 was also included as a measure of impulsivity. Internal consistencies were  $\alpha = .72$ ,  $\alpha = .62$ , and  $\alpha = .70$  for the attentional, motor, and non-planning subscales, respectively.

### **Laboratory-Assessed Behavioural Measures of Impulsivity**

**Two-choice Impulsivity Paradigm (TCIP; Dougherty, Mathias, Marsh, & Jagar, 2005)**. The TCIP is a computerized task designed to examine one's ability to delay

reward. Participants were shown two shapes on a computer screen and asked to choose one based on their reward preference. One shape (circle) was associated with a smaller reward given at a shorter time interval (5 points earned after 5 seconds). The other shape (square) was associated with a greater reward given at a longer time interval (15 points earned after 15 seconds). Participants engaged in eight training trials. In four of the trials participants were presented with the circle and were shown the number of points awarded when they chose that shape (5). In the subsequent four trials participants were presented with the square and shown the number of points awarded when they chose that shape (15). The practice session allowed participants to recognize the potential rewards associated with each shape before beginning the testing session. Participants then engaged in 40 testing trials where both shapes were shown simultaneously and the number of times the participant chose the smaller reward at the shorter time interval was recorded. That choice was considered to be an indication of impulsive responding via an inability to delay reward.

*Single Key Impulsivity Paradigm (SKIP; Dougherty, Mathias, Marsh, & Jagar, 2005).* The SKIP is another delayed reward task. Here participants were asked to press the mouse button as often as desired. Each button press allowed the participant to accumulate points. Before starting the task, participants were explicitly told that more points would be awarded for longer delays between button presses. Participants were also shown the number of points they had accumulated after each button press to allow for further recognition of the fact that longer delays resulted in greater rewards. The task was set up with a linear payout and the constant was left at the default setting of three allowing for a reward that was in direct proportion to the amount of time that elapsed in

between responses. The total number of responses were recorded with higher numbers indicating more impulsive responding and a greater inability to delay reward.

*Go-Stop Impulsivity Paradigm (Dougherty, Mathias, Marsh, & Jagar, 2005).*

The go-stop task was used to examine participant's ability to inhibit a response that had already been initiated and to respond appropriately to environmental cues. The task involved no-stop, stop, and novel computer trials. On the no-stop trials, the participants were presented with a black number on a computer screen. After a blackout period, the number reappeared again in black and the participants were required to respond by pushing a button. During the stop trials, the participants viewed a number presented in black and after a blackout period, the number reappeared in black and then changed to red at one of four pre-set times (50, 150, 250, 350 milliseconds). When this occurred, the participants were instructed to withhold their response. On the novel trials, participants viewed a number in black and at a predetermined time interval a different number appeared in black on the screen. On these trials the participant were instructed not to respond. All stimuli were presented for 500 milliseconds, and blackout periods between stimuli presentations was set to 1500 milliseconds. Response inhibition failure was determined by calculating the number of times the participant pushed the button during the stop trials, divided by the total number of stop trials. This gauged the participants' ability to inhibit a response that had already been initiated, with higher scores indicating greater impulsivity. Response initiation was measured by calculating the number of time the participant responded on the novel trials, divided by the total number of novel trials. This assessed the participant's ability to respond appropriately to environmental cues or to think before acting.

**Data Analysis.** As in Study 1, raw data was first examined for univariate outliers. Values that exceeded 3 SD above/below the mean were Winsorized (Tukey, 1977) adjusting values to be 3 SD from the mean. The data was then analysed using Amos v. 21 and path analyses were utilized to examine the predicted associations among psychopathy and impulsivity. Separate path models were examined for each of the self-reported impulsivity measures, and the four laboratory-assessed behavioural impulsivity indices were included in one additional model. The impulsivity domains/behavioural indices were simultaneously regressed onto the predicted psychopathy factors. The direct effects of the psychopathy factors on the impulsivity domains were estimated and global and local fit indices were examined. All model parameters were estimated using full information maximum likelihood estimation.

## **Results**

**Correlations among all model variables.** Means, standard deviations, and bivariate correlations are present in Table 1.4. Moderate associations were found among most self-reported impulsivity domains, although there were a few exceptions to this pattern. Most notably, sensation seeking was unrelated to urgency, lack of perseverance, non-planning, and attentional impulsivity. In addition, self-reported and laboratory-based behavioural impulsivity measures were generally unrelated, with the exception of small positive correlations between attentional impulsivity and delayed reward (assessed using the TCIP) and the response initiation aspect of the Go-Stop paradigm. The two laboratory-assessed behavioural impulsivity measures designed to examine delayed reward were also found to be moderately correlated ( $r = .25, p < .001$ ), and as were the scores on the inhibition failure and response initiation aspects of the Go-Stop paradigm ( $r$

Table 1.4

*Study 2 Descriptive Statistics and Correlations*

	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. IM	40.00 (9.58)															
2. CA	36.40 (7.86)	.63**														
3. EL	41.04 (9.09)	.45**	.45**													
4. ASB	23.66 (6.84)	.26**	.23**	.33**												
5. EL (adj)	16.33 (4.26)	.44**	.39**	.87**	.34**											
6. PreMed	20.88 (5.10)	.06	.13	.48**	.18*	.37**										
7. Urgency	28.20 (6.44)	.16*	.01	.40**	.15*	.38**	.35**									
8. SS	34.16 (6.67)	.17*	.24**	.54**	.22**	.32**	.26**	.13								
9. Pers	18.71 (4.45)	.05	.03	.23**	.14*	.28**	.46**	.37**	-.10							
10. Motor	21.96 (3.95)	.09	.14*	.46**	.18*	.37**	.46**	.43**	.35**	.29**						
11. NP	23.38 (4.61)	-.08	.05	.33**	.09	.30**	.56**	.37**	.08	.53**	.51**					
12. Attn	17.03 (3.70)	.15*	.15*	.35**	.04	.35**	.28**	.39**	.12	.46**	.41**	.44**				
13. TCIP	13.62 (10.86)	.08	.08	.04	.08	.09	.09	.11	.03	.03	.12	.13	.16*			
14. SKIP	250.40 (483.23)	.04	.00	-.11	-.03	-.15*	-.09	-.05	.05	-.14	-.03	-.02	-.03	.25**		
15. IF	19.31 (7.58)	.01	.02	.10	.10	.11	.03	.03	.02	.06	.00	.05	.07	-.10	.00	
16. RI	.03 (.05)	.11	.13	.06	.06	.06	.03	-.02	.05	.05	.01	.05	.18*	-.02	.06	.52**

*Note.*  $N = 193$ ,  $*p < .05$ ,  $**p \leq .01$ , IM = interpersonal manipulation, CA = callous affect, EL = erratic lifestyle, ASB = antisocial behaviour, EL (adj) = adjusted erratic lifestyle scores (impulsivity items removed), PreMed = lack of premeditation, SS = sensation seeking, Pers = lack of perseverance, NP = Non-planning, Attn = attentional, TCIP = Two choice Impulsivity Paradigm, SKIP = Single Key Impulsivity Paradigm, IF = Inhibition failure, RI = Response initiation



= .52,  $p < .001$ ). As is typical in the literature, the four psychopathy factors were moderately correlated (see Table 1.4). In line with expectations, moderate to strong positive associations were also observed between erratic lifestyle traits and all self-reported impulsivity domains, a pattern that held even after removing impulsivity items from Factor 2. Of note, interpersonal manipulation scores were positively associated with urgency, sensation seeking and attentional impulsivity in the bivariate analyses. Additionally, callous affect was positively associated with sensation seeking, and motor and attentional impulsivity. Finally, all psychopathy facets were unrelated to the laboratory-based behavioural impulsivity indices, with the exception of a negative association observed between adjusted erratic lifestyle traits and delayed reward as assessed by the single key impulsivity paradigm.

#### **Relationships of Psychopathy Facets with Impulsivity Domains.**

*Psychopathy and UPPS.* Table 1.5 presents the results of the predicted path model. Global fit indices indicated that the model is a good fit to the data,  $\chi^2(10) = 10.17$ ,  $p = .426$ , RMSEA = .009, 90% CI [.000, .079],  $p = .754$ , CFI = 1.00. Examination of the correlation residual matrix, and the covariance and standardized covariance residual matrices, also indicated good local fit. The four psychopathy facets together accounted for 26%, 19%, 29%, and 5% of the variance in lack of premeditation, urgency, sensation seeking, and lack of perseverance respectively. As expected, after accounting for all other psychopathy facets, interpersonal manipulation was negatively associated with lack of premeditation, callous affect was negatively associated with urgency, and erratic lifestyle was associated positively with all four UPPS impulsivity domains.

Table 1.5

*Study 2 Path Model Results: Relationships of Psychopathy Facets with UPPS Impulsivity Domains*

Predictor	Premeditation (lack of)				Urgency				Sensation Seeking				Perseverance (lack of)			
	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$
Predicted Model	.26				.19				.29				.05			
IM		-.09*	.03	-.17												
CA						-.15*	.06	-.19								
EL		.31**	.04	.56		.34**	.05	.48		.40**	.04	.54		.11**	.03	.23

*Note.*  $N = 193$ ,  $*p < .01$ ,  $**p \leq .001$ , IM = interpersonal manipulation, CA = callous affect, EL = erratic lifestyle, antisocial behaviour psychopathy facet was included as a covariate.

***Psychopathy and BIS 11.*** Predicted path model results are present in Table 1.6. Global fit indices indicate that the model was a good fit to the data,  $\chi^2(8) = 7.931$ ,  $p = .440$ , RMSEA = .000, 90% CI [.000, .084],  $p = .735$ , CFI = 1.00. Local fit indices including the correlation residual matrix, and the covariance and standardized covariance residual matrices also indicated relatively good fit. Together, the four psychopathy facets accounted for 15% of the variance in non-planning, 21% of the variance in motor impulsivity, and 12% of the variance in attentional impulsivity. As expected, after accounting for interpersonal manipulation, callous affect, and antisocial behaviour, erratic lifestyle was positively associated with all three BIS 11 impulsivity domains. Also as predicted, after accounting for the other three psychopathy facets, interpersonal manipulation was negatively associated with non-planning.

***Psychopathy and Laboratory-Assessed Behavioural Impulsivity Measures.***

Despite the lack of association between psychopathy and behavioural measures of impulsivity at the bivariate level, the predicted model was still examined (Table 1.7). Although global and local fit indices indicated adequate fit,  $\chi^2(12) = 10.269$ ,  $p = .592$ , RMSEA = .000, 90% CI [.000, .065],  $p = .876$ , CFI = 1.00, all path co-efficients were nonsignificant. Contrary to expectation, after accounting for interpersonal manipulation, callous affect, and antisocial behaviour, erratic lifestyle was not significantly related to laboratory-based behavioural impulsivity measures.

**Summary.** Study 2 results generally replicated those found in Study 1, once again demonstrating support for the hypothesized associations between psychopathy and self-reported impulsivity. After accounting for the interpersonal manipulation, callous affect and anti-social behaviour traits of psychopathy, erratic lifestyle traits significantly

Table 1.6

*Study 2 Path Model Results: Relationships of Psychopathy Facets with BIS 11 Impulsivity Domains*

Predictor	Non-Planning				Motor				Attentional			
	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$
Predicted Model	.15				.21				.12			
IM		-.11**	.03	-.23								
EL		.22**	.04	.43		.20**	.03	.46		.14**	.03	.35

*Note.*  $N = 193$ , \*\* $p < .001$ , IM = interpersonal manipulation, EL = erratic lifestyle, callous affect and antisocial behaviour psychopathy facets were included as covariates in the model.

Table 1.7

*Study 2 Path Model Results: Relationships of Psychopathy Facets with Laboratory-Assessed Behavioural Impulsivity Measures*

Predictor	TCIP				SKIP				Stop-Go				Stop-Go			
	Delayed Reward				Delayed Reward				Inhibition Failure				Response Initiation			
	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$
Predicted Model	.002				.01				.01				.004			
EL		.05	.09	.04		-5.79	3.81	-.11		.09	.06	.10		.00	.00	.06

*Note.*  $N = 193$ , the interpersonal manipulation, callous affect, and antisocial behaviour psychopathy facets were included as covariates

predicted higher levels of self-reported impulsivity across domains (regardless of measure). Notably, this pattern held at the bivariate level even after removing impulsivity related items from psychopathy. Bivariate correlations between psychopathy and impulsivity revealed that interpersonal manipulation and callous affect were associated with sensation seeking and attentional impulsivity. Moreover, interpersonal manipulation was also associated with urgency, and callous affect was also related to motor impulsivity. Path analysis results revealed that, as predicted, after accounting for callous affect, erratic lifestyle, and antisocial behaviour, interpersonal manipulation was negatively associated with lack of premeditation and non-planning. In addition, after accounting for interpersonal manipulation, erratic lifestyle, and antisocial behaviour, callous affect was negatively associated with urgency. Of note, the increase in magnitude between these variables in the bivariate and multivariate analyses indicates that classical suppression is occurring.<sup>3</sup> After accounting for the other three psychopathy facets, erratic lifestyle was positively associated with all self-reported impulsivity domains, but unrelated to the laboratory-assessed behavioural impulsivity measures. Overall, erratic lifestyle traits appear to be primarily responsible for driving the psychopathy-impulsivity relationship. After accounting for the shared variance between the psychopathy facets, interpersonal manipulation and callous affect (Factor 1 traits) are largely unrelated to impulsivity and may even demonstrate a negative relationship with some forms of impulsivity. Finally, results suggest that self-reported and laboratory-based behavioural impulsivity measures appear to be tapping into different, and generally unrelated, constructs.

<sup>3</sup> In three follow-up regressions, results showed that when each facet was included as the only predictor, CA was unrelated urgency, IM was unrelated to (lack of) premeditation, and IM was unrelated to non-planning. When EL was included in each of the regressions all three relationships were negative, suggesting that EL may be the suppressor variable in the model.

## Discussion

In an effort to clarify existing empirical inconsistencies, this research sought to examine the associations among psychopathy and impulsivity in multiple subclinical samples utilizing several different measures of impulsive behaviour. These findings add to the current body of literature by providing a more nuanced understanding of the psychopathy-impulsivity relationship by employing the four-factor model of psychopathy. Study 1 examined the direct associations among psychopathic traits and several types of self-reported impulsivity in a community sample. Study 2 was designed to replicate and extend Study 1 by including laboratory-assessed behavioural measures of impulsivity, in a sample of undergraduate students. Generally it was expected that after accounting for the interpersonal manipulation, callous affect, and antisocial behaviour facets of psychopathy, the erratic lifestyle psychopathy traits would be positively associated with all forms of impulsivity. Conversely, after accounting for the other 3 psychopathy facets, interpersonal manipulation traits were expected to be negatively related to (lack of) premeditation and non-planning, whereas callous affect was expected to be negatively associated with urgency.

As predicted, across both studies, the erratic lifestyle psychopathy traits were positively associated with all types of self-reported impulsivity. Thus, findings suggest that traits such as irresponsibility, impulsivity, stimulation seeking, parasitic orientation, and lack of realistic life goals are associated with a decreased likelihood of considering potential consequences, engaging in future planning, taking part in challenging or boring activities, and an increased desire to escape negative emotions and to engage in exciting and possibly dangerous activities. Unsurprisingly, these results are largely consistent with

existing literature (Anestis et al., 2009; Morgan et al., 2011; Ray et al., 2009; Snowden & Gray, 2011). Of note, these relationships remained consistent across bivariate and multivariate analyses. Results suggest that there is something unique about traits specific to erratic lifestyle, over and above interpersonal manipulation, callous affect, and antisocial behaviour, that contributes to impulsive behaviour in general. The current work also examined the possibility that the consistent relationship between Factor 2/erratic lifestyle psychopathy traits and impulsivity is the result of measurement confounds generated by the presence of impulsivity items within the assessment of psychopathy. Although the magnitude of the relationships was slightly smaller, the pattern of associations between erratic lifestyle psychopathy traits and impulsivity remained unchanged after removing impulsivity items from the psychopathy measure. This analysis helped to rule out measurement confound as a possible explanatory mechanism.

With respect to the Study 2 laboratory-based behavioural measures, the general hypotheses predicting positive associations among erratic lifestyle and the behavioural indices of impulsivity was not supported. More specifically in the current work, erratic lifestyle traits were unrelated to one's ability to delay reward, to inhibit already initiated responses and to respond appropriately to environmental cues. Results are consistent with previous research by Morgan, Gray, and Snowden (2011) which demonstrated that Psychopathy, and Factor 2 in particular (which includes erratic lifestyle), was unrelated to response inhibition and delayed reward in a community sample. Conversely, Feilhauer and colleagues (2012) found that Factor 2 psychopathy traits *were* associated with poor response inhibition among delinquent male adolescents. Similarly, Cherek, Moeller, Dougherty, and Rhoades (1997) found that violent male parolees exhibited an inability to



delay reward when compared to nonviolent counterparts. The differential findings may be a function of the sample under investigation. More specifically, it is plausible that deficiencies in response inhibition and ability to delay reward only emerge at extreme or clinical levels of antisociality or psychopathy. The lack of association found in the current study may also be a reflection of the specific measures that were used (i.e., SKIP, TCIP, GO-STOP). For example, previous work with community and undergraduate populations has reported a positive relationship between Factor 2 psychopathy traits and alternative behavioural tasks designed to reflect impulsive responding, including the delayed discounting task, the Iowa Gambling Task and the Balloon Analog Risk Task (Dean et al., 2013; Hunt, Hopko, Bare, Lejuez, & Robinson, 2015; Morgan et al., 2011).

The current findings regarding the association between erratic lifestyle and impulsivity strongly suggest that the impulsive tendencies inherent in the erratic lifestyle psychopathy traits are pervasive and likely to influence the behavioural responses of individuals who exhibit these characteristics across a multitude of situations and contexts. These results are generally consistent with the dual pathway model of psychopathy (Fowles and Dindo, 2006/2009), in that the relationship between erratic lifestyle/Factor 2 psychopathy traits and impulsivity may indeed reflect difficulty with emotional and behavioural regulation as a function of cognitive processing deficits. In this vein, there has been a wealth of research demonstrating that psychopathy is indeed associated with deficits in cognitive processing, specifically with respect to behavioural inhibition and attentional modulation (see Hiatt & Newman, 2006). Consequently, researchers may benefit from exploring cognitive and informational processing mechanisms to assist in explaining the link between erratic lifestyle psychopathy traits and impulsive behaviour.

The current work demonstrated support for the hypothesized associations among interpersonal manipulation and callous affect psychopathy traits and impulsivity. More specifically, after accounting for callous affect, erratic lifestyle, and antisocial behaviour, interpersonal manipulation traits were negatively associated with lack of premeditation and non-planning across samples. The hypothesized negative association between callous affect and urgency (after accounting for interpersonal manipulation, erratic lifestyle, and antisocial behaviour) was also evident in both studies.

Existing empirical inconsistencies in the Factor 1-impulsivity relationship may be a function of the type of impulsivity measures and the statistical approaches that were utilized. More specifically, when employing bivariate analyses, studies using the BIS (Patton, Stanford & Barratt, 1995) tend to report no relationship between Factor 1 psychopathy traits and impulsivity (Fields et al., 2015; Hunt et al., 2005; Morgan et al., 2011; Snowden & Gray, 2011). Conversely, research utilizing the UPPS (Whiteside & Lynam, 2001) tends to find positive relationships between Factor 1 traits and some impulsivity subscales, namely sensation seeking and (lack of) premeditation (Anestis et al., 2009; Ray et al., 2009). Bivariate results for Study 1 in the current work deviates from the pattern found in the existing literature whereby interpersonal manipulation and callous affect psychopathy traits were positively associated with all impulsivity subscales across both measures. It is possible that this finding is sample specific given the elevated correlations found between the erratic lifestyle facet and both the interpersonal manipulation ( $r = .63$ ) and callous affect facets ( $r = .66$ ) in the community sample. Given previous research and the current findings regarding the relationship between erratic lifestyle traits and impulsivity, it is possible that the high correlations contributed to

inflated associations of interpersonal manipulation and callous affect with the impulsivity subscales. The differential pattern of results found at the multivariate level also point to the inflated correlations as a plausible cause of this pattern of results. Bivariate results for Study 2 were more consistent with what is typically found, whereby interpersonal manipulation and callous affect were related to sensation seeking (from the UPPS) and attentional impulsivity (from the BIS). Interpersonal manipulation was also associated with urgency, whereas callous affect was related to motor impulsivity. The discrepancies that emerge when using the BIS and UPPS are likely a reflection of the differential domains of impulsivity that each measure encompasses.

Indeed, the nomological network regarding the construct of impulsivity is vast. Researchers generally agree that impulsivity should be viewed as multidimensional and there is a substantial number of empirical studies that can attest to the heterogeneous nature of the construct (Caswell, Bond, Duka, & Morgan, 2015; Patton, Stanford & Barratt, 1995; Sharma, Markon, & Clark, 2014; Sperry, Lynam, Walsh, Horton, & Kwapil, 2016; Whiteside & Lynam, 2001). The lack of association between behavioural and self-report measures of impulsivity in the current work, and elsewhere (Caswell et al., 2015; Hunt et al., 2005; Morgan et al., 2011; Swann et al., 2002) provide further support for this assertion. Moreover, the current results correspond with previous work demonstrating a lack of relation between some self-reported impulsivity subscales (Miller, Flory, Lynam, & Leukefeld, 2003; Whiteside & Lynam, 2001), further exemplifying the importance of examining various domains of impulsivity. Such findings suggest that perhaps the term “impulsivity” may indeed be too broad, and researchers may benefit from the use of more specific language. Moreover, as suggested by

Whiteside and Lynam (2001), perhaps the differential domains of impulsivity are more accurately viewed as distinct psychological processes, each of which result in behaviour that may appear to be impulsive. Regardless, the substantial number of impulsivity factors and domains identified and examined may create difficulties and inconsistencies when attempting to compare and connect empirical findings. The inconsistencies regarding the Factor 1 psychopathy-impulsivity relationship is a case in point.

As noted, discrepancies in the literature regarding the Factor 1 psychopathy-impulsivity relationship may also be a function of whether bivariate or multivariate statistical analyses are employed. In the current work, across both populations, use of multivariate analyses involving partialling or controlling for shared variance among the psychopathy facets, either changed the direction, or increased the magnitude, of the Factor 1 (interpersonal manipulation/callous affect)-impulsivity relationships found at the bivariate level. Further, the relationship between the interpersonal manipulation and non-planning and lack of premeditation impulsivity domains was found to be negative, as was the association between callous affect and urgency. This discrepancy between bivariate and multivariate results is also apparent in previous empirical work (Edens & McDermott, 2010; Ray et al., 2009; Ruiz et al., 2010; Snowden & Gray, 2011) and may assist in explaining the differential findings that have been reported in the literature. The occurrence of suppression in the psychopathy literature is not uncommon. In fact, the problems inherent in the process of partialling psychopathy factors from one another have been thoroughly addressed by Lynam, Hoyle, and Newman (2006). In the current research, it may be the case that after accounting for the erratic lifestyle facet, all impulsivity-related variance is removed from the interpersonal manipulation and callous

affect facets of psychopathy. This is likely given that erratic lifestyle appears to be responsible for driving the psychopathy-impulsivity relationship.<sup>4</sup>

Overall, the current results regarding the relationship between Factor 1 related traits and impulsivity suggest that among community members and undergraduate students, traits specific to interpersonal manipulation and callous affect may be unrelated to impulsivity. In addition, the specific traits that are included in the interpersonal manipulation facet, such as deceitfulness, superficial charm, conning and manipulation may contribute to a slightly increased likelihood of considering potential consequences, engaging in future planning, and taking part in challenging activities. Moreover, the traits associated with callous affect including lack of empathy and remorse, and shallowness and callousness, may be associated with slightly decreased urgency, or more specifically, a diminished tendency to exhibit impulsive behaviour driven by a desire or need to avoid or escape negative emotion. This is a reasonable result given that this facet is characterized by an inherent lack of emotion. These possible conclusions are tentative as it is difficult to interpret exactly what the interpersonal manipulation and callous affect psychopathy scores represent after partialling out the other aspects of psychopathy.

At a conceptual level, this pattern of results may be a reflection of successful psychopathy, which is presumably more likely in the absence of impulsivity. Indeed, the attributes included in the interpersonal manipulation and callous affect psychopathy facets are likely important for individuals high in psychopathy to be effective in the manipulation and deceit of others and in evading detection when engaging in antisocial activities. In fact it has been suggested that severity of impulsivity and irresponsibility, coupled with high (rather than low) conscientiousness, may help in differentiating among

<sup>4</sup>A series of post hoc regression analyses supported the general conclusion that erratic lifestyle appears to be driving the psychopathy-impulsivity relationship. Results demonstrated that most of the variance in the impulsivity domains that is accounted for by the psychopathy factors is attributable to variance that is shared with erratic lifestyle.

successful and unsuccessful psychopaths (Mullins-Sweatt, Glover, Derefinko, Miller, & Widiger, 2010). Specifically, those deemed to be successful in their psychopathic endeavours were viewed as displaying high levels of order, achievement-striving, competence, and self-discipline. This perspective is consistent with the current pattern of results regarding the unique associations between interpersonal manipulation and future oriented planning and premeditation. Moreover, the current results may also be indicative of the way impulsivity presents among individuals higher in interpersonal manipulation and callous affect (Factor 1 traits) and lower in erratic lifestyle and antisocial behaviour (Factor 2 psychopathy traits). Accordingly, individuals who display this pattern of traits may also be more likely to be successful in their psychopathic pursuits to con, manipulate, and deceive others.

Another possible interpretation of the results concerning the interpersonal manipulation facet, is that after account for the variance associated with the other psychopathy facets, what's left is more akin to machiavellianism, than psychopathy per se. Machiavellianism is an interpersonal orientation characterised as manipulative, cold, and exploitive, but does not include traits that are typically associated with Factor 2, such as impulsivity (Glenn & Sellbom, 2015). Of note, the observed negative relationships of interpersonal manipulation with non-planning and (lack of) premeditation in the current work, is consistent with previous research indicating that machiavellianism is largely unrelated to impulsivity (Jones & Paulhus, 2011; Malesza & Ostaszewski, 2016).

Results generally support Fowles and Dindo's (2006/2009) contention that Factor 1 traits follow a distinct etiological pathway characterized by low anxiety and anticipatory fear. The theoretical assertion that the apparent impulsive behaviour

exhibited by individuals who display Factor 1 traits is not the result of a failure to consider and/or anticipate consequences, but rather to proceed despite the consequences, is supported in the current work. Specifically, when considered independently, Factor 1 traits appear to be associated with diminished impulsivity and possibly a greater likelihood of planning and forethought.

Although the current work enhances our understanding of the psychopathy-impulsivity relationship among community and undergraduate populations, it is difficult to ascertain whether these results will extend to clinical samples. Accordingly, future work should seek to replicate these findings among both adult and youth offender populations. In addition, findings were based primarily on self-report measures. As such, common method variance may have contributed to intercorrelations inflation. In a related vein, the current work also only employed one self-report measure of psychopathy. Future studies may benefit from the inclusion of additional psychopathy measures that represent alternative conceptualizations of the construct. Moreover, future work incorporating non-self-report measures of both psychopathy and impulsivity may also be advantageous in eliminating possible concerns regarding socially desirable responding. Also of note, the community sample in the current project was collected via MTURK and researchers have expressed concerns regarding the attentiveness of these participants (Goodman, Cryder, & Cheema, 2013). Use of high-reputation workers (as was done in the current work) has been found to compensate for this issue. Moreover, MTURK has been found to be a reliable, valid, and efficient approach to obtain diverse community based samples (Buhrmester, Kwang, & Gosling, 2011; Casler, Bickel, & Hackett, 2013; Peer, Vosgerau, & Acquisti, 2014).

The current study adds valuable insight into the role that impulsivity plays within the construct of psychopathy, reinforcing the notion that both psychopathy and impulsivity are multifaceted constructs. Results suggest that the impulsivity-psychopathy relationship is much more complex than originally thought. The differential findings based on bivariate and multivariate analyses highlight the importance of examining psychopathy facets independently, as well as accounting for shared variance. Results also provide some insight and explanation for the apparent inconsistencies in the existing psychopathy-impulsivity literature, specifically with respect to Factor 1 psychopathy traits.

Given the literature linking both psychopathy and impulsivity to a variety of detrimental behaviours, including risk taking, substance abuse, and aggression, (Book et al., 2016; Charnigo, et al., 2013; Dean et al., 2013; Hosker-Field, et al, 2016; Hoyle et al., 2000; Kastner & Sellbom, 2012; Leeman et al., 2014; Maneiro et al., 2016; Swogger et al., 2010; Walsh et al., 2007; White et al., 1994), future research should work towards developing a more complete understanding of the interrelations among these constructs. The current findings may serve as a stepping stone towards the explicit examination of impulsivity (or lack thereof) as a potential mechanism linking psychopathic traits and the aforementioned negative outcomes. Such initiatives will enhance our current understanding of the underlying causes of the behavioural tendencies exhibited by individuals who demonstrate psychopathic traits. Consequently, such research may also inform the development of targeted intervention strategies designed to mitigate the harm caused by these individuals.



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### **Studies 3 and 4: Examining the Association between Psychopathic Traits and Impulsivity Relevant HEXACO-PI-R Facets in Youth and Online Samples**

Psychopathy can be conceptualized as a set of personality traits characterized by emotional and interpersonal dysfunction, accompanied by impulsive and anti-social tendencies (Hare, 1993; Hare & Neumann, 2008). However, given the apparent multifaceted nature of the construct, various researchers have questioned the general assumption that all psychopaths are impulsive (Feilhauer & Cima, 2013; Hosker-Field & Book, 2017; Levenson, 1992; Poythress & Hall, 2011). This contention, coupled with the notion that impulsivity is also seen as a multifaceted construct (Patton, Stanford, & Barratt, 1995; Whiteside & Lynam, 2001), indicates a need to examine, synthesize, and extend, the current knowledge regarding the psychopathy-impulsivity relationship. Indeed, research conducted on adult populations has demonstrated inconsistent associations between psychopathic traits and impulsivity (Anestis, Anestis and Joiner, 2009; Morgan, Gray, & Snowden, 2011; Ray, Poythress, Weir, & Rickelm, 2009; Snowden & Gray, 2011). Recent empirical research suggests that this discrepancy may be attributable to the use of different measurement tools and analytical techniques (Hosker-Field & Book, 2017). More specifically, findings indicated that consistent relationships can be obtained across adult populations when the same measures and analytical strategies are utilized. However, it is yet unknown whether these consistencies will extend beyond adult populations. Thus, the primary purpose of the current work was to examine the associations among psychopathic traits and impulsivity in both adolescents and adults, utilizing multiple indices of impulsivity, and both bivariate and multivariate analytical approaches. As noted, impulsivity is currently understood to be a

heterogeneous construct (Caswell, Bond, Duka, & Morgan, 2015; Patton et al., 1995; Sperry, Lynam, Walsh, Horton, & Kwapil, 2016; Whiteside & Lynam, 2001). Moreover, several researchers have worked to situate the construct within broader models of general personality (e.g., Eysenck & Eysenck, 1977; Whiteside & Lynam, 2001; Zuckerman & Glicksohn, 2016). However, this approach has yet to include one of the more prominent models of general personality in the current literature, namely, the HEXACO model. Thus, the secondary purpose of the current work was to examine whether various domains of impulsivity could be assessed using preselected facets of HEXACO-PI-R (Ashton & Lee, 2009; Lee & Ashton, in press).

In order to grasp the complex nature of the relationship between psychopathy and impulsivity it is first necessary to obtain a general understanding of the multifaceted nature of each construct. Research dating back over half a century has shown that impulsivity is not a unitary construct, but rather a constellation of loosely associated traits that can indeed be adequately situated within general models of personality (Eysenck & Eysenck, 1977). Eysenck and Eysenck (1977) for example, suggested that broad impulsivity consists of four underlying factors including risk taking, non-planning, liveliness, and “narrow impulsiveness”. Further, the authors found that these factors were differentially associated with varying levels of extraversion, neuroticism, and psychoticism. More recently, Whiteside and Lynam (2001) applied the Five Factor Model of personality (FFM; McCrae & Costa, 1992) to impulsivity. In doing so, the authors developed a four-factor model of impulsivity that includes urgency, (lack of) premeditation, (lack of) perseverance, and sensation seeking (the UPPS). According to the authors, each factor is considered to represent a distinct or independent psychological



process culminating in what observers would likely classify as “impulsive behaviour”. Further, each factor is thought to represent a specific personality facet within the FFM. For example, Urgency, which denotes impulsive behaviour that results from a need to reduce or avoid negative emotion, is represented by the impulsivity facet of Neuroticism. The (low) deliberation facet of Conscientiousness underlies the (lack of) premeditation factor, which represents an individual’s tendency (or lack thereof) to consider potential behavioural consequences before engaging in an activity. The (lack of) perseverance factor reflects one’s ability to avoid distraction and remain engaged in activities perceived as difficult and/or boring. This factor is represented by the self-discipline facet of Conscientiousness. Finally, the sensation seeking domain reflects the excitement seeking facet of Extraversion, and refers to one’s propensity to take part in novel and exciting, but possibly dangerous activities.

As noted, one aim of the current work was to determine whether the HEXACO model of personality (Ashton & Lee, 2009; Lee & Ashton, 2004) could be used to tap into or approximate the impulsivity domains outline by the UPPS model (Whiteside & Lynam, 2001). Indeed, the HEXACO-PI-R does appear to include facets that may be conceptually similar to the FFM facets that are represented in the UPPS. Generally speaking, the HEXACO model of personality consists of six factors, including Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience (Ashton & Lee, 2009; Lee & Ashton, 2004). As both (lack of) premeditation and (lack of) perseverance have underlying facets that are subsumed under Conscientiousness, and both the FFM and the HEXACO-PI-R include a Conscientiousness factor, these two impulsivity domains may be well represented in the

HEXACO model. More specifically, it is proposed that (lack of) premeditation can be approximated via low scores on the prudence facet, defined as one's propensity towards careful deliberation and consideration of consequences. Further, (lack of) perseverance may be tapped into via low scores on the diligence facet which represents low achievement motivation and poor self-discipline. The impulsivity domains of sensation seeking and urgency are not represented as definitively within in the HEXACO model. However, low scores on the fearfulness facet of Emotionality, representing a tendency to be brave and tough, without concern for personal safety may loosely map onto the sensation seeking domain of impulsivity. Also, low scores on the patience facet of Agreeableness, reflecting an inability to remain calm and a tendency to lash out when angry, may be associated with the urgency domain of impulsivity.

Empirical work does provide preliminary support for the use of the HEXACO-PI-R as a means of approximating impulsivity related constructs. For example, de Vries, de Vries, and Feij (2009) found that the HEXACO model accounted for a significant amount of variance in both risk taking and sensation seeking. More specifically, it was found that Conscientiousness, which includes the facets of prudence and diligence (suggested to map onto lack of premeditation and perseverance, respectively), was consistently associated with thrill and adventure seeking, boredom susceptibility, and disinhibition. Moreover, the fearfulness facet (suggested to map onto sensation seeking) was also significantly associated with experience seeking, in addition to the three aforementioned constructs. Finally, significant relationships were also observed between agreeableness, which includes the patience facet (suggested to map negatively onto urgency), and both boredom susceptibility and disinhibition.

Research also suggests that the impulsivity domains of the UPPS and the proposed corresponding HEXACO-PI-R facets demonstrate similar associations with external correlates. For example, research by Hecht and Latzman (2015) on undergraduate students found that at the bivariate level urgency, (lack of) premeditation, (lack of) perseverance, and sensation seeking, were all positively correlated with proactive aggression. Conversely, bivariate correlations demonstrated that only urgency and lack of perseverance were positively associated with reactive aggression. Book, Volk, and Hosker (2012) found a similar pattern of relationships utilizing the HEXACO-PI-R with community adolescents. More specifically, in terms of the HEXACO-PI-R factors of interest here, conscientiousness (which includes prudence and diligence), agreeableness (which includes patience) and emotionality (including fearfulness) were all negatively associated with proactive aggression. Moreover, only agreeableness and conscientiousness were negatively related to reactive aggression. Research has also demonstrated that both the impulsivity related HEXACO-PI-R factors, as well as the UPPS impulsivity domains are significantly associated with various forms of antisocial behaviour (Maneiro, Gómez-Fraguela, Cutrín, & Romero, 2017; Međedović, 2017). Although empirical work in this area is limited, the similarity among external correlates, as well as the research examining direct associations among HEXACO-PI-R factors and impulsivity related constructs, provides a basis for further investigation regarding the ability of the HEXACO model to capture previously established impulsivity domains.

As the primary aim of the current work was to obtain a more nuanced understanding of the interrelations among impulsivity and psychopathy, a more comprehensive review of the psychopathic construct is warranted. Traditionally, within

adult populations, psychopathy has been conceptualized as consisting of two independent, albeit related factors including the emotional interpersonal traits (Factor 1) and the social deviance characteristics (Factor 2; Hare, 1993; Hare & Neumann, 2008). Research suggests each factor may be further divided into two facets. The four-factor model includes interpersonal traits such as pathological lying, superficial charm, and manipulative tendencies. The affective traits include lack of remorse, guilt, and empathy, as well as callousness and shallow affect. The lifestyle characteristics include having a parasitic orientation, a lack of realistic goals, irresponsibility and, most importantly, impulsivity. Finally, the antisocial characteristics include poor behaviour control, early behaviour problems, and juvenile delinquency. The factors were assessed via the interpersonal manipulation, callous affect, erratic lifestyle, and antisocial behaviour subscales of the Self-Report Psychopathy Scale 4<sup>th</sup> Ed. (Paulhus, Neumann, & Hare, 2016). Collectively, psychopathic traits have been associated with several negative outcomes, including a higher likelihood of engaging in substance use and abuse, risk taking, and violence and aggression (Book et al., 2016; Dean et al., 2013; Kastner & Sellbom, 2012; Hosker-Field, Molnar, & Book, 2016; Walsh, Allen, & Kosson, 2007).

Given the detrimental outcomes associated with psychopathic traits in adulthood, researchers have sought to extend the construct to incorporate youth and adolescents. Of note, constellations of traits similar to those found among adults, have also been identified within youth and adolescent populations (Frick & Hare, 2001; Munoz & Frick, 2007; Vitacco, Rogers, & Neumann, 2003). More specifically, researchers have found that callous-unemotional traits, narcissism, and impulsivity are especially prevalent among at risk youth who show a distinct pattern of severe and aggressive behaviour

(Shaffer et al., 2016; Feilhauer & Cima, 2013) Accordingly, the Antisocial Process Screening Device was developed as a measure to assess psychopathic traits at earlier developmental stages (APSD; Frick & Hare, 2001). Although originally developed as a parent/teacher report designed to emulate adult measures of psychopathy, research has demonstrated that the APSD can also be utilized as a self-report measure with community or subclinical populations (Shaffer et al., 2016).

As noted, both adult and youth conceptualizations of psychopathy identify impulsivity as a defining feature. Moreover, at both developmental stages, impulsivity is only included in one of the factors that represent the overarching construct. Focusing on adult populations, Fowles and Dindo (2006/2009) developed a dual-pathway model that may help in explaining the association among psychopathy and impulsivity. This theoretical model indicates that there are two developmental pathways leading to the emergence of Factor 1 (interpersonal and affective traits) and Factor 2 (lifestyle and antisocial characteristics) psychopathy traits. Factor 1 psychopathy traits are presumed to be distinctly associated with low levels of fear and anxiety. Although these characteristics are likely to result in an increased propensity to exhibit risky or dangerous behaviours, such activities are not impulsive per se, but rather carried out despite consideration of possible detrimental consequences. In contrast, Factor 2 characteristics are indicative of information processing and regulatory control deficits. Such difficulties are thought to lead to impulsive behaviour via poor attention allocation, as well as limited understanding and/or consideration of potential negative outcomes. Of note, this theoretical model suggests that these developmental trajectories originate in childhood. Drawing on the child and adolescent literature regarding attention deficit hyperactivity

disorder (ADHD), conduct disorder (CD)/oppositional defiant disorder (ODD), and, callous-unemotional traits (CU traits), Frick and Morris (2004) proposed similar developmental pathways. More specifically, it is suggested that the presence of callous-unemotional traits coupled with conduct related problems (Factor 1 trajectory) were associated with deficient conscience development, low levels of fear, and a heightened probability of engaging in planned or premeditated aggression. Conversely, conduct problems in the absence of callous-unemotional traits, a pathway primarily encompassing ADHD, CD, and ODD type symptoms (Factor 2 trajectory), are thought to be the result of emotional regulation difficulties (Fowles & Dindo, 2006/2009; Frick & Morris, 2004). It is apparent that among both youths and adults, the dual-pathway model indicates that impulsive behaviour is highly relevant with respect to the Factor 2 trajectory. However, the etiological pathway and associated behavioural tendencies in the Factor 1 trajectory suggest more purposeful planned behaviour and, accordingly a general absence of impulsivity. As such, differential associations between Factor 1 and 2 psychopathy traits and impulsivity should be observable among both youth and adults.

Indeed, research with adult populations has demonstrated differential relationships between Factor 1 and 2 psychopathy traits and impulsivity (Anestis et al., 2009; Morgan et al., 2011; Ray et al., 2009; Snowden & Gray, 2011). More specifically, Factor 2 traits have been consistently related to self-reported impulsive behaviour regardless of the measures and/or analyses used, and the population under investigation. Conversely, the association between Factor 1 traits and impulsivity is much less consistent. Although some studies report positive associations between Factor 1 traits and specific impulsivity domains at the bivariate level (Anestis et al., 2009; Ray et al., 2009), others have

demonstrated no relationship between Factor 1 psychopathy traits and impulsive behaviour (Fields et al., 2015; Hunt et al., 2005; Morgan et al., 2011; Snowden & Gray, 2011). The nature of the relationship between the two constructs becomes even more complicated at the multivariate level where some research has indicated negative associations between Factor 1 traits and various domains of impulsivity (Ray et al., 2009; Snowden and Gray, 2011). Of note, the population under investigation doesn't appear to heavily contribute to these empirical inconsistencies. Hosker-Field and Book (2017) proposed that the different findings are primarily a function of the measures used to assess impulsivity, as well as the analyses that were employed to examine the data. The authors further delineated the psychopathy-impulsivity relationship by relying on the four-factor model of psychopathy. Indeed it was found that the relationship among the erratic lifestyle psychopathy traits (part of Factor 2) and impulsivity was consistent across measures and analyses. However, the association between Factor 1, including interpersonal and affective traits, varied as a function of impulsivity domain and type of analysis. More specifically, in two independent samples, multivariate analyses revealed that after accounting for the other facets of psychopathy, interpersonal manipulation was negatively associated with non-planning and lack of premeditation, and callous affect was negatively related to urgency. All positive associations found between interpersonal manipulation and callous affect traits and impulsivity at the bivariate level were reversed or increased in magnitude when multivariate path analyses were examined. Therefore, the shared variance of the psychopathy facets was suppressing the negative associations of these particular psychopathy facets with the aforementioned domains of impulsivity. As such, the use of differential methodological and statistical approaches does appear to

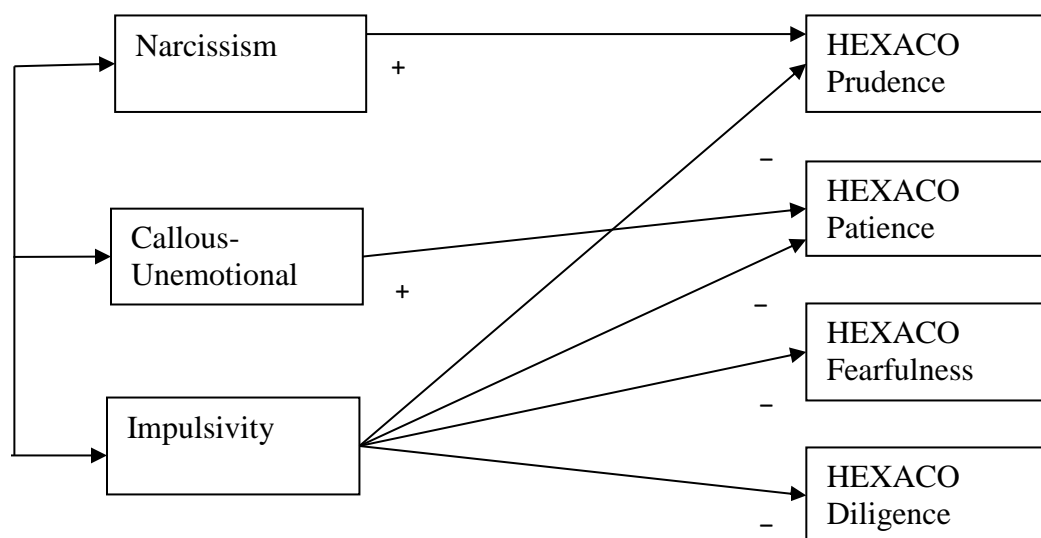
provide one potential explanation for the inconsistencies in the literature. Although these associations were found to be consistent across an undergraduate sample and a community sample, research has yet to ascertain if these findings will extend to youth.

The theoretical position outlined by the dual-pathway model (discussed above) would suggest that the different empirical associations between the psychopathy factors and impulsivity observed among adults should extend to youth and adolescents. There is some evidence that this is indeed the case. For example, within a sample of antisocial adolescents, Feilhauer, Cima, Korebrits, and Kunert (2012) found that only Factor 2 psychopathy characteristics were associated with an increased error rate on a go-no-go response inhibition task. Moreover, partial correlations suggested that Factor 1 psychopathy traits were actually associated with better response inhibition after controlling for Factor 2. Furthermore, in a general review of the different correlates associated with youth psychopathy, Feilhauer and Cima (2013) advanced the notion that impulsivity, and specifically response inhibition, may be differentially associated with each dimension of the construct. Thus, although limited, there is some preliminary evidence suggesting that the factors of youth psychopathy may indeed be differentially associated with impulsivity, as is found in the adult literature.

As noted, the purpose of the current work was two-fold. The primary aim was to examine the relationships among psychopathic traits and impulsivity in both adolescents and adults. The secondary intent was to examine the extent to which established domains of impulsivity can be captured utilizing the HEXACO model of personality. Two independent studies were conducted and based on the empirical literature eight hypotheses were examined.

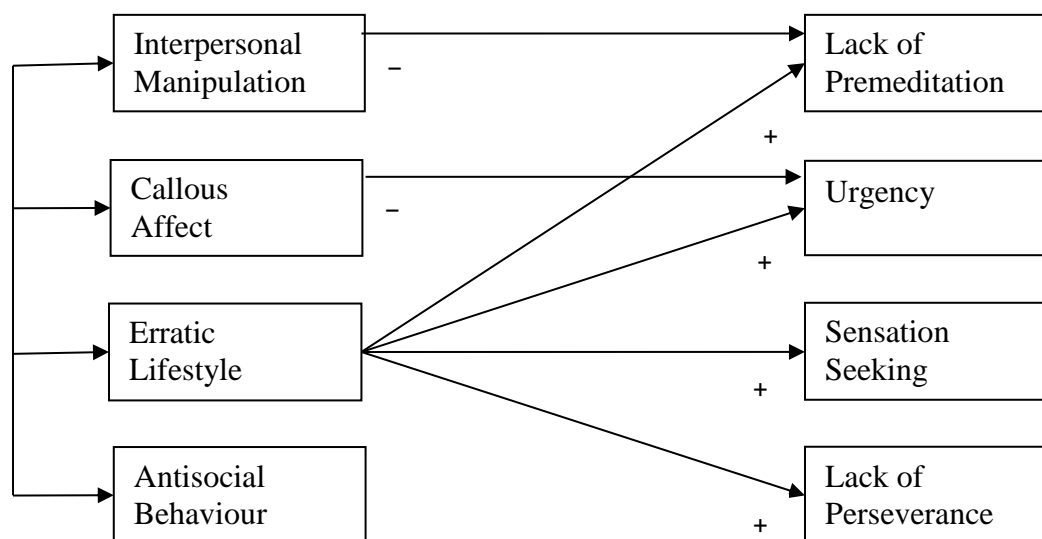


With respect the first aim of the current research, in Study 3 it was hypothesized that 1) after accounting for the callous-unemotional and narcissism subscales of the APSD, the impulsivity subscale would be negatively associated with prudence, patience, fearfulness, and diligence (see figure 2.1). It was also predicted that 2a) the callous-unemotional subscale would be positively associated with patience and 2b) the narcissism subscale would be positively related to prudence after accounting for the remaining psychopathy factors (see figure 2.1). With respect to the secondary goal of the current work it was predicted that 3) the predetermined facets of the HEXACO-PI-R would be significantly associated with several impulsivity relevant external correlates. More specifically, prudence, patience, fearfulness, and diligence were expected to be negatively associated with hyperactivity, aggression, and conduct problems, including theft, vandalism, substance use, and violence, and positively correlated with activation control, attention, fear, inhibitory control, and surgency.



*Figure 2.1.* Study 3 hypothesized relationships of the APSD psychopathy factors with the impulsivity relevant HEXACO-PI-R facets

In terms of the primary purpose of the current work, in Study 4 it was expected that after accounting for interpersonal manipulation, callous affect, and antisocial behaviour, erratic lifestyle would be 4a) positively associated with all four UPPS impulsivity domains and 4b) negatively related to all four HEXACO-PI-R facets (see figure 2.2). It was also expected that after taking the other psychopathy factors into account, 5) interpersonal manipulation would be negatively associated with (lack of) premeditation and positively associated with urgency, whereas 6) callous affect would be negatively related to urgency and positively related to patience (figure 2.2). With respect to the secondary aim of the current work, in Study 4 it was hypothesized that the predetermined HEXACO-PI-R facets would be negatively associated with the corresponding UPPS impulsivity domains. More specifically, (lack of) premeditation, urgency, sensation seeking, and (lack of) perseverance were expected to be negatively associated with prudence, patience, fearfulness, and diligence, respectively (figure 2.3).



*Figure 2.2.* Study 4 hypothesized relationships of the SRP-4 psychopathy facets with the impulsivity subscales of the UPPS

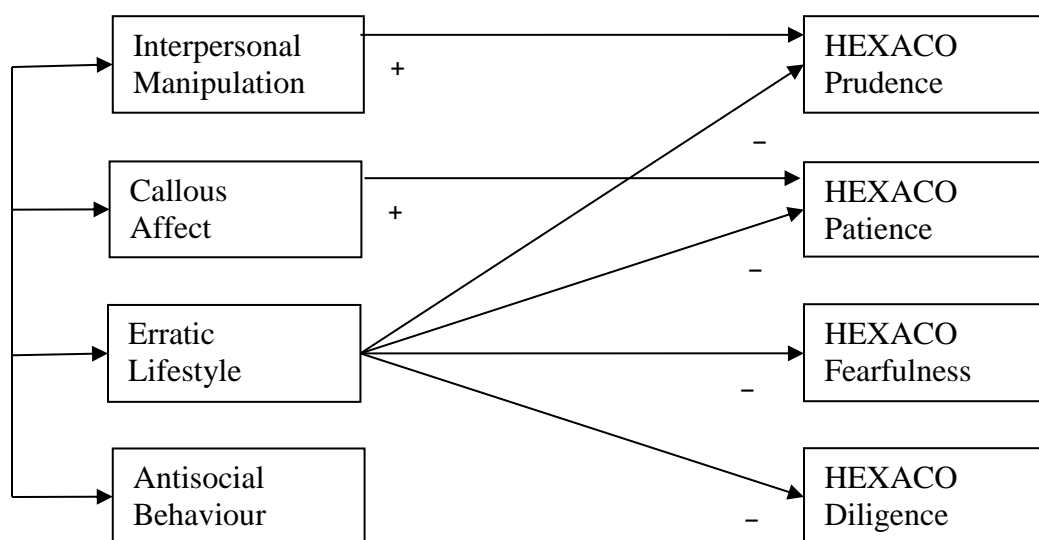


Figure 2.3. Study 4 hypothesized relationships of the SRP-4 psychopathy facets with the impulsivity relevant HEXACO-PI-R facets

### Study 3

#### Method

**Participants.** The total sample consisted of 399 adolescents including 230 girls (57.8%) and 167 boys (41.9%; 1 participant did not report sex and 1 participant indicated “other”). Participant age ranged from 12 to 23 ( $M = 14.73$ ,  $SD = 1.68$ ; only 5 participants reported age was greater than 18 and 1 participant did not report sex) and the sample was predominantly Caucasian (80.9%,  $n = 292$ ).

**Procedure.** Participants were recruited via local athletic clubs and community organizations. After obtaining parental consent and participant assent, youth completed a series of questionnaires online via Qualtrics, which is an on-line survey platform. Each participant received \$15.00 compensation for their participation. Of note, the current

research is part of a larger ongoing study that includes various measures that will not be addressed in the current work.

### **Measures.**

*Antisocial Process Screening Device (APSD; Frick & Hare, 2001).* The APSD was used to examine psychopathic traits. The measure consists of 20 items assessed on a likert scale ranging from 0 (*not at all true*) to 2 (*definitely true*). The scale consists of three factors including callous-unemotional (6 items), narcissism (7 items), and impulsivity (5 items). There are two additional items that are included in the overall score, but do not fit within the three identified factors (you engage in illegal activities; you lie easily and skillfully; Munoz & Frick, 2007). Reliabilities for the total scores, and the narcissism, callous-unemotional, and impulsivity subscales were  $\alpha = .77$ ,  $\alpha = .72$ ,  $\alpha = .50$ , and  $\alpha = .58$  respectively. These alpha coefficients are consistent with what has been reported in previous literature, and although they are less than ideal, research suggests that the APSD remains a valuable tool for psychopathy research in youth (Munoz & Frick, 2007; Shaffer et al., 2016).

*HEXACO Personality Inventory – Revised 60 Items (HEXACO PI-R-60; Ashton & Lee, 2009).* The 60 item version of the HEXACO Personality Inventory-Revised was used to indirectly assess impulsivity. This measure of general personality consists of six factors, including Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. Each factor includes four lower order facets. Although not designed explicitly to assess impulsive behaviour, the measure does include facet-level scales that appear to map on well to existing conceptualizations of impulsivity. The current work utilized the prudence (3 items) and

diligence (2 items) facets of the Conscientiousness factor, the patience (2 items) facet of the Agreeableness factor, the fearfulness (3 items) facet of the Emotionality factor.

Participants responded to each item on a 5-point likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) and facet-level score were computed by calculating the mean across all items. The reliabilities for the patience, prudence, diligence and fearfulness facets were  $\alpha = .56$ ,  $\alpha = .61$ ,  $\alpha = .58$ , and  $\alpha = .50$  respectively.

***The Strengths and Difficulties Questionnaire (SDQ: Goodman, 1997).*** The strengths and difficulties questionnaire has 25 items and consists of five (5 item) subscales that assess emotional problems, conduct problems, hyperactivity, peer problems, and prosocial behaviour. Items were rated on a scale ranging from 1 (*Not True*) to 3 (*Certainly True*). Subscale scores were calculated by summing participant responses to the appropriate items. The current work utilized the conduct problems and hyperactivity subscales of this measure and reliabilities were  $\alpha = .58$  and  $\alpha = .69$ , respectively. Please note, item number 21 (*I think before I do things*), which is part of the hyperactivity subscale was omitted in the current study due to human error.

***The Early Adolescent Temperament Questionnaire - Revised Short Form (EATQ-R sf; Capaldi & Rothbart, 1992; Ellis & Rothbart, 2001).*** This measure contains 65 items that can be subdivided into several subscales, each of which taps into a different area of adolescent temperament. The subscales include activation control, affiliation, aggression, attention, depressed mood, fear, frustration, inhibitory control, pleasure sensitivity, perceptual sensitivity, shyness, and surgency/high intensity pleasure. Responses were provided on a likert scale ranging from 1 (*Almost always untrue*) to 5 (*almost always true*) and scores were calculated for all participants who responded to at

least 80% of the items on a given subscale. Impulsivity relevant subscales including activation control (5 items), attention (6 items), fear (6 items), inhibitory control (5 items), and surgency/high intensity pleasure (6 items) were utilized in the current study. In the current sample, reliabilities for the aforementioned subscales were  $\alpha = .78$ ,  $\alpha = .56$ ,  $\alpha = .65$ ,  $\alpha = .42$ , and,  $\alpha = .58$ , respectively.

***The Self-Report Delinquency Questionnaire (LeBlanc & Frechette, 1989).*** A modified version of the Self-Report Delinquency scale was used to examine self-reported involvement in theft (11 items), vandalism (6 items), substance use (3 items), and violence (7 items). Participants were asked how frequently they engaged in a variety of anti-social activities in the past year. Responses were provided on a 4-point likert scale ranging from 1 (*Never*) to 4 (*Often*). Cronbach's alphas for all four subscales were: theft,  $\alpha = .89$ ; vandalism,  $\alpha = .86$ ; substance use,  $\alpha = .84$ , and violence,  $\alpha = .87$ .

***Reactive and Proactive Aggression (Dodge & Coie, 1987).*** Dodge and Coie's 6-item reactive and proactive aggression scale was used to examine aggressive behaviour. The scale was modified to be used as a self-report measure in the current work. Participants responded to each item on a scale ranging from 1 (*Never*) to 5 (*Almost Always*). Total aggression scores were calculated for participants who responded to at least 80% of the items. Cronbach's alpha was  $\alpha = .84$ .

**Data Analysis.** Data was first examined for normality and univariate outliers. Any values that exceeded 3 *SD* above/below the mean were Winsorized (Tukey, 1977) by substituting the outliers with values that were equal to the 3 *SD* cut off. Correlations among all relevant study variables were examined first. Path analyses were then conducted using AMOS v. 21. The predicted model was examined in an effort to utilize

the most parsimonious approach. The predicted HEXACO-PI-R facets were simultaneously regressed onto the specified psychopathy factors and direct effects and overall fit indices were estimated. When/if poor fit was achieved additional paths were added one at a time based on examination of modification and local fit indices, expected parameter change values, and in accordance with theoretical rationale. If modifications were conducted, fit indices and parameter estimates for both the original and final models were included and results from both the predicted and adjusted models are presented. Full information maximum likelihood estimation was employed to estimate model parameters.

## **Results**

### **Impulsivity Relevant HEXACO-PI-R Facets and External Correlates.**

Descriptive statistics and bivariate correlations are presented in Table 2.1. Correlational results were generally in the expected directions. More specifically, patience, prudence, and diligence were negatively associated with conduct problems, hyperactivity, aggression, substance use, and violence. Prudence and diligence were also negatively associated with vandalism and theft. Consistent positive associations were also identified between patience, prudence, and diligence, on the one hand, and activation control, attention, and inhibitory control, on the other hand. Finally, the fearfulness facet of the HEXACO-PI-R was negatively associated with surgency, theft, substance use, and violence, and positively related to fear, and activation control.

**Relationships of Psychopathy Factors with Impulsivity Relevant HEXACO-PI-R Facets.** Means, standard deviations, bivariate correlations are presented in Table 2.2. Results show small to moderate positive correlations among the three APSD factors. Small to moderate associations were also found among the impulsivity relevant

Table 2.1

*Study 3 Descriptive Statistics and Correlations among Impulsivity Relevant HEXACO-PI-R facets and External Correlates*

Variable	<i>M (SD)</i>	Patience	Prudence	Diligence	Fearfulness
SDQ Conduct Problems	6.70 (1.63)	-.47**	-.35**	-.40**	-.05
SDQ Hyperactivity	7.52 (2.04)	-.25**	-.41**	-.31**	-.05
Aggression	10.37 (4.01)	-.31**	-.31**	-.30**	-.03
EATQ-R sf Activation Control	17.08 (4.30)	.14*	.34**	.49**	.18**
EATQ-R sf Attention	20.46 (3.58)	.19**	.42**	.53**	.04
EATQ-R sf Fear	18.20 (2.94)	-.09	-.06	.02	.45**
EATQ-R sf Inhibitory Control	18.02 (2.94)	.22**	.39**	.44**	-.03
EATQ-R sf Surgency	19.95 (4.25)	.05	-.04	.16**	-.24**
Theft	12.87 (3.17)	-.09	-.19**	-.25**	-.12*
Vandalism	6.56 (1.41)	-.06	-.14*	-.26**	-.06
Substance Use	4.28 (2.05)	-.15*	-.20**	-.15*	-.11*
Violence	7.80 (1.74)	-.15*	-.15*	-.26**	-.11*

Note.  $N = 388$  \*\* $p \leq .001$ , \* $p < .05$ . SDQ = Strengths and Difficulties Questionnaire, EATQ-R sf = Early Adolescent Temperament Questionnaire – Revised Short Form.



Table 2.2

*Study 3 Descriptive Statistics and Bivariate Correlations between APSD Factors and Impulsivity Relevant HEXACO-PI-R Facets*

Variable	<i>M</i> ( <i>SD</i> )	1	2	3	4	5	6	7
1. APSD Total	10.87 (5.15)							
2. APSD Callous-Unemotional	3.34 (1.96)	.64**						
3. APSD Narcissism	3.00 (2.39)	.83**	.34**					
4. APSD Impulsivity	3.74 (1.91)	.70**	.14*	.42**				
5. HEXACO Patience	3.52 (.89)	-.34**	-.25**	-.22**	-.25**			
6. HEXACO Prudence	3.17 (.74)	-.39**	-.19**	-.25**	-.41**	.25**		
7. HEXACO Diligence	3.97 (.81)	-.47**	-.45**	-.31**	-.28**	.15*	.35**	
8. HEXACO Fearfulness	3.10 (.78)	-.13*	-.11*	-.05	-.09 <sup>t</sup>	-.04	.08	.10*

Note.  $N = 399$ , \*\* $p \leq .001$ , \* $p < .05$ , <sup>t</sup> $p = .056$ . APSD = Antisocial Process Screening Device

HEXACO-PI-R facets, with the exception of fearfulness which was nearly uncorrelated with the other facets. Notably, at the bivariate level, all three psychopathy factors (callous-unemotional, narcissism, impulsivity) were negatively related to patience, prudence, and diligence. However, the three psychopathy factors were all nearly uncorrelated with fearfulness.

Results of the predicted path model are presented in Table 2.3. The predicted model was a poor fit to the data,  $\chi^2(6) = 90.95, p < .001, RMSEA = .19, 90\% CI [.155, .224], p < .001, CFI = .79$ . Examination of the modification and local fit indices, including the correlation residual matrix, and the covariance and standardized covariance residual matrices, revealed that the model did not adequately account for the association among callous-unemotional traits and diligence, and callous-unemotional traits and prudence. Given that the previously published adult literature has demonstrated empirical inconsistencies with respect to the relationship among Factor 1 psychopathy traits (callous affect and interpersonal manipulation) and impulsivity, it is plausible that the predicted model failed to incorporate all relevant associations in this regard. First, an additional path was added allowing callous affect to predict diligence, as the modification indices and expected parameter change values for this parameter were largest. Consistent with what was observed in the results of the predicted model, examination of model fit, modification and local fit indices, as well as expected parameter change values of the modified model indicated that this model still failed to account for the relationship among callous-unemotional traits and prudence. Accordingly, another path was added. The modified model results are included in Table 2.3.

Table 2.3

*Study 3 Path Model Results: Relationships of APSD Psychopathy Factors with Relevant HEXACO-PI-R Facets*

Predictor	Prudence				Patience				Fearfulness				Diligence			
	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$
Predicted Model	.17				.12				.009				.08			
CU						-.10**	.02	-.23								
Narcissism		-.01	.02	-.03												
Impulsivity		-.15**	.02	-.40		-.10**	.02	-.21		-.04 <sup>t</sup>	.02	-.10		-.12**	.02	-.28
Modified Model	.19				.11				.01				.25			
CU		-.05*	.02	-.12		-.11**	.02	-.23						-.17**	.02	-.42
Narcissism		-.01	.02	-.02												
Impulsivity		-.15**	.02	-.39		-.10**	.02	-.21		-.04 <sup>t</sup>	.02	-.10		-.10**	.02	-.23

Note.  $N = 399$ , \*\* $p < .001$ , \* $p < .05$ , <sup>t</sup> $p \leq .055$ , CU = Callous-Unemotional traits

After including both additional paths, results indicate improved model fit,  $\chi^2 = (4) 9.42, p = .051, RMSEA = .06, 90\% CI [.000, .108], p = .323, CFI = .99$ . A chi square difference test was conducted to determine whether the fit indices for the predicted and modified models were significantly different. Results indicated there was a significant improvement,  $\chi^2 (2) = 81.53, p = .01$ . Modified model results demonstrated that together the callous-unemotional, narcissism, and impulsivity psychopathy subscales accounted for 19%, 11%, 1%, and 25% of the variance in prudence, patience, fearfulness and diligence, respectively (see Table 2.3). As expected, after accounting for the callous-unemotional and narcissism subscales, the impulsivity psychopathy subscale was negatively associated with all four impulsivity relevant HEXACO-PI-R facets. Contrary to expectation, after accounting for the other psychopathy subscales, negative associations were also observed between the callous-unemotional psychopathy subscale and prudence, patience, and diligence, while narcissism was found to be unrelated to prudence.

**Summary.** Bivariate analyses regarding the relationships among the impulsivity relevant HEXACO-PI-R facets and the specified external correlates were in the expected directions. More specifically, as would be anticipated with established measures of impulsivity, greater patience, prudence, and diligence were all positively associated with activation control, inhibitory control, and attention. Furthermore, lower patience, prudence, and diligence were also associated with a higher likelihood of exhibiting hyperactivity and conduct problems, as well as a greater probability of engaging in aggression, violence, theft, and substance use. Lower prudence and diligence were also associated with a higher likelihood of taking part in vandalism. Also of note, greater self-

reported fearfulness was related to a lower likelihood of engaging in theft, substance use, and violence. As would be anticipated at the bivariate level higher scores on the impulsivity psychopathy factor were associated with lower patience, prudence, fearfulness, and diligence. A similar pattern of results was observed for both the callous-unemotional and narcissism psychopathy subscales (although narcissism was not significantly associated with fearfulness).

At the multivariate level, hypotheses concerning the predicted relationships between the psychopathy factors and the HEXACO-PI-R facets were partially supported. More specifically, after accounting for the callous-unemotional and narcissism subscales of psychopathy, greater impulsivity was still associated with lower scores on patience, prudence, fearfulness and diligence. However, contrary to expectation, after accounting for the impulsivity psychopathy subscale, higher scores on the callous-unemotional subscale were related to lower scores on the patience, prudence, and diligence HEXACO-PI-R facets. Further, the expected negative association between narcissism and patience was not significant. A different pattern of results was observed at the bivariate and multivariate levels whereby the negative association observed between the narcissism psychopathy factor and the prudence facet of the HEXACO-PI-R at the bivariate level was negated in the multivariate analysis. Overall, it appears that both the callous-unemotional and impulsivity psychopathy factors are associated with impulsive behaviour, as indexed via the preselected HEXACO-PI-R facets in youth.

#### **Study 4**

##### **Method**

**Participants.** The total sample consisted of 140 participants, including 92 women

(65.7%) and 47 men (33.6%; 1 participant did not report sex). Participants' ages ranged from 17 to 60 ( $M = 21.22$ ,  $SD = 7.21$ ) and were predominantly Caucasian ( $n = 107$ , 76.4%).

**Procedure.** Qualtrics was used to compile the consent and debriefing forms, as well as the questionnaires, and all participants completed the study online at their own convenience. The order in which participants complete the questionnaires was randomized to control for possible order effects. Participants were recruited via the social networking site Facebook, as well as through a university based research system. Undergraduate students who took part in the study were granted credit for their participation and all participants were given the opportunity to enter a draw for a \$50.00 gift card to a local coffee shop.

### **Measures.**

*Self-Report Psychopathy Scale-Fourth Edition (SRP-4; Paulhus, Neumann, & Hare, 2016).* Psychopathic traits were assessed with the SRP-4. The 64-item measure can be subdivided into two 32 item subscales including the Emotional/Interpersonal subscale (Factor 1) and the Social Deviance subscale (Factor 2). The scale can be further divided into 4 16 item subscales representing interpersonal manipulation, callous affect, erratic lifestyle, and antisocial behaviour. Item responses are indicated on a scale ranging from 1 (*disagree strongly*) to 5 (*agree strongly*). Scores were computed for all participants who responded to at least 80% of the items. Cronbach's alphas were  $\alpha = .89$  and  $\alpha = .90$  for Factor 1 and Factor 2 ( $\alpha = .90$ ) psychopathy scores. Internal consistencies for the interpersonal manipulation, callous affect, erratic lifestyle, and antisocial behaviour subscales were  $\alpha = .81$   $\alpha = .81$   $\alpha = .82$  and  $\alpha = .89$  respectively.

***UPPS Impulsive Behavior Scale (UPPS; Whiteside & Lynam, 2001).***

Impulsivity was examined utilizing the 45 item UPPS impulsive behavior scale. The UPPS contains 4 subscales, namely, urgency (12 items), (lack of) premeditation (11 items), (lack of) perseverance (10 items), and sensation seeking (12 items). Participants responded to each item on scale that ranged from 1 (*agree strongly*) to 4 (*disagree strongly*). Appropriate items were reverse coded in order for higher scores to reflect greater impulsivity. Reliabilities were  $\alpha = .84$ ,  $\alpha = .86$ ,  $\alpha = .81$ , and  $\alpha = .84$  for the urgency, (lack of) premeditation, (lack of) perseverance, and sensation seeking subscales.

***HEXACO Personality Inventory – Revised (HEXACO-PI-R; Lee & Ashton, In Press).*** The 100 item version of the HEXACO Personality Inventory-Revised includes six factors, namely Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. Only the four lower order facets that were identified as being conceptually similar to the impulsivity domains included in the UPPS Impulsive behavior scale were examined. More specifically, the prudence (4 items) and diligence (4 items) facets of the Conscientiousness factor, the patience (4 items) facet of the Agreeableness factor, and the fearfulness (4 items) facet of the Emotionality factor were analysed. Responses were provided to on a likert scale that ranged from 1 (*strongly disagree*) to 5 (*strongly agree*) and scores for each facet were calculated by computing the mean of the appropriate items. Reliabilities for the patience, prudence, fearfulness and diligence facets were  $\alpha = .71$ ,  $\alpha = .65$ ,  $\alpha = .65$ , and  $\alpha = .66$ , respectively.

**Data Analysis.** As was done in study 3, Univariate outliers that fell *more* than 3 SD above/below the mean were Winsorized (Tukey, 1977). SPSS statistical software was utilized to examine bivariate associations and Amos v. 21 was used to conduct all path

analyses. Path analysis was utilized to examine the relationships among the psychopathy factors and the impulsivity domains of the UPPS, as well as the psychopathy factors and impulsivity relevant facets of the HEXACO-PI-R. In separate path models, the UPPS impulsivity domains/HEXACO-PI-R facets were simultaneously regressed onto the predicted psychopathy factors and path coefficients as well as global and local fit indices were examined. If results indicated poor fit, modification and local fit indices, as well as expected parameter change values were examined to determine whether additional paths would result in a better fitting model. If this was the case, additional paths were added one at a time and only when theoretically appropriate. Results from both the predicted and final models are presented. Full information maximum likelihood estimation was used to estimate the model parameters.

## **Results**

**Correlations Among all Study Variables.** Means, standard deviations, and bivariate correlations are presented in Table 2.4. Most notably, results indicated that the correlations between the UPPS impulsivity domains and corresponding HEXACO-PI-R facets were all moderate to large (bolded in Table 2.4). Moreover, with the exception of the association between prudence and urgency ( $r = -.55$ ), the highest correlations observed were between the UPPS impulsivity domains and the proposed corresponding HEXACO-PI-R facet. With the exception of the non-significant associations of sensation seeking with interpersonal manipulation and antisocial behaviour, all four psychopathy facets were positively associated with all UPPS impulsivity domains and negatively related to all HEXACO-PI-R facets. Of note, the relationships of the erratic lifestyle psychopathy traits with the impulsivity domains and with impulsivity relevant HEXACO-



Table 2.4

*Study 4 Descriptive Statistics and Correlations*

	<i>M (SD)</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. IM	40.57 (8.84)												
2. CA	37.70 (8.90)	.67**											
3. EL	44.69 (9.04)	.58**	.56**										
4. ASB	28.31 (11.02)	.43**	.65**	.44**									
5. EL adj	17.84 (4.30)	.52**	.50**	.90**	.46**								
6. PreMed	21.92 (5.01)	.28**	.33**	.49**	.33**	.45**							
7. Urgency	30.60 (6.14)	.35**	.23*	.42**	.19*	.39**	.20*						
8. SS	33.79 (6.46)	.04	.26*	.41**	.12	.26**	.01	.11					
9. Pers	20.75 (4.61)	.31**	.20*	.21*	.19*	.24*	.51**	.17*	-.22*				
10. Prudence	3.19 (.66)	-.26*	-.19*	-.48**	-.23*	-.44**	<b>-.41**</b>	-.55**	-.18*	-.32**			
11. Patience	3.06 (.76)	-.24*	-.26*	-.30**	-.21*	-.30**	-.19*	<b>-.43**</b>	.05	-.04	.23*		
12. Fearful	3.13 (.78)	-.35*	-.54**	-.48**	-.35**	-.35**	-.25*	-.01	<b>-.48**</b>	-.09	.16 <sup>t</sup>	.05	
13. Diligence	3.52 (.70)	-.24*	-.16 <sup>t</sup>	-.19*	-.19*	-.20*	-.32**	-.30**	.08	<b>-.67**</b>	.35**	.04	.06

*Note.*  $N = 140$ , <sup>t</sup> $p < .10$  \* $p < .05$ , \*\* $p \leq .001$ , bolded values represent correlations between UPPS impulsivity domains and corresponding HEXACO facets. , IM = interpersonal manipulation, CA = callous affect, EL = erratic lifestyle, ASB = antisocial behaviour, EL (adj) = adjusted erratic lifestyle scores (impulsivity items removed), PreMed = lack of premeditation, SS = sensation seeking, Pers = lack of perseverance.

PI-R facets remained similar in size or became only modestly smaller after removing the impulsivity items from the psychopathy measure.

**Relationships of Psychopathy Facets with UPPS Impulsivity Domains.** Table 2.5 provides the results of the predicted and modified path models. Global fit indices indicated that the predicted model was not a good fit to the data,  $\chi^2(10) = 31.93$ ,  $p < .001$ , RMSEA = .126, 90% CI [.078, .176],  $p = .007$ , CFI = .944. Examination of modification and local fit indices, and expected parameter change values revealed that the predicted model did not adequately account for all expected relationships. The modification indices, expected parameter change values, and standardized residual covariances revealed that the largest discrepancies occurred with respect to the association between interpersonal manipulation and sensation seeking. As the existing empirical literature has demonstrated inconsistencies with respect to the relationship among Factor 1 psychopathy traits (callous affect and interpersonal manipulation) and various domains of impulsivity, it is possible that the predicted model failed to incorporate all relevant associations in this regard. Accordingly, an additional path was added allowing interpersonal manipulation to predict sensation seeking. Examination of model fit and modification and local fit indices, as well as expected parameter change values of the modified model indicated that this model did not adequately account for the relationship among callous affect and sensation seeking and therefore a second path was added to account for this association. The modified model results are included in Table 2.5.

After inclusion of the two additional paths in the model global fit was improved, RMSEA = .093, 90% CI [.032, .153],  $p = .102$ , CFI = .975, although the model  $\chi^2$

Table 2.5

*Study 4 Path Model Results: Relationships of Psychopathy Facets with UPPS Impulsivity Domains*

Predictor	Premeditation (lack of)				Urgency				Sensation Seeking				Perseverance (lack of)			
	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$
Predicted Model	.25				.18				.17				.04			
IM		-.09*	.04	-.16												
CA						-.01	.06	-.01								
EL		.32**	.05	.57		.29**	.06	.43		.30**	.06	.42		.11*	.04	.21
Modified Model	.24				.18				.25				.04			
IM		-.08 <sup>t</sup>	.05	-.13						-.28**	.07	-.39				
CA						-.01	.06	-.01		.20*	.07	.28				
EL		.31**	.05	.56		.29**	.06	.43		.35**	.07	.49		.11*	.04	.21

*Note.*  $N = 140$ , <sup>t</sup> $p = .093$ , \* $p \leq .05$ , \*\* $p \leq .001$ , IM = interpersonal manipulation, CA = callous affect, EL = erratic lifestyle, antisocial behaviour psychopathy facet was included as a covariate.

remained significant,  $\chi^2(8) = 17.70, p = .024$ . However, a chi square difference test was conducted to determine whether the fit indices for the predicted and modified models were significantly different. Results indicated there was a significant improvement,  $\chi^2(2) = 14.23, p = .01$ . Together the four psychopathy facets accounted for 24%, 18%, 25%, and 4% of the variance in (lack of) premeditation, urgency, sensation seeking, and (lack of) perseverance, respectively. As expected, after accounting for interpersonal manipulation, callous affect, and antisocial behaviour, erratic lifestyle was positively associated with all impulsivity domains. After accounting for the other psychopathy facets, the negative association between interpersonal manipulation and lack of premeditation was marginally significant, whereas the relationship between callous affect and urgency was not significant. Of note, the two additional paths that were added were both significant albeit in opposite directions. Interpersonal manipulation was negatively associated with sensation seeking, whereas callous affect was positively associated with sensation seeking, after accounting for the other psychopathy facets.

**Relationships of Psychopathy Facets with Impulsivity Relevant HEXACO-PI-R Facets.** Results of the predicted and adjusted path models are presented in Table 2.6. Results indicated that the predicted model was a poor fit to the data,  $\chi^2(10) = 29.77, p = .001, RMSEA = .119, 90\% CI [.071, .170], p = .012, CFI = .943$ . Examination of the modification and local fit indices, as well as the parameter change estimates, suggested that the predicted model did not adequately account for the relationship between callous affect and fearfulness. Given the previously reported empirical inconsistencies in the associations among Factor 1 traits (callous affect and interpersonal manipulation) and impulsivity, it is possible that the predicted model did not adequately account for the

Table 2.6

*Study 4 Path Model Results: Relationships of Psychopathy Facets with Relevant HEXACO-PI-R Facets*

Predictor	HEXACO Prudence				HEXACO Patience				HEXACO Fearfulness				HEXACO Diligence			
	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$	$R^2$	$b$	$SE$	$\beta$
Predicted Model	.23				.12				.23				.04			
IM		.01	.01	.07												
CA						-.02*	.01	-.23								
EL		-.04**	.01	-.52		-.02 <sup>t</sup>	.01	-.17		-.04**	.01	-.48		-.02*	.01	-.19
Modified Model	.23				.11				.34				.04			
IM		.01	.01	.08												
CA						-.01	.01	-.15		-.03**	.01	-.39				
EL		-.04**	.01	-.53		-.02*	.01	-.22		-.02**	.01	-.27		-.02*	.01	-.19

*Note.*  $N = 140$ , <sup>t</sup> $p < .10$ , \* $p < .05$ , \*\* $p \leq .001$ , IM = interpersonal manipulation, CA = callous affect, EL = erratic lifestyle, antisocial behaviour psychopathy facet was included as a covariate.

relationships among these traits and various forms of impulsivity. As such, an additional path was added to the model allowing callous affect to predict fearfulness. Notably, the modification required in the HEXACO model was similar to the modification that was conducted in the UPPS model (i.e., additional pathways were required with respect to sensation seeking/fearfulness).

Examination of global fit indices demonstrate that the adjusted model was a good fit to the data,  $\chi^2(9) = 10.12, p = .341, RMSEA = .03, 90\% CI [.000, .103], p = .593, CFI = .997$ . A chi square difference test was conducted to determine whether the fit indices for the predicted and modified models were significantly different. Results indicated there was a significant improvement,  $\chi^2(1) = 19.65, p = .01$ . Together the four psychopathy facets accounted for 23%, 11%, 34%, and 4% of the variance in prudence, patience, fearfulness and diligence, respectively. As expected, after accounting for interpersonal manipulation, callous affect and antisocial behaviour, erratic lifestyle was negatively associated with all four HEXACO-PI-R facets. After accounting for the other psychopathy facets, interpersonal manipulation was unrelated to prudence, and callous affect was unrelated to patience. However, callous affect was found to be negatively associated with fearfulness.

**Summary.** As expected bivariate results indicated that the UPPS impulsivity domains were significantly associated with the proposed corresponding HEXACO-PI-R facets. More specifically, lack of premeditation was associated with lower prudence; higher urgency scores were related to lower levels of patience; a higher likelihood of engaging in sensation seeking was associated with lower fearfulness; and lack of perseverance was associated with lower diligence. Of note, both sensation seeking

(UPPS) and fearfulness (HEXACO-PI-R) appear to demonstrate a differential pattern of associations in comparison to the other impulsivity domains and HEXACO-PI-R facets. More specifically, while (lack of) premeditation, urgency, and (lack of) perseverance are all positively correlated, sensation seeking was unrelated to or negatively associated with the other impulsivity domains. A similar pattern was observed for fearfulness.

Bivariate results demonstrated that all four psychopathy facets were positively associated with the UPPS impulsivity domains and negatively related to the impulsivity relevant HEXACO-PI-R facets. The only exception to this was the lack of association between interpersonal manipulation, antisocial behaviour, and sensation seeking. Therefore, at the bivariate level all psychopathy facets were associated with a greater tendency towards impulsivity. Notably, the erratic lifestyle associations remained significant after removing the impulsivity items from the psychopathy measure.

As anticipated, multivariate path analyses indicated that after accounting for interpersonal manipulation, callous affect, and antisocial behaviour, erratic lifestyle traits were positively associated with lack of premeditation, urgency, sensation seeking, and lack of perseverance, and negatively related to prudence, patience, fearfulness, and diligence. After accounting for the other psychopathy facets, a marginally significant negative association was observed between interpersonal manipulation and lack of premeditation in analyses utilizing the UPPS, while the path analyses using the HEXACO-PI-R indicated that interpersonal manipulation and prudence were unrelated. Moreover, callous affect was not significantly associated with urgency in analyses using the UPPS, or with patience in the HEXACO-PI-R analyses. Although the hypothesized negative associations were not observed, this finding was consistent with across analyses

utilizing the UPPS and the HEXACO-PI-R. Of note, in both the sets of analyses, additional pathways involving sensation seeking/fearfulness were required to obtain good model fit. More specifically paths were added from interpersonal manipulation and callous affect to sensation seeking the UPPS model and from callous affect to fearfulness in the HEXACO model. The relative consistency in the observed pattern of associations among the psychopathy facets and the UPPS domains and HEXACO-PI-R facets adds some credence to use of the preselected HEXACO-PI-R facet as a means of approximating impulsivity.

Of note, differential associations between the psychopathy facets and impulsivity constructs were observed in the in the bivariate and multivariate analyses.<sup>5</sup> Generally speaking, results of multivariate analyses suggested that the erratic lifestyle traits are primarily responsible for driving the psychopathy-impulsivity relationship. Moreover, when the variance shared among the psychopathy facets is accounted for Factor 1 traits, including interpersonal manipulation and callous affect, appear to be largely unrelated to impulsive behaviour.

## **Discussion**

The current work sought to examine the association between psychopathic traits and impulsivity in both adolescents (Study 3) and adults (Study 4) through the lens of a general model of personality, namely, the HEXACO. The purpose of the current research was two-fold. The primary aim was to examine whether previously reported associations between psychopathic traits and impulsivity among adults would extend to an adolescent

<sup>5</sup> In four follow-up regressions, results showed that when each facet was included as the only predictor, CA was positively related to urgency, IM was positively related to (lack of) premeditation, CA was negatively related to patience, and IM was negatively related to prudence. When EL was included in each of the regression all relationships were not significant, suggesting that EL may be the suppressor variable in the model.



population. The secondary goal was to examine the extent to which preselected facets of the HEXACO-PI-R could approximate already established domains of impulsivity. To my knowledge, this is the first study to utilize the HEXACO model of personality to tap into impulsivity. Moreover, this research adds to the current body of literature regarding the relationship between psychopathic traits and impulsivity by utilizing the more recent and statistically supported four-factor model of psychopathy. The secondary aim of the paper will be covered first to give further credence to the subsequent discussion regarding the associations found among psychopathy traits and the impulsivity relevant HEXACO-PI-R facets.

Hypotheses concerning the relationships between the impulsivity relevant HEXACO-PI-R facets and various external correlates that have previously been found to be associated with impulsivity, were largely supported. More specifically, as expected, in Study 3 it was found that lower self-reported prudence, patience, and diligence (proposed to map onto lack of premeditation, urgency, and lack of perseverance, respectively) were associated with a higher likelihood of exhibiting hyperactivity, aggression, and conduct problems, including theft, vandalism, substance use, and violence. Further, higher levels of prudence, patience, and diligence were also found to be correlated with greater activation control, attention, and inhibitory control, all variables that would likely play a role in the expression of impulsive behaviour. These results coincide with previous research concerning the association between the UPPS impulsivity domains and aggression (Hecht & Latzman, 2015), as well as work examining the relationship between the HEXACO-PI-R and aggression (Book, et al., 2012). The current findings also fit with research conducted by Maneiro, Gómez-Fraguela, Cutrín, and Romero

(2017) in which some of the UPPS impulsivity domains were found to be associated with aggression, theft, vandalism, and rule breaking behaviour. Results concerning the fearfulness facet (proposed to map onto sensation seeking) were more inconsistent. Although higher fearfulness was associated with a decreased tendency to engage in theft, substance use, and violence, and with greater fear and activation control, it was unrelated to the other predicted external correlates. Overall, the current findings provide preliminary support for use of the preselected HEXACO-PI-R facets to approximate impulsivity by demonstrating some degree of construct validity.

Findings from Study 4 provide further, and more direct, support for the notion that the preselected HEXACO-PI-R facets may be used to tap into currently established impulsivity domains. As hypothesized, the UPPS impulsivity domains demonstrated moderate to strong relationships with the proposed corresponding HEXACO-PI-R facets. More specifically, lack of premeditation was associated with lower prudence, higher urgency scores were related to lower levels of patience, greater self-reported sensation seeking was associated with lower fearfulness, and lack of perseverance was associated with lower diligence. Of note, with the exception of the relationship between urgency and prudence, the UPPS impulsivity domains demonstrated the highest associations with the proposed corresponding HEXACO-PI-R facets (as compared to the other HEXACO-PI-R facets that were included).

It appears that both sensation seeking (UPPS) and fearfulness (HEXACO-PI-R) display an inconsistent pattern of associations when compared to the other impulsivity domains and HEXACO-PI-R facets. More specifically, although (lack of) premeditation, urgency, and (lack of) perseverance all demonstrate positive intercorrelations, sensation

seeking was unrelated or negatively related to the other impulsivity domains. The fearfulness facet of the HEXACO-PI-R appears to demonstrate similar inconsistencies, which may provide some insight into why the hypothesized relationships with several external correlates were not found in Study 3. Further, these results appear to be consistent with previous work demonstrating lower and sometimes non-significant relationships between sensation seeking and the other impulsivity domains (Maneiro et al., 2017; Miller, Flory, Lynam, & Leukefeld, 2003; Whiteside & Lynam, 2001). The current work, in conjunction with the previous literature, suggests that perhaps sensation seeking may be best viewed as a separate construct that may not necessarily represent impulsivity in the traditional sense.<sup>6</sup> For example, sensation seeking, or thrill/adventure seeking behaviours (e.g., sky diving) can be planned and premeditated, and carried out after careful evaluation of the possible consequences. This conflicts with the more traditional conceptualizations of impulsivity as unplanned, hasty behavioural responses that occur without consideration of consequences. From this perspective, it may be plausible that sensation seeking would be better situated within the construct of risk-taking. Indeed the Risk Return Framework of Risk Choice (Blais & Webber 2006/2009) conceptualizes risk taking as behaviour predicated on evaluation of perceived risk, perceived benefit, and the trade-off between the two. Moreover, this theoretical model also depicts risk-taking as domain specific and includes a recreational component that clearly depicts sensation seeking activities (i.e., sky diving, bungee jumping, white water rafting). This perspective highlights the similarities between risk-taking and sensation seeking behaviours, further supporting the notion that sensation seeking does not fit well

within the construct of impulsivity. Also of note, researchers in both the social

<sup>6</sup>Post hoc analyses in which sensation seeking was removed from the tested path models in Studies 1, 2, and 4, revealed that without sensation seeking in the analyses, all models were a good fit to the data, no model modifications were necessary, and the remaining path co-efficients revealed the same patterns as was found in the models that contained sensation seeking.

neuroscience and developmental psychology streams have proposed that impulsivity and sensation seeking may in fact follow distinctly different developmental trajectories with roots in differing neurobiological systems (Harden & Tucker-Drob, 2011; Steinberg et al., 2008).

Taken together, overall results from Studies 1 and 2 do indeed provide some preliminary support for the use of specific facets of the HEXACO-PI-R as a means of approximating or tapping into impulsivity relevant traits, although further work is need to validate this approach.

As noted, the primary purpose of the current work was to examine the specific associations among psychopathic traits and impulsivity, and further to examine whether psychopathy-impulsivity associations are consistent among adult and youth populations. Results of Study 4 demonstrated that as expected, within an adult sample the erratic lifestyle psychopathy factor was associated with an increased propensity towards impulsive behaviour. More specifically, erratic lifestyle was positively associated with all four UPPS impulsivity domains and negatively related to all four impulsivity relevant HEXACO-PI-R facets. Of most importance, the relationship was observed in both bivariate and multivariate analyses, held even after the impulsivity relevant items were removed from the psychopathy measure, and remained consistent irrespective of the domain or type of impulsivity that was under investigation. These findings are largely consistent with previous literature demonstrating a positive relationship between Factor 2 psychopathy traits and impulsivity (Anestis et al., 2009; Morgan et al., 2011; Ray et al., 2009; Snowden & Gray, 2011). Moreover, results are also consistent with more recent work by Hosker-Field and Book (2017) indicating that the erratic lifestyle facet, which

includes traits such as stimulation seeking, irresponsibility, impulsivity and a lack of realistic goals, is primarily responsible for driving the psychopathy (specifically Factor 2) impulsivity relationship.<sup>7</sup>

Study 3 results revealed that this pattern of associations may indeed extend to youth populations. Findings demonstrated that the impulsivity facet of the Antisocial Process Screening Device (Frick & Hare, 2001) was associated with greater levels of impulsivity as indexed by the preselected impulsivity relevant facets of the HEXACO-PI-R. More specifically, the impulsivity psychopathy facet was associated with lower levels of prudence, patience, diligence, and fearfulness (proposed to map onto lack of premeditation, urgency, lack of perseverance, and sensation seeking respectively) in both bivariate and multivariate analyses. Therefore among youth this facet appears to be important with respect to the psychopathy-impulsivity relationship. It is important to note that although the erratic lifestyle psychopathy facet examined in adult populations does assess several traits in addition to impulsivity, the impulsivity subscale of the APSD only contains 5 items, all of which appear to directly assess some aspect of impulsivity.

The current work demonstrated limited support for the predicted associations of Factor 1 traits, including interpersonal manipulation and callous affect with impulsivity. As expected the analytical approach utilized did appear to influence the results. The significant positive associations between interpersonal manipulation and lack of premeditation, and between callous affect and urgency, and the negative associations observed between interpersonal manipulation and prudence, and between callous affect

<sup>7</sup>A series of post hoc regression analyses supported the general conclusion that erratic lifestyle appears to be driving the psychopathy-impulsivity relationship. Results demonstrated that most of the variance in the impulsivity domains that is accounted for by the psychopathy factors is attributable to variance that is shared with erratic lifestyle.

and patience, found in the bivariate analyses were negated or reversed in the multivariate path analyses. Identifying and acknowledging the change in the observed relationships when different analytical approaches are used may help to inform previously identified empirical inconsistencies in the psychopathy (specifically Factor 1)--impulsivity relationship. It may be the case that accounting for the erratic lifestyle facet, which is consistently associated with impulsivity, removes the impulsivity-relevant variance in interpersonal manipulation and callous affect. This in turn, may lead to the observed negative associations between these facets and impulsivity at the multivariate level. Generally, findings suggest that researchers should be explicit about whether their conclusions are based on bivariate or multivariate analyses.

Multivariate analyses did provide some support for the predicted negative association between interpersonal manipulation and lack of premeditation, a finding that is consistent with our previous work (Hosker-Field & Book, 2017). Of note, interpersonal manipulation was found to be unrelated to the prudence facet of the HEXACO-PI-R, which was proposed to map onto lack of premeditation. This inconsistency suggests that although the prudence facet of the HEXACO-PI-R and the lack of premeditation domain of the UPPS may be conceptually similar and highly related, they likely represent distinct and independent constructs. Results suggest that after accounting for erratic lifestyle, antisocial behaviour, and callous affect, individuals who exhibit interpersonal manipulation traits, such as glibness and superficial charm, and deceitful and conning behaviour, may be unlikely to engage in impulsive behaviour characterized by a lack of consideration for potential consequences. In other words, for these individuals, behaviour that appears impulsive may actually be planned or premeditated and carried out despite

possible detrimental outcomes. This conclusion makes sense given the traits that are inherent in the interpersonal manipulation facet of psychopathy. It is also possible that after accounting for the other psychopathy facets, the variance left in the interpersonal manipulation facet is conceptually similar to machiavellianism, which can be defined as a cold, exploitive, and manipulative interpersonal orientation (Glenn & Sellbom, 2015). In this case, the negative relationship between interpersonal manipulation and (lack of) premeditation found here coincides with existing research demonstrating that machiavellianism and impulsivity are largely unrelated (Jones & Paulhus, 2011; Malesza & Ostaszewski, 2016).

Contrary to expectation, callous affect was unrelated to both the urgency domain of the UPPS and the patience facet of the HEXACO-PI-R. That, after accounting for the interpersonal manipulation, erratic lifestyle, and antisocial behaviour traits of psychopathy, callous affect which involves shallow affect, lack of guilt, remorse, and empathy and callousness was unrelated to impulsive behaviour driven by a need to reduce or escape negative emotional experiences and unrelated to one's ability to remain calm and avoid angry outbursts. Given the general lack of emotion that characterizes the callous affect facet of psychopathy this result is none too surprising.

Although no predictions were made regarding the Factor 1 psychopathy-sensation seeking relationship, it is interesting that multivariate path analyses revealed that interpersonal manipulation was found to be negatively associated with sensation seeking, whereas callous affect was positively related to sensation seeking. Moreover, callous affect was also found to be negatively associated with the fearfulness facet of the HEXACO-PI-R. Although not predicted in the current work, this finding does coincide

with previous research in which Factor 1 traits were found to be positively associated with the sensation seeking (Anestis et al., 2009; Ray et al., 2009). The current findings may provide further insight into this association by suggesting that it may be the callous affect facet that is primarily responsible for driving the previously observed Factor 1 psychopathy-sensation seeking relationships. However, further work is needed to determine the replicability of this result. The observed associations between Factor 1 traits and sensation seeking coupled with the inconsistent associations between sensation seeking and other identified domains of impulsivity (discussed above) further suggest that perhaps sensation seeking should be regarded as an independent construct, better situated within the risk-taking literature, rather than as a component of impulsivity.

Although the observed associations between Factor 2 psychopathy traits (specifically the erratic lifestyle facet) and impulsivity do appear to extend to youth populations, the same degree of consistency was not observed with respect to the relationship between Factor 1 psychopathy traits and impulsivity. For example, although callous affect was found to be unrelated to patience in the adult sample (Study 4), results of Study 3 indicated that in a youth sample, callous-unemotional traits were negatively associated with patience (proposed to map onto urgency). Moreover, callous-unemotional traits were also found to be negatively related to prudence and diligence (proposed to approximate lack of premeditation and perseverance respectively). Thus, after accounting for the narcissism and impulsivity dimensions of youth psychopathy, callous-unemotional traits were associated with a lower likelihood of deliberation and considering potential consequences, a decreased ability to remain calm and maintain composure when angry or upset, and lower levels of self-discipline. Results also indicated that narcissism was



unrelated to prudence in the youth sample, which did in fact mirror the results found in the adult sample. Overall, although Factor 1 psychopathy traits appear to be unrelated, or even negatively associated with impulsivity among adults (when shared variance is accounted for), Factor 1 traits, most notably callous-unemotional traits do appear to be associated with an increased propensity towards impulsive behaviour in youth (at least as indexed by the impulsivity relevant HEXACO-PI-R facets).

Overall the current pattern of results generally supports the dual-pathway model proposed by Fowles and Dindo (2006/2009). The consistent and pervasive associations observed between Factor 2 psychopathy traits, specifically the erratic lifestyle facet, and impulsivity, coupled by the relative lack of relationship observed among Factor 1 psychopathy traits and impulsivity, provides support for the dual pathway model among adult populations. More specifically, these findings support the notion that the etiological pathway leading to the emergence of Factor 2 psychopathy traits may indeed be characterized by regulatory control and information processing deficits, while Factor 1 traits are likely to follow a developmental trajectory characterised by lack of anticipatory fear and anxiety. Thus, in some cases the risky or dangerous behaviour exhibited by individuals who display Factor 1 traits may be planned and/or premeditated. Conversely, individuals who exhibit Factor 2 traits may engage in risky or dangerous impulsive behaviour due to a lack of attention to, understanding of, or consideration for, potential consequences. The consistent relationships observed between Factor 2 psychopathy traits and impulsivity/impulsivity relevant HEXACO-PI-R facets among both youth and adult samples, suggests that the Factor 2 developmental trajectory may indeed begin in childhood. In contrast, the inconsistent associations observed between Factor 1

psychopathy traits and impulsivity in the youth and adult samples suggest that the Factor 1 trajectory may become much more distinguishable in later developmental stages. Although alternative explanations, including the use of different psychopathy measures with youths and adults, may also be influencing the results.

There are several possibilities that may assist in explaining why the observed pattern of associations among Factor 1 psychopathy traits and impulsivity may differ among youth and adult populations. One possible explanation centres on the way impulsivity was assessed in the current youth sample. Although results did provide evidence that the preselected HEXACO-PI-R facets may indeed tap into traits that are relevant and likely conceptually similar to the impulsivity domains assessed by the UPPS, they remain distinct and separate constructs. Accordingly, perhaps use of the UPPS impulsive behaviour scale (Whiteside & Lynam, 2001) within the youth sample would have yielded results more consistent with what is observed in adult populations. It is also possible the all domains of impulsivity are simply more normative and pervasive during adolescence. Indeed, research by Collado, Felton, MacPherson, and Lejuez (2014) demonstrated that impulsivity gradually increased during adolescence, peaking between ages 13 and 17, before declining. Other researchers have reported a gradual decline in impulsivity throughout adolescence (Harden & Tucker-Drob, 2011; Steinberg et al., 2008). Regardless of whether there is a linear or quadratic trajectory in impulsivity during childhood/adolescence, both possibilities would indicate higher levels of impulsivity during adolescence than adulthood. Such a trend may shed some light onto why impulsivity was found to be positively associated with Factor 1 psychopathy traits during adolescences, but unrelated (and potentially negatively related) during adulthood.

The current work has several limitations that should be acknowledged. First, all measures were self-report which may pose a problem with respect to socially desirable responding. This approach could potentially result in inflated correlations between scales measuring traits that have similar levels of (un)desirability. Thus, future research would benefit from including alternative measures of both psychopathy and impulsivity, such as observer or parent/teacher reports. In a related vein, the reliability of the callous-unemotional and impulsivity facets of the APSD were quite low in the current work. However, reliabilities were consistent with what has been reported elsewhere and regardless of this fact several researchers have concluded that the measure remains a valuable tool in assessing psychopathy among youth (Munoz & Frick, 2007; Shaffer et al., 2016). That said, incorporating teacher or parent reports as suggested above would likely improve reliability in future research. The current work is also based solely on community or student samples, and future research would benefit from examining psychopathy and impulsivity in incarcerated youth and adult samples to assess whether the pattern of relationships remains consistent across all populations.

Despite several limitations, the current work does provide valuable insight into the complex nature of the relationship between two multifaceted constructs, namely psychopathy and impulsivity. Findings highlight a need to examine the facet/factor level relationships among the two constructs, and further indicate a need be clear and explicit about whether empirical conclusions are based on bivariate or multivariate analyses, as suppression does appear to be a prevalent issue in this body of literature. The current work also demonstrates to some extent that the scales of a general personality inventory (HEXACO-PI-R) can be used to approximate already established domains of impulsivity.

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## General Discussion

The purpose of the program of research presented in this dissertation was two-fold. The primary goal was to examine the associations among specific psychopathic traits or factors and various domains of impulsivity. As covered extensively in previous chapters, both psychopathy and impulsivity have been conceptualized as multifaceted constructs and empirical research has demonstrated considerable support for this assertion (Hare & Neumann, 2008; Mahmut, Menictas, Stevenson, & Homewood, 2011; Neal & Sellbom, 2012; Patton, Stanford, & Barratt, 1995; Whiteside & Lynam, 2001; Whiteside, Lynam, Miller, & Reynolds, 2005). Moreover, research has demonstrated inconsistent and differential relationships among psychopathic traits and impulsivity, most notably with respect to the affective and interpersonal features of psychopathy (Anestis, Anestis, & Joiner, 2009; Morgan, Gray, & Snowden, 2011; Ray, Poythress, Weir, & Rickelm, 2009; Snowden & Gray, 2011). Thus, it seemed an extensive investigation regarding possible explanations for these discrepancies was warranted. My contention was that the inconsistent empirical results were a reflection of the differential measures and analytical techniques that are utilized in the literature. Accordingly, several studies were designed to assess the extent to which consistent relationships could be obtained across multiple populations, when similar measures and statistical analyses were applied. Of note, researchers have long sought to situate the construct of impulsivity within broader models of personality (Eysenck & Eysenck, 1977; Eysenck, 1993a; Eysenck, 1993b; Gray, 1987; Gray & McNaughten, 2000; Whiteside & Lynam, 2001). However, researchers have yet to explore the extent to which the more recent six-factor model of personality, the HEXACO (Ashton & Lee, 2009; Lee & Ashton, 2004), can

capture the construct. As such, the secondary aim of the current work to assess the extent to which preselected facets of the HEXACO-PI-R could capture already established factors of impulsivity.

Research has consistently shown that the socially deviant features of psychopathy (Factor 2) are strongly associated with self-reported impulsivity (Anestis et al., 2009; Morgan et al., 2011; Ray et al., 2009; Snowden & Gray, 2011) and the current body of work is no exception. Moreover, this program of research added to the literature by examining the psychopathy-impulsivity relationship from the perspective of the empirically supported four-factor model of psychopathy. Bivariate and multivariate results of Studies 1, 2, and 4, which were based on adult student and adult community populations, all indicated that the erratic lifestyle facet of psychopathy demonstrated the strongest and most consistent relationship with impulsivity. This finding was consistent regardless of the measure, domain, or type of impulsivity under investigation, and also held in analyses utilizing the preselected HEXACO-PI-R facets to tap into sub-traits of impulsivity. The erratic lifestyle facet is characterized by irresponsibility, stimulation seeking, a lack of realistic life goals, having a parasitic orientation, and impulsivity. As such, it is not overly surprising that this particular facet is driving the psychopathy-impulsivity relationship. However, in an attempt to account for possible measurement confounds, bivariate relationships were also examined after removing the impulsivity items from the erratic lifestyle subscale of the psychopathy measure. Of most importance, in all three studies, the pattern of results remained consistent when adjusted erratic lifestyle scores were utilized. Not surprisingly and consistent with expectation, Study 3 results based on a community youth population revealed that the

psychopathy facet labeled impulsivity demonstrated the strongest relations with the preselected, impulsivity relevant HEXACO-PI-R facets. As this psychopathy facet is entirely comprised of impulsivity related items, analyses utilizing adjusted scores were not possible. However, the consist pattern of associations observed here may provide some support for use of the preselected HEXACO-PI-R facets to tap into impulsivity relevant constructs. Overall, results from all four studies, based on community youth, community adults, and undergraduate students, indicate that the socially deviant lifestyle or more behaviourally based traits of psychopathy (as opposed to the interpersonal and affective features) are most consistently associated with self-reported impulsivity across contexts and regardless of the way in which impulsivity is conceptualized and/or measured.

Of note, Study 2 was the only study that incorporated laboratory-based behavioural indices of impulsivity, via inclusion of various computer based tasks. Results were not consistent with findings based on self-report measures of impulsivity. More specifically, the erratic lifestyle traits (as well as all other features of psychopathy) were unrelated to the laboratory-assessed behavioural impulsivity measures. These results are somewhat inconsistent with previous research reporting positive associations between the socially deviant features of psychopathy (Factor 2) and behavioural measures of impulsivity (Feilhauer, Cima, Korebrits, & Kunert, 2012; Weidacker, Snowden, Boy, & Johnston, 2017a). However, the previous work was based on offender samples, which may help to explain the discrepancy with the current findings. More specifically, perhaps the association between psychopathic traits and behavioural indices of impulsivity are

more readily detected in samples that demonstrate a more severe degree of psychopathic traits.

The current program of research paints a more interesting and complex picture concerning the relationship between the interpersonal and affective features of psychopathy and the various domains of impulsivity. As expected, results tended to differ based on the type of analyses that were used and which domains of impulsivity were under investigation. Across studies, bivariate analyses tended to reveal positive or non-significant associations between interpersonal manipulation, callous affect, and the various domains of impulsivity, as assessed by both pre-existing measures of impulsivity, as well as the preselected impulsivity relevant facets of the HEXACO-PI-R. However, when predicted associations were tested with multivariate path analyses these relationships were negated, reversed, or increased in magnitude.

Results of the multivariate analysis in all four studies indicated that the interpersonal features of psychopathy were either unrelated or negatively associated with the domains of impulsivity that involve planning, forethought, or consideration of potential consequences. This finding seems fitting given that the interpersonal aspects of psychopathy involve such traits as grandiosity, superficial charm, deceitfulness, and tendency to engage in conning and manipulative behaviour. Presumably, in order to successfully con, manipulate, and deceive others, one would have to demonstrate some degree of competency with regard to future planning and consequence consideration, or at the very least not be lacking in these areas.

Results of Studies 1, 2, and 4, based on adult populations also revealed that at the multivariate level the affective features of psychopathy were negatively related or

unrelated to urgency, a domain of impulsivity characterised by a desire to avoid or escape negative emotional experiences. Again, this pattern of results is not overly surprising given that the callous affect facet of psychopathy is characterised by lack of remorse, empathy, and guilt, and shallow affect, as this affective flattening would likely denote a lower likelihood of experiencing negative emotion in the first place. Of note, results of Study 3, based on an adolescent sample were not consistent with the adult samples. More specifically, the callous-unemotional features of psychopathy were found to be positively associated with impulsivity (as indicated by observed negative associations with the preselected impulsivity relevant facets of the HEXACO-PI-R). Youth generally demonstrate higher levels of impulsivity than adults (Collado, Felton, MacPherson, & Lejuez, 2014; Harden & Tucker-Drob, 2011; Steinberg et al., 2008) which may help to explain why the psychopathy-impulsivity relationship may be more pervasive and not limited to the socially deviant/lifestyle traits alone in younger populations.

The current results regarding the differential pattern of associations found among the emotional/interpersonal and socially deviant lifestyle features of psychopathy and the various domains of impulsivity are consistent with newly published literature citing the importance of examining psychopathy and impulsivity with multivariate analytical techniques (Fox & Hammond, 2017). For example, Fox and Hammond (2017) examined psychopathic traits and impulsivity in a university sample employing canonical correlation analysis to examine the multivariate relationship among the two constructs. Results revealed three functions, the first of which demonstrated that impulsivity accounts for a large portion of the variance in psychopathy. The authors interpreted this as support for the contention that psychopathy measures may be heavily based on items

assessing impulsive traits. The second and third functions are of more relevance and are reflective of the results presented here. More specifically, the second identified function was equated with secondary psychopathy and was characterized by reckless, rebellious, risk taking, an inability to plan, a lack of forethought, and a present (rather than future) orientation. This is consistent with the current findings regarding the extensive and pervasive association between the lifestyle facet of psychopathy and impulsivity. The final function identified by Fox and Hammond (2017) was identified as being similar to the primary psychopath and was denoted by the ability to engage in future planning, to make quick calculated decisions, as well as a lack of anxiety, and a tendency to manipulate and blame others. This is reminiscent of the current findings regarding the relationship between the emotional/interpersonal features of psychopathy and the impulsivity domains related to planning, forethought, consideration of consequences and negative emotion. Further, the authors identified “planning impulsivity” as a plausible mechanism by which various subtypes of psychopathy may be distinguished.

Although the current work did not utilize a person-centred research approach, findings suggest that future work employing person-centred analyses may indeed find that, as suggested by Karpman (1946; 1948a/1948b), impulsivity may be useful in distinguishing between psychopathy subtypes. Indeed recent work described by Hare (2016) involving latent profile analysis does point to the existence of various subtypes of psychopathy, some of which are consistent with the results presented herein. More specifically, Hare (2016) discusses a body of literature in which latent profile analysis has led to the repeated identification of four distinct subtypes of psychopathy including a “psychopath” subtype that scores high on all four identified facets of psychopathy, a

“callous-conning” subtype that displays elevated scores on the emotional/interpersonal features of psychopathy, a “sociopathic offender” subtype that scores high on the lifestyle and antisocial features of psychopathy, and a “general offender” group that does not generally exhibit many psychopathic traits. This body of literature appears to be somewhat consistent with the current findings, specifically with respect to the observed relations (or lack thereof) among the affective/interpersonal psychopathy features and impulsivity. More specifically result suggest that there may indeed be a “callous-conning” subgroup, which does not display the antisocial or lifestyle features of psychopathy that are highly associated with impulsivity.

Generally speaking, the current program of research, coupled with other recently published literature in the field, provides some support for the theoretical assertions proposed in the dual-pathway model of psychopathy (Fowles & Dindo, 2006/2009). More specifically, the differential relationships observed between the interpersonal/affective (Factor 1) and socially deviant (Factor 2) features of psychopathy and the various domains of impulsivity give credence to the notion that these features of psychopathy may emerge via separate etiological pathways. More specifically, the collective results of these studies suggest that the Factor 2 trajectory may be characterized by poor regulatory control and information processing deficits leading to impulsive behaviour that results from a lack of understanding, attention to, and/or consideration of potential consequences. Conversely, within the Factor 1 trajectory, behaviour that may appear impulsive, risky or dangerous, is likely to be the result of a general lack of fear and/or anxiety and is carried out with full knowledge and understanding of the potential consequences. Notably, although the dual-pathway model



of psychopathy does not conceptualize the construct from a subtype or taxometric perspective, it may in fact be helpful in explaining the existence of various subtypes of psychopathy.

As previously mentioned, a secondary aim of the current work was to assess the extent to which the HEXACO model of personality (Ashton & Lee, 2009; Lee & Ashton, 2004; Lee & Ashton, in press) could be used to tap into already established measures of impulsivity. It was proposed that the HEXACO-PI-R facets of prudence, patience, fearfulness, and diligence could be used to approximate the already established subscales of the UPPS impulsive behaviour scale (Whiteside & Lynam, 2001), including (lack of) premeditation, urgency, sensation seeking, and (lack of) perseverance, respectively. Generally speaking, Studies 2 and 3 appear to provide preliminary support for the use of these preselected facets of the HEXACO-PI-R to tap into pre-existing impulsivity domains. Study 3 provided some support in terms of demonstrating construct validity. More specifically, prudence, patience, and diligence were negatively associated with aggression, hyperactivity, and conduct problems, including vandalism, violence, theft, and substance use, and positively related to activation control, attention, and inhibitory control. In addition, fearfulness was also negatively related to theft, substance use, and violence and positively associated with fear and activation control. These findings are consistent with previous research in which the domains of impulsivity assessed with the UPPS were found to be associated with aggression, theft, vandalism, and rule breaking (Hecht & Latzman, 2015; Maneiro, Gómez-Fraguela, Cutrín, & Romero, 2017). Results from Study 4 provided even further support for the use of the preselected HEXACO-PI-R facets as a means of approximating the UPPS impulsivity domains. Moderate to strong

associations were observed between the UPPS impulsivity domains and the proposed corresponding HEXACO-PI-R facets. More specifically, lack of premeditation was related to lower prudence, greater urgency was associated with lower patience, higher levels of sensation seeking was associated with lower fearfulness, and lack of perseverance was related to lower diligence. Also of note, a similar pattern of relations was observed between the psychopathy facets and the UPPS impulsivity domains, and the psychopathy facets and impulsivity relevant facets of the HEXACO-PI-R.

The program of research presented in this dissertation provides a more nuanced understanding of the associations between two complex, multifaceted constructs, namely psychopathy and impulsivity. More specifically, the results demonstrated that relatively consistent relationships between psychopathic traits and self-reported impulsivity can indeed be obtained across various populations when the same measures and statistical analyses are used. Results suggest that it is specifically the erratic lifestyle features of psychopathy that drive the psychopathy-impulsivity relationship. This is evidenced by the positive associations observed in both the bivariate and multivariate analyses. Results concerning the relationships among the affective and interpersonal aspects of psychopathy and the various factors of impulsivity suggest that conclusions based on bivariate and multivariate analyses may differ substantially. More specifically, after accounting for the socially deviant lifestyle traits of psychopathy, the affective and interpersonal traits appear to be unrelated and possibly negatively associated with some factors of impulsivity, namely those that involve planning, forethought and consideration of consequences. These findings appear to be relatively consistent with the dual-pathway model of psychopathy (Fowles & Dindi, 2006/2009). Finally, the results of this

dissertation also provide some preliminary support for the idea that the HEXACO model of personality can be used to tap into pre-existing domains of impulsivity. However, more extensive research is needed to support this approach.

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**APPENDIX A**





**Brock University**  
 Research Ethics Office  
 Tel: 905-688-5550 ext. 3035  
 Email: reb@brocku.ca

Social Science Research Ethics Board

**Certificate of Ethics Clearance for Human Participant Research**

DATE: 10/9/2013

PRINCIPAL INVESTIGATOR: BOOK, Angela  
 Psychology

FILE: 13-053 - BOOK

TYPE: Undergraduate and Ph.D      STUDENT: Ashley Hosker-Field  
    SUPERVISOR: Angela Book

TITLE: Examining the Associations among Psychopathy, Impulsivity and Risk Taking

**ETHICS CLEARANCE GRANTED**

Type of Clearance: NEW

Expiry Date: 10/31/2014

The Brock University Social Sciences Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from 10/9/2013 to 10/31/2014.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 10/31/2014. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at <http://www.brocku.ca/research/policies-and-forms/research-forms>.

In addition, throughout your research, you must report promptly to the REB:

- a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
- c) New information that may adversely affect the safety of the participants or the conduct of the study;
- d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:

  
 \_\_\_\_\_  
 Jan Frijters, Chair  
 Social Sciences Research Ethics Board

**Note:** Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.

**APPENDIX B**

**SONA Advertisement (Study 2)**

<b>Study Name:</b>	Personality and Behaviour
<b>Abstract:</b>	Obtain research participation experience by taking part in our personality study
<b>Description:</b>	Participants will complete three short computer based tasks designed to assess behavioural response and will then complete a series of brief questionnaires regarding personality and behaviour.
<b>Purpose:</b>	To investigate the relationship between personality and behaviour
<b>Eligibility:</b>	Must be a Brock student
<b>Requirements:</b>	All are welcome!
<b>Sign up:</b>	on SONA or through e-mail at <a href="mailto:mh10xm@brocku.ca">mh10xm@brocku.ca</a>
<b>Restrictions:</b>	None
<b>Duration:</b>	1 hr
<b>Pay:</b>	1 hour of research participation and entry into a draw for a \$50.00 Tim Hortons gift certificate
<b>Researchers:</b>	Ashley Hosker-Field, Melissa Hill
<b>Faculty Supervisor:</b>	Dr. Angela Book

This study has been reviewed and received ethics clearance through the Office of Research Ethics Board (REB #13-053-BOOK).

# **ATTENTION STUDENTS!!**

If you are currently a Brock University student,

**WE WANT YOU . . .**

To participate in a research study about personality and behaviour.

## **How long will it take?**

ONLY **1 hour!!!**

## **What will you do?**

Complete three computer based tasks and fill out a few brief questionnaires

## **Why should you sign up?**

Your name will be entered in a draw to **win a \$50.00 Tim Hortons gift certificate!!!** You can also use your experience towards the completion of course assignments

## **How to sign up?**

Go to the Psychology Department research website  
<http://brocku.sona-systems.com/>

**Look for the “Personality and Behaviour” study after signing in.**

Please refer questions to Ashley Hosker-Field (ah03ez@brocku.ca)

Faculty supervisor: Dr. Angela Book (abook@brocku.ca)

This study has been reviewed and received ethical clearance through the Office of Research Ethics Board (REB #13-053-BOOK).

## Consent Form (Study 1)

Date: 2013-2014 Academic Year  
Project Title: Personality and Behaviour

Principal Investigator: Ashley Hosker-Field  
Department of Psychology  
Brock University  
ah03ez@brocku.ca

Supervisor: Dr. Angela Book  
Department of Psychology  
Brock University  
(905) 688-5550 Ext. 5223  
abook@brocku.ca

Co-Investigator: Melissa Hill  
Department of Psychology  
Brock University  
mh10xm@brocku.ca

### **INVITATION**

You are invited to participate in a study that involves empirical research. The purpose of this study is to examine the relationship between specific personality traits and behaviour.

### **WHAT'S INVOLVED**

As a participant, you will be asked to complete several brief self-report questionnaires. Participation will take approximately 45 minutes of your time.

### **POTENTIAL BENEFITS AND RISKS**

You will be asked to answer some questions that may potentially cause you to experience some discomfort and it is your right to refrain from answering any such question. Further, if participation in this study causes an aversive emotional response, you may contact any of the researchers involved. Your participation in this study will contribute to the advancement of knowledge regarding the relationship between specific personality traits and behaviour.

### **CONFIDENTIALITY**

The data you provide during your participation in the present study will remain anonymous. Your questionnaire responses will be coded with an arbitrary number that will not be associated in any way with your name. Additionally, data collected during this study will be stored in the Forensic Research Lab at Brock University. Ashley Hosker-Field, Melissa Hill and Dr. Angela Book will have access to the data you provide. Please note that, Mechanical Turk and Survey Monkey are based in the United States and therefore are subject to American Homeland Security laws such as the Patriot Act.

**VOLUNTARY PARTICIPATION**

As previously stated, your participation in the present study is completely voluntary and you may decline to respond to any questions asked of you. Additionally, you may withdraw at any point with no penalty or consequence. Should you choose to withdraw, any data that has already been collected will not be utilized. Once the data have been submitted and the session is over, you will be unable to withdraw your responses as responses are anonymous and therefore cannot be linked to your name.

**RESULTS**

The results of this study will be incorporated into a PhD Dissertation as well as into an Honour's level Thesis. Additionally, the results of this study may be published in professional journals or academic books and presented at empirical research conferences. Feedback concerning the results of the study will be available in the summer of 2014 and you may contact Ashley Hosker-Field, Melissa Hill or Dr. Angela Book if you wish to obtain a copy of the results.

**CONTACT INFORMATION AND ETHICS CLEARANCE**

If you have any questions about this study or require further information, please contact the Principal Investigator or the Faculty Supervisor using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (REB #13-053-BOOK). If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca. Thank you for your assistance with the completion of this project. Please keep a copy of this form for your records.

**CONSENT FORM**

I agree to participate in the study described above and I have made this decision based on the information I have read in the Consent Form.

## Consent Form (Study 2)

Date: 2013-2014 Academic Year  
Project Title: Personality and Behaviour

Principal Investigator: Ashley Hosker-Field  
Department of Psychology  
Brock University  
ah03ez@brocku.ca

Supervisor: Dr. Angela Book  
Department of Psychology  
Brock University  
(905) 688-5550 Ext. 5223  
abook@brocku.ca

Co-Investigator: Melissa Hill  
Department of Psychology  
Brock University  
mh10xm@brocku.ca

### **INVITATION**

You are invited to participate in a study that involves empirical research. The purpose of this study is to examine the relationship between specific personality traits and behaviour.

### **WHAT'S INVOLVED**

As a participant, you will be asked to complete three computer based tasks. Specific instructions will be given on a task by task basis, but for each task you will be asked to view stimuli presented on a computer monitor and to respond by pressing a key on the keyboard. You will also be asked to complete several self-report questionnaires. Participation will take approximately 1 hour of your time.

### **POTENTIAL BENEFITS AND RISKS**

You will be asked to answer some questions that may potentially cause you to experience some discomfort. If participation in this study causes an aversive emotional response, you may contact any of the researchers involved in the study, or Brock University Counseling Services at (905)688-5550, ext. 3240, free of charge. Your participation in this study will contribute to the advancement of knowledge regarding the relationship between specific personality traits and behaviour. Additionally, you are able to use your participation experience as the basis for your assignment in the Introduction to Psychology Course (or other courses offering such opportunities). Further, your name will also be entered in a draw to win a \$50.00 Tim Hortons gift certificate (if you choose to provide contact information to take part in the draw).

### **CONFIDENTIALITY**

The data you provide during your participation in the present study will remain confidential and anonymous. Your questionnaire responses and computer task data will be coded with an arbitrary number that will not be associated in any way with your name. Additionally, data collected during this study will be stored in the Forensic Research Lab at Brock University and will be kept for 5 years after publication, at which time the data will be destroyed. Access to this data will be restricted to Ashley Hosker-Field, Melissa Hill and Dr. Angela Book.

### **VOLUNTARY PARTICIPATION**

As previously stated, your participation in the present study is completely voluntary and you may decline to respond to any questions asked of you. Additionally, you may withdraw at any point with no penalty or consequence. Should you choose to withdraw, any data that has already been collected will be destroyed, and you will still be able to use the experience towards your course assignment. Once the data have been submitted and the session is over, you will be unable to withdraw your responses as responses are anonymous and therefore cannot be linked to your name.

### **RESULTS**

The results of this study will be incorporated into a PhD Dissertation as well as into an Honour's level Thesis. Additionally, the results of this study may be published in professional journals or academic books and presented at empirical research conferences. Feedback concerning the results of the study will be available in the summer of 2014 and you may contact Ashley Hosker-Field, Melissa Hill or Dr. Angela Book if you wish to obtain a copy of the results.

### **CONTACT INFORMATION AND ETHICS CLEARANCE**

If you have any questions about this study or require further information, please contact the Principal Investigator or the Faculty Supervisor using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (REB # 13-053-BOOK). If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca. Thank you for your assistance with the completion of this project. Please keep a copy of this form for your records.

### **CONSENT FORM**

I agree to participate in the study described above. I have made this decision based on the information I have read in the Consent Form. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. Further, I understand that I may withdraw this consent at any time.

Participant Name: \_\_\_\_\_



Participant Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Investigator Signature: \_\_\_\_\_

**Demographics (Study 1)**

1. Male/Female
  
  2. Age: \_\_\_\_\_
  
  3. Race: \_\_\_\_\_
  
  4. Nationality: \_\_\_\_\_
  
  5. Please indicate your education level
    - a. Some high school
    - b. Completed high school
    - c. Some post secondary education
    - d. Completed post secondary education
    - e. Graduate school (MA/PhD)
  
  6. Occupation: \_\_\_\_\_
  
  7. Please indicate if you have ever been diagnosed with any mental health conditions
-

**Demographics (Study 2)**

1. Please circle:

Male/Female

2. Age: \_\_\_\_\_

3. Race: \_\_\_\_\_

4. University year: \_\_\_\_\_

5. University Major: \_\_\_\_\_

6. Please indicate if you have ever been diagnosed with any mental health conditions and list them below:

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### UPPS Impulsive Behavior Scale

Below are a number of statements that describe ways in which people act and think. For each statement, please indicate how much you agree or disagree with the statement.

Rating Scale:

- 1 = Agree Strongly
- 2 = Agree Somewhat
- 3 = Disagree Somewhat
- 4 = Disagree Strongly

Be sure to indicate your agreement or disagreement for every statement below. Also, there are a few more questions on the next page

1. I have a reserved and cautious attitude toward life.
2. I have trouble controlling my impulses.
3. I generally seek new and exciting experiences and sensations.
4. I generally like to see things through to the end.
5. My thinking is usually careful and purposeful.
6. I have trouble resisting my cravings (for food, cigarettes, etc.).
7. I'll try anything once.
8. I tend to give up easily.
9. I am not one of those people who blurt out things without thinking.
10. I often get involved in things I later wish I could get out of.
11. I like sports and games in which you have to choose your next move very quickly.
12. Unfinished tasks really bother me.
13. I like to stop and think things over before I do them.
14. When I feel bad, I will often do things I later regret in order to make myself feel better now.
15. I would enjoy water skiing.
16. Once I get going on something I hate to stop.
17. I don't like to start a project until I know exactly how to proceed.
18. Sometimes when I feel bad, I can't seem to stop what I am doing even though it is making me feel worse.
19. I quite enjoy taking risks.
20. I concentrate easily.
21. I would enjoy parachute jumping.
22. I finish what I start.

23. I tend to value and follow a rational, "sensible" approach to things.
  24. When I am upset I often act without thinking.
  25. I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional.
  26. I am able to pace myself so as to get things done on time.
  27. I usually make up my mind through careful reasoning.
  28. When I feel rejected, I will often say things that I later regret.
  29. I would like to learn to fly an airplane.
  30. I am a person who always gets the job done.
  31. I am a cautious person.
  32. It is hard for me to resist acting on my feelings.
  33. I sometimes like doing things that are a bit frightening.
  34. I almost always finish projects that I start.
  35. Before I get into a new situation I like to find out what to expect from it.
  36. I often make matters worse because I act without thinking when I am upset.
  37. I would enjoy the sensation of skiing very fast down a high mountain slope.
  38. Sometimes there are so many little things to be done that I just ignore them all.
  39. I usually think carefully before doing anything.
  40. Before making up my mind, I consider all the advantages and disadvantages.
  41. In the heat of an argument, I will often say things that I later regret.
  42. I would like to go scuba diving.
  43. I always keep my feelings under control.
  44. I would enjoy fast driving.
  45. Sometimes I do impulsive things that I later regret
-

## Barratt Impulsiveness Scale 11

DIRECTIONS: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and put an X on the appropriate circle on the right side of this page. Do not spend too much time on any statement. Answer quickly and honestly.				
	①	②	③	④
	Rarely/Never	Occasionally	Often	Almost Always/Always
1 I plan tasks carefully.	①	②	③	④
2 I do things without thinking.	①	②	③	④
3 I make-up my mind quickly.	①	②	③	④
4 I am happy-go-lucky.	①	②	③	④
5 I don't "pay attention."	①	②	③	④
6 I have "racing" thoughts.	①	②	③	④
7 I plan trips well ahead of time.	①	②	③	④
8 I am self controlled.	①	②	③	④
9 I concentrate easily.	①	②	③	④
10 I save regularly.	①	②	③	④
11 I "squirm" at plays or lectures.	①	②	③	④
12 I am a careful thinker.	①	②	③	④
13 I plan for job security.	①	②	③	④
14 I say things without thinking.	①	②	③	④
15 I like to think about complex problems.	①	②	③	④
16 I change jobs.	①	②	③	④
17 I act "on impulse."	①	②	③	④
18 I get easily bored when solving thought problems.	①	②	③	④
19 I act on the spur of the moment.	①	②	③	④
20 I am a steady thinker.	①	②	③	④
21 I change residences.	①	②	③	④
22 I buy things on impulse.	①	②	③	④
23 I can only think about one thing at a time.	①	②	③	④
24 I change hobbies.	①	②	③	④
25 I spend or charge more than I earn.	①	②	③	④
26 I often have extraneous thoughts when thinking.	①	②	③	④
27 I am more interested in the present than the future.	①	②	③	④
28 I am restless at the theater or lectures.	①	②	③	④
29 I like puzzles.	①	②	③	④
30 I am future oriented.	①	②	③	④

### The Self-Report Psychopathy Scale: Version 4

Please rate the degree to which you agree with the following statements about you. You can be honest because your name will be detached from the answers as soon as they are submitted.

Rating Scale:

1 = Disagree

2 = Disagree Strongly

3 = Neutral

4 = Agree

5 = Agree Strongly

1. I'm a rebellious person.
2. I'm more tough-minded than other people.
3. I think I could "beat" a lie detector.
4. I have taken illegal drugs (e.g., marijuana, ecstasy).
5. I have never been involved in delinquent gang activity.
6. I have never stolen a truck, car or motorcycle.
7. Most people are wimps.
8. I purposely flatter people to get them on my side.
9. I've often done something dangerous just for the thrill of it.
10. I have tricked someone into giving me money.
11. It tortures me to see an injured animal.
12. I have assaulted a law enforcement official or social worker.
13. I have pretended to be someone else in order to get something.
14. I always plan out my weekly activities.
15. I like to see fist-fights.
16. I'm not tricky or sly.

17. I'd be good at a dangerous job because I make fast decisions.
18. I have never tried to force someone to have sex.
19. My friends would say that I am a warm person.
20. I would get a kick out of 'scamming' someone.
21. I have never attacked someone with the idea of injuring them.
22. I never miss appointments.
23. I avoid horror movies.
24. I trust other people to be honest.
25. I hate high speed driving.
26. I feel so sorry when I see a homeless person.
27. It's fun to see how far you can push people before they get upset.
28. I enjoy doing wild things.
29. I have broken into a building or vehicle in order to steal something or vandalize.
30. I don't bother to keep in touch with my family any more.
31. I find it difficult to manipulate people.
32. I rarely follow the rules
33. I never cry at movies.
34. I have never been arrested.
35. You should take advantage of other people before they do it to you.
36. I don't enjoy gambling for real money.
37. People sometimes say that I'm cold-hearted.
38. People can usually tell if I am lying.
39. I like to have sex with people I barely know.

40. I love violent sports and movies
41. Sometimes you have to pretend like people to get something out of them.
42. I am an impulsive person.
43. I have taken hard drugs (e.g., heroin, cocaine).
44. I'm a soft-hearted person.
45. I can talk people into anything.
46. I never shoplifted from a store.
47. I don't enjoy taking risks.
48. People are too sensitive when I tell them the truth about themselves.
49. I was convicted of a serious crime.
50. Most people tell lies everyday
51. I keep getting in trouble for the same things over and over.
52. Every now and then I carry a (knife or gun) for protection.
53. People cry way too much at funerals.
54. You can get what you want by telling people what they want to hear.
55. I easily get bored.
56. I never feel guilty over hurting others.
57. I have threatened people into giving me money, clothes, or makeup.
58. A lot of people are "suckers" and can easily be fooled.
59. I admit that I often "mouth off without thinking.
60. I sometimes dump friends that I don't need any more.
61. I would never step on others to get what I want.
62. I have close friends who served time in prison.



63. I purposely tried to hit someone with the vehicle I was driving.

64. I have violated my probation from prison.

## Feed Back Form (Study 1)

Date: 2013-2014 Academic Year  
Project Title: Personality and Behaviour

Principal Investigator: Ashley Hosker-Field  
Department of Psychology  
Brock University  
ah03ez@brocku.ca

Supervisor: Dr. Angela Book  
Department of Psychology  
Brock University  
(905) 688-5550 Ext. 5223  
abook@brocku.ca

Co-Investigator: Melissa Hill  
Department of Psychology  
Brock University  
mh10xm@brocku.ca

The purpose of this form is to provide you with additional information about the current study. In this study you were asked to complete several self-report questionnaires. These questionnaires were designed to assess antisociality, actual and perceived risk taking, and impulsivity.

The general purpose of this study is to investigate the relationships between antisociality, risk taking, and self-reported impulsivity. More specifically, we are interested in determining how certain aspects of antisociality are associated with specific forms of impulsivity and risk taking. Moreover, we hope to determine whether the relationship between antisociality and impulsivity is similar across various different self-report measures. Finally, we also hope to ascertain whether individual who demonstrate antisocial traits tend to engage in risk taking behaviour because they do not view the behaviour as being risky in the first place. Results of the study will help to provide a clearer understanding of how the aforementioned constructs are related to one another. Please be assured that the responses you provided in this study will remain anonymous. Your data will be given an arbitrary number and will in no way be linked to your name. Additionally, all data provided will be kept in a locked laboratory at Brock University. Please note that Mechanical Turk and Survey Monkey are based in the United States and therefore are subject to American Homeland Security laws such as the Patriot Act. This study has been reviewed and received ethical clearance from the Brock University Research Ethics Board (REB #13-053-BOOK). If you have any questions regarding the purpose or results of the study, please contact Ashley Hosker-Field, Melissa Hill, or Dr. Angela Book. Results will be made available in the summer of 2014. Additionally, if you have any questions concerning your rights as a research participant, please contact the Research Ethics Officer (mail to [reb@brocku.ca](mailto:reb@brocku.ca), 688-5550, ext. 3035).

Thank you for your participation!

## Feed Back Form (Study 2)

Date: 2013-2014 Academic Year  
Project Title: Personality and Behaviour

Principal Investigator: Ashley Hosker-Field  
Department of Psychology  
Brock University  
ah03ez@brocku.ca

Supervisor: Dr. Angela Book  
Department of Psychology  
Brock University  
(905) 688-5550 Ext. 5223  
abook@brocku.ca

Co-Investigator: Melissa Hill  
Department of Psychology  
Brock University  
mh10xm@brocku.ca

The purpose of this form is to provide you with additional information about the current study. In this study you were asked to take part in three computer based tasks and to complete several self-report questionnaires. The computer based tasks were designed to provide a behavioural measure of impulsivity. In addition, the questionnaires you completed pertained to antisociality, actual and perceived risk taking, and impulsivity. The general purpose of this study is to investigate the relationships between antisociality, risk taking, self-reported impulsivity and behavioural impulsivity. More specifically, we are interested in determining how certain aspects of antisociality are associated with specific forms of impulsivity and risk taking. Moreover, we hope to determine whether the relationship between antisociality and impulsivity is similar across self-report and behavioural measures. Finally, we also hope to ascertain whether individual who demonstrate antisocial traits tend to engage in risk taking behaviour because they do not view the behaviour as being risky in the first place. Results of the study will help to provide a clearer understanding of how the aforementioned constructs are related to one another.

Please be assured that the responses you provided in this study will remain anonymous and confidential. Your data will be given an arbitrary number and will in no way be linked to your name. Additionally, all data provided will be kept in a locked laboratory and will be destroyed 5 years after the publication of the results of the study.

This study has been reviewed and received ethical clearance from the Brock University Research Ethics Board (REB #13-053-BOOK). If you have any questions regarding the purpose or results of the study, please contact Ashley Hosker-Field, Melissa Hill, or Dr. Angela Book. Results will be made available in the summer of 2014. Additionally, if you have any questions concerning your rights as a research participant, please contact the Research Ethics Officer (mail to [reb@brocku.ca](mailto:reb@brocku.ca), 688-5550, ext. 3035).

Thank you for your participation!

**APPENDIX C**



**Brock University**  
 Research Ethics Office  
 Tel: 905-688-5550 ext. 3035  
 Email: reb@brocku.ca

Social Science Research Ethics Board

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**Certificate of Ethics Clearance for Human Participant Research**

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DATE: 2/5/2016

PRINCIPAL INVESTIGATOR: VOLK, Anthony - Child and Youth Studies

CO-INVESTIGATOR(S): Angela Book; Andrew Dane; Zopito Marini; Elizabeth Shulman

FILE: 15-173 - VOLK

TYPE: Undergraduate                      STUDENT: Ann Farrell  
           Masters Thesis/Project        SUPERVISOR: Anthony Volk

TITLE: Adolescent Social Relationships

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**ETHICS CLEARANCE GRANTED**

Type of Clearance: NEW

Expiry Date: 2/28/2017

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The Brock University Social Science Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from 2/5/2016 to 2/28/2017.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 2/28/2017. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at <http://www.brocku.ca/research/policies-and-forms/research-forms>.

In addition, throughout your research, you must report promptly to the REB:

- a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
- c) New information that may adversely affect the safety of the participants or the conduct of the study;
- d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:

\_\_\_\_\_  
 Kimberly Maich, Chair  
 Social Science Research Ethics Board

**Note:** Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.

**APPENDIX D**

### **Invitation to Extracurricular Organizations**

Dear EXTRACURRICULAR ORGANIZATION

My name is Dr. Anthony Volk. I am a professor of Child and Youth Studies at Brock University. I am currently working with a team of faculty and student collaborators in a study of adolescent relationships. We are particularly interested in how extracurricular participation influences experiences of bullying and relationships in adolescents. As a result, we are interested in asking the members of your organization to participate in our study. Participation is purely voluntary, but prior to participating in the study, your members must obtain parental consent. To do so, we provide a sealed envelope for the parents that contain an information form, a permission form, and another sealed envelope that contains an assent form and website link to Qualtrics, an online survey website for adolescents to fill out. Those who return completed consent forms will receive \$15 cash for their participation. If parental consent is denied, the members still receive the money, but we don't use their data. The questionnaires are private, and they ask your members to discuss their social relationships with their parents and friends, and also on their own personality and individual characteristics.

No personal information is collected on any of the forms, so their confidentiality, and the confidentiality of your organization, is preserved. We therefore can't provide you with specific feedback regarding bullying in your organization, but we can provide you with the overall results of our study after it is completed in 2016. We do provide information regarding resources (including our lab) that the participants can access should they be experiencing problems with bullying.

Specifically what we would need from you and your organization is a time to come in and talk to your members about participating in the study. At this point we will explain the study, answer any questions they have, and pass out the forms. We will then arrange for a time to return to your organization to pick up any completed forms and answer any further questions, comments, or concerns that they may have.

If you have any questions about this study, please feel free to contact me at [tvolk@brocku.ca](mailto:tvolk@brocku.ca) or 905-688-5550 Ext. 5368, or the Brock University Research Ethics Office at (905) 688-5550 Ext. 3035, [reb@brocku.ca](mailto:reb@brocku.ca). The Research Ethics Board has provided ethic clearance for this study. If you are interested in allowing us to come and talk to your members, please let us know.

Thank you very much for your consideration of our request!

Yes, I am interested in allowing you to present your study

No, I am not interested in allowing you to present your study

Signed : \_\_\_\_\_

Date: \_\_\_\_\_



## Adolescent Relationships

Principal Investigator:  
**Dr. Anthony Volk, Professor**  
**Department of Child and Youth Studies**  
**Brock University**  
**905-688-5550 xt. 5368**  
**tvolk@brocku.ca**

### INVITATION

You are invited to participate in a study on adolescent relationships. The purpose of this study is to better understand how adolescent relationships are influenced by various aspects of their personal and social lives, such as personality, school, peers, and parents. We would like to note that a small number of the questions are about violence, sexual activity and related behaviors.

### WHAT'S INVOLVED

As a participant, you will be asked to fill out questionnaires about yourself, your social group, and your basic demographics (e.g., things like age, who you live with, etc.) online using the link provided for Qualtrics, a questionnaire website. It should take you about 45-50 minutes to complete the forms. You will need to complete these questionnaires in one sitting. If you close the website or stop in the middle, there will be no way to return to the questionnaire. Only the researchers will see these responses, and the only ties to participant names will be a unique Identification (ID) number that will be used to confirm participation so that you can receive \$15 cash for participating. The ID number will not be linked to any other responses to the questionnaires. They will only be linked to participant names on the consent forms, which will be stored separately in a filing cabinet separate from questionnaire responses. The original consent form, which includes the unique identification number, will only be removed from the filing cabinet in the event that the participant chooses to withdraw from the study. In such an event, the removed identification number will be used to identify the participant's response in the questionnaire database, and the data will be deleted.

### POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include getting to know your own relationships better, and learning about adolescent relationships in general through reflection on some of your own experiences. There also may be risks associated with participation. Some relationships are tough to think about. If you find any part of this study to be stressful, you may contact the researcher, the Brock University Ethics board, or simply stop your participation. You may also freely discuss the study with parents or friends if you need to, although we would ask that you try not to talk to someone before they complete the study on their own (e.g., don't share answers until both of you have completed the study unless you feel it's really necessary). Sharing answers before the study ends can distort and/or change your own natural answers.

We do not ask for any specific incidents or events, so **there is no personal or legal liability associated with any of your answers, nor are we legally obligated to disclose any of your answers to our questions (including abuse and harm)**. If you have any concerns about specific behaviours or incidents, we strongly suggest that you discuss them with trusted individuals. These individuals could be parents, teachers, friends, or other trusted adults. You may also contact the Kids Help Phone at: <http://www.kidshelpphone.ca/en/> (1-800-668-6868). It is important to know that you do not need to tolerate any form of abuse!

You will receive \$15 cash for your participation in this study. You will receive this payment once you have completed the questionnaires and returned the consent and assent forms. Once receiving the \$15, you will have to sign a sheet for our records indicating you have received the payment.

### **CONFIDENTIALITY**

You will only be identified by a unique number that is tied your name. There is no way for anyone to identify the data beyond this number. Unique, identifiable data (such as exact date of birth, name, names of friends and family) will not be collected. Your parents will have to consent to your participation, **but they will not be able to read your answers** (*although they can request that any such data be deleted*). You also do not have to reveal your answers to any of your friends, peers, or anyone else other than the researchers in this study. The only exception is that Dr. Volk will have a copy of your consent form, with your participation number, stored in a password protected computer in his lab, so that you can later request that your data be removed from the study if you wish. No other individual will have access to this link to your name, and Dr. Volk will ONLY access this information if you contact him asking to remove your data from the study within 5 years. Your name or ID will in no other way be involved with the data analysis or presentation.

Data collected during this study will be stored on a secure computer. Data will be kept for five years, after which time the data will be deleted or shredded. Access to this data will be restricted to Dr. Volk and his collaborators, who have signed confidentiality agreements. Your parents, friends, participants, and coaches will not have access to any individual data, although they may have access to the overall study results. So you do not have to worry about anyone finding out your answers, or about anyone following up on your answers, or about any consequences of the answers you provide. Your responses will be confidential and the only links between your name and ID number will be stored separately from your questionnaire responses, with access only by Dr. Volk.

In order to best protect your confidentiality, we suggest completing the online questionnaires in private and on your own. This will limit the possibility of others (e.g., parents, siblings, friends) from seeing your responses.

The researchers will own all data collected through Qualtrics and therefore all information will be confidential. Qualtrics data are temporarily stored in the United States and therefore is subject to the Homeland Security or Patriot Act. However, data will be downloaded daily on a secured Canadian server onto a password protected lab computer. Once data is downloaded in the lab, the data will be immediately deleted off from Qualtrics.

### **VOLUNTARY PARTICIPATION**

Participation in this study is purely voluntary. Whether you participate, or what questions you answer, is completely up to you. If you want to withdraw from this study at any time, you may do so without any penalty other than not receiving the \$15 and your data will be confidentially destroyed in the event of withdrawal. This research is not linked to your organization, so there is no organizational penalty if you do not participate. If you would like to withdraw your data after you have completed the study, you must provide your unique identification number as it is the only way we have to identify your data. Please keep your ID number attached to this sheet in a safe place in case you wish to withdraw from the study.

However, before you can participate in this study, you **MUST** obtain parental consent. If you are reading this form, you should have already obtained parental consent. If you haven't, please provide your parents with the appropriate forms immediately. If you do not provide parental consent, you may NOT participate in this study. Again, your parents will not have direct access to your answers, but they do control whether WE are able to see your answers or not. If your parents do provide consent, you are not obligated to participate. That is your own decision. So you need their consent to participate, but that consent doesn't force you to participate.

### **PUBLICATION OF RESULTS**

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by late Spring or Early Summer on Dr. Volk's

research web page (<http://www.brocku.ca/volk-developmental-science-lab>).

**CONTACT INFORMATION AND ETHICS CLEARANCE**

If you have any questions about this study or require further information, please contact Dr. Volk using the contact information provided above. You can also use this contact information if you have any questions about what the questionnaires mean, or if you need any help completing the questionnaires. If you have any questions while you are filling out the forms, please feel free to contact Dr. Volk. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University # 15-173 VOLK. If you experience any stress while participating in this study, please refer to debriefing form for a list of agencies you may contact.

If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, [reb@brocku.ca](mailto:reb@brocku.ca).

**LINK TO QUALTRICS**

If you are interested in participating, please follow this link to the Qualtrics website and use the following password to proceed:

Link:

Your ID number:

Thank you for your help in this project!

**Please keep this form for your records.**

## Adolescent Relationships Parental Form

Please keep this form for your records.

Principal Investigator:  
**Dr. Anthony Volk, Professor**  
**Department of Child and Youth Studies**  
**Brock University**  
**905-688-5550 xt. 5368**  
[tvolk@brocku.ca](mailto:tvolk@brocku.ca)

### INVITATION

Your son/daughter has been invited to participate in a study that involves research into adolescent relationships. The purpose of this study is to better understand how adolescent relationships in one domain (e.g., parents) influence their relationship in another (e.g., personality, school, or peers). What follows are the specific goals of the study.

We are interested in exploring factors associated with adolescent social relationships including personality, peer relationships, and school factors. For instance, we are interested in how an adolescent's individual traits, such as personality, influence the likelihood that they will be a bully and/or a victim. So far, no one has looked at most of these factors in teenagers, and no one has looked at the combination of all these factors. We believe that answering these questions will give us a much better idea of what factors are involved in adolescent social relationships. We would like to note that a small number of the questions are about violence, sexual activity and related behaviors.

### WHAT'S INVOLVED

As a participant, your son/daughter has been asked to fill out questionnaires about themselves, their friends, their peers, their parents, and their basic demographics (e.g., age) on an online survey website. Participation will take approximately 45-50 minutes of their time. Only the researchers will see these responses, and the only ties to participant names will be a unique Identification (ID) number that will be used to confirm participation so that participants can receive \$15 cash for participating. The ID number will not be linked to any other responses to the questionnaires. They will only be linked to participant names on the consent forms, which will be stored separately in a filing cabinet separate from questionnaire responses. The original consent form, which includes the unique identification number, will only be removed from the filing cabinet in the event that the participant chooses to withdraw from the study. In such an event, the removed identification number will be used to identify the participant's response in the questionnaire database, and the data will be deleted.

### POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include getting to know their own relationships better, and learning more about adolescent relationships in general through reflection on some of the participants' own relationships. There also may be risks associated with participation in that some relationships are stressful to think about. If they find any part of this study to be stressful, they may contact the researcher, the Brock University Ethics board, or simply stop their participation. We also tell your son/daughter that "[they] may also freely discuss the study with parents or friends if [they] need to, although we would ask that [they] try not to talk to someone before [they] complete the study on [their] own (e.g., don't share answers until both have completed the study). Sharing answers before the study ends can complicate and/or change their own natural answers. We do not ask any specific questions regarding specific incidents, **so there are no issues of personal or legal liability for any of your son/daughter's answers, nor are we legally obligated to disclose any of their answers (including abuse or harm) to our questions.**

All participants will be offered \$15 cash for their participation. They will receive this payment once the completed forms are returned. Once receiving the \$15, participants will have to sign a sheet

for our records indicating you have received the payment.

### **CONFIDENTIALITY**

Participants in this study will only be identified by a unique number that is tied to a master list kept by Dr. Volk. You, or they, may request the withdrawal of their data from the study within 5 years of their participation. Unique, identifiable data (such as date of birth, names) will not be collected.

As a parent, you will have to consent to your son/daughter's participation, **but you will not gain access to their answers. You may only control whether WE are able to view their answers or not by providing or withdrawing your consent.** *We feel that it is very important for the participants in our study to be able to know that their answers are completely confidential.* This will hopefully encourage them to be as honest as possible so we can really understand what is going on in their relationships. To this end, we again ask that you don't discuss the study with your son/daughter until they have completed it in order to avoid biasing their answers. Once the study is completed (i.e., after they have filled in and handed in the forms), you may of course discuss any related topic you feel fit. In the final form explaining the study, we encourage participants to talk to people whom they trust (including parents) about any related issues.

Data collected during this study will be stored on a secure computer and hard copies of forms will be kept in a locked filing cabinet. Data will be kept for five years, after which time the data will be deleted. Access to this data will be restricted to Dr. Volk and his collaborators, who have signed confidentiality agreements. Parents, friends, and participants will not have access to any individual data, although they may have access to the overall study results.

The researchers will own all data collected through Qualtrics and therefore all information will be confidential. Qualtrics data are temporarily stored in the United States and therefore is subject to the Homeland Security or Patriot Act. However, data will be downloaded daily on a secured Canadian server onto a password protected lab computer. Once data is downloaded in the lab, the data will be immediately deleted off from Qualtrics.

### **VOLUNTARY PARTICIPATION**

Your teenager's participation is voluntary. They need not participate, even if you give parental consent. There are no organizational or personal consequences for not participating other than not receiving the \$15. **Again, as a parent, you do NOT have access to your adolescent's individual results. You control whether or not we are able to view them by providing or withdrawing your consent for their participation.** In the event of withdrawal, data will be confidentially destroyed.

### **PUBLICATION OF RESULTS**

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by late Spring or Early Summer on Dr. Volk's research web page (<http://www.brocku.ca/volk-developmental-science-lab>).

### **CONTACT INFORMATION AND ETHICS CLEARANCE**

If you have any questions or concerns about this study, please contact the study coordinator, Dr. Volk, using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University #15-173. If you have any comments or concerns about the study ethics, or your adolescent's rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, [reb@brocku.ca](mailto:reb@brocku.ca).

If you have any concerns about your adolescent participating as a bully, or being a victim of bullying, please feel free to discuss the matter with other parents, teachers, friends, and/or any trusted individuals. For advice on how to talk to your teen or other individuals about bullying, we recommend [www.bullying.org](http://www.bullying.org), <http://www.lfcc.on.ca/bully.htm>, and the Niagara Youth Connection

(905-641-2118 ext. 5592). You may also feel free to contact me, Dr. Anthony Volk, at [tvolk@brocku.ca](mailto:tvolk@brocku.ca) (905-688-5550 ext. 5368) with any related questions or concerns.

Thank you for your help in this project!

**Please keep this form for your records.**

**CONSENT FORM**

I agree to allow my teen to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time and request that my son/daughter's data be removed from the study.

Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Do you agree to allow your teen to be contacted via e-mail for follow-up studies in the future?

Yes: \_\_\_\_\_

No: \_\_\_\_\_

Please return this form. If you consent to your son/daughter's participation, please provide them with the envelope marked "Participant". If you do not consent to their participation, you may dispose of that envelope as you see fit.

**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
- 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.
- \_\_\_\_\_

## Strengths and Difficulties Questionnaire

Check the box that best describes your opinion on the following statements:

	Not True	Somewhat true	Certainly True
1. I try to be nice to other people. I care about their Feelings			
2. I am restless. I cannot stay still for long			
3. I get a lot of headaches, stomach-aches or sickness			
4. I usually share with others (food, games, pens etc.)			
5. I get very angry and often lose my temper			
6. I am usually on my own. I generally play alone or keep to myself			
7. I usually do as I am told			
8. I worry a lot			
9. I am helpful if someone is hurt, upset or feeling ill			
10. I am constantly fidgeting or squirming			
11. I have one good friend or more			
12. I fight a lot. I can make other people do what I want			
13. I am often unhappy, down-hearted or tearful			
14. Other people my age generally like me			
15. I am easily distracted. I find it difficult to concentrate			
16. I am nervous in new situations. I easily lose Confidence			
17. I am kind to younger children			
18. I am often accused of lying or cheating			

19. Other children or young people pick on me or bully Me			
20. I often volunteer to help others (parents, teachers, children)			
21. I take things that are not mine from home, school or Elsewhere			
22. I get on better with adults than with people my own Age			
23. I have many fears. I am easily scared			
24. I finish the work I'm doing. My attention is good			

### Self-Report Delinquency Questionnaire (SRDQ)

How often have you done the following over the past 12 months?

Response scale: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often

1. Purposely broken or destroyed musical instruments, sports equipment or other school equipment?
2. Taken and kept any school property worth \$10 or more?
3. \*\*Purposely broken a part of the school (windows, walls, etc.)?
4. Taken and kept something from a store without paying?
5. Threatened to hit someone or to force them to do something they didn't want to do?
6. Taken part in fights between groups of youth (gangs)?
7. Purposely break or destroy something that didn't belong to you?
8. Taken and kept something worth less than \$10, that didn't belong to you?
9. \*\*Taken and kept something worth \$100 or more that didn't belong to you?
10. Bought or sold something you knew was stolen?
11. \*\*Purposely destroyed an antenna, tires or some other part of a car?
12. Entered a place where you were not allowed?
13. Taken and kept something worth between \$10 and \$100 that didn't belong to you?
14. Gone without paying to a place where you should have paid? (movie theatre, concert, sports event?)
15. Used a weapon (stick, knife, gun, rocks) in fighting with someone else?
16. Purposely broken or destroyed something belonging to your parents or another family member?
17. Taken money from the house without permission, or without the intent of saying anything?
18. \*\*Broken open a window or door and entered somewhere to take something?
19. Carried a weapon (chain, knife, gun, etc.)?
20. Started a fire in a store or elsewhere?
21. Thrown rocks, bottles or other objects at someone?
22. Hit someone who hadn't done anything?
23. \*\*Taken and kept a bicycle that didn't belong to you?
24. Had a fist fight with anyone?
25. Drank alcohol?
26. Got drunk on beer, wine, or other alcoholic beverages?
27. Used marijuana?

## **Reactive and Proactive Aggression**

Modified for self-report from:

Response Scale: Never, Hardly Ever, Sometimes, Fairly Often, Almost Always

1. When I have been teased or threatened I get angry easily and strike back
2. I use physical force (or threaten to use physical force) to dominate other kids
3. When a peer has accidentally hurt me (such as by bumping into me), I assume he or she meant to do it, and react by getting angry and fighting
4. I threaten or bully others in order to get my way
5. I say that other kids are to blame for fights and feel that they started all the trouble
6. I get others to gang up on a peer I don't like

## Written Debriefing

**PLEASE READ THIS ONLY AFTER YOU HAVE FINISHED THE STUDY**

### **Adolescent Relationships Debriefing**

Thank you for your participation in our study of adolescent relationships! As you can tell from the many forms, we are interested in a wide range of relationship details, personal constructs, and social environments. For instance, we are interested in how an adolescent's individual traits, such as personality, influence the likelihood that they will be a bully and/or a victim. It is our belief that an understanding of all these factors together will help us learn about topics such as: bullying; antisocial behavior; school achievement; parenting; etc. If you have any specific questions or concerns about the study, please feel free to ask them now. Very little research has been done on this topic, which we feel is an important one.

Parts of this study may have been uncomfortable and/or difficult to complete. Bullying and victimization are unfortunately a common experience for many adolescents, but they aren't pleasant. If you have any concerns about participating as a bully, or being a victim of bullying, please feel free to discuss the matter with your parents, teachers, friends, and/or any trusted individuals. We can recommend [www.bullying.org](http://www.bullying.org), <http://www.kidshelpphone.ca/en/> (1-800-668-6868), and Niagara Youth Connection (905-641-2118 ext. 5592). In general, you can help prevent bullying by: not participating as a bully, intervening when others are being bullied (e.g., report that behaviour to an adult), and by actively disapproving of the bully's behaviour (e.g., telling them it's not cool). You may be able to reduce victimization by: talking to your parents, teachers, and/or friends and by trying to make supportive friendships.

As stated in the briefing letter we asked you to keep, we hope to publish some of the results on Dr. Volk's web page at: [www.brocku.ca/volklab](http://www.brocku.ca/volklab) .

Should you have any further questions or concerns, you may freely contact the study coordinator, Dr. Anthony Volk at (905) 688-5550 ext. 5368 ([tvolk@brocku.ca](mailto:tvolk@brocku.ca)) or if regarding the study's ethics, the Brock University Research Ethics Board at (905) 688-5550 ext. 3035 ([reb@brocku.ca](mailto:reb@brocku.ca)).

Please keep this form for your records.

**APPENDIX E**



**Brock University**  
 Research Ethics Office  
 Tel: 905-688-5550 ext. 3035  
 Email: reb@brocku.ca

Social Science Research Ethics Board

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### Certificate of Ethics Clearance for Human Participant Research

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DATE: 2/23/2017

PRINCIPAL INVESTIGATOR: BOOK, Angela - Psychology

CO-INVESTIGATOR(S): Tabitha Jones (tm06ti@brocku.ca); Nathalie Gauthier (ng04bn@brocku.ca)

FILE: 16-218 - BOOK

TYPE: Ph. D. STUDENT: Ashley Hosker-Field  
 SUPERVISOR: Angela Book

TITLE: Personality Traits and Behavioural Tendencies

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#### ETHICS CLEARANCE GRANTED

Type of Clearance: NEW

Expiry Date: 2/28/2018

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The Brock University Social Science Research Ethics Board has reviewed the above named research proposal and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement. Clearance granted from 2/23/2017 to 2/28/2018.

The Tri-Council Policy Statement requires that ongoing research be monitored by, at a minimum, an annual report. Should your project extend beyond the expiry date, you are required to submit a Renewal form before 2/28/2018. Continued clearance is contingent on timely submission of reports.

To comply with the Tri-Council Policy Statement, you must also submit a final report upon completion of your project. All report forms can be found on the Research Ethics web page at <http://www.brocku.ca/research/policies-and-forms/research-forms>.

In addition, throughout your research, you must report promptly to the REB:

- a) Changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) All adverse and/or unanticipated experiences or events that may have real or potential unfavourable implications for participants;
- c) New information that may adversely affect the safety of the participants or the conduct of the study;
- d) Any changes in your source of funding or new funding to a previously unfunded project.

We wish you success with your research.

Approved:

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Ann-Marie DiBiase, Chair  
 Social Science Research Ethics Board

**Note:** Brock University is accountable for the research carried out in its own jurisdiction or under its auspices and may refuse certain research even though the REB has found it ethically acceptable.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of research at that site.



**APPENDIX F**

### Community Recruitment Advertisement

We are looking for individuals age 18 or older, who are able to read and comprehend English fluently, and reside in Canada to participate in a research study examining the link between personality and behaviour.

In exchange for approximately 1 hour of your time, you can be entered in a **draw to win a \$50 Tim Hortons gift certificate!!!**

You will be asked to complete a series of questionnaires. Please be advised that some of the questionnaires contain items concerning behaviour that may be considered unlawful or socially unacceptable. However, your responses will be anonymous and confidential, and you have the right to refrain from responding to any questions that make you feel uncomfortable.

Also, a reminder that if you are viewing this posting on social media (i.e. facebook) and you interact with this posting in any way *other than* simply following the link below (i.e. commenting on, or “liking” the post), your privacy and confidentiality may be compromised (i.e. others can see that you have “liked” or commented). However, your actual questionnaire responses will remain anonymous and confidential.

If you would like to take part follow the link below and you will be provided with further information.

Insert link here . . . .

### SONA Advertisement

<b>Study Name:</b>	Personality Traits and Behavioural Tendencies
<b>Abstract:</b>	Obtain research participation experience by taking part in our personality study
<b>Description:</b>	Participants will complete a series of questionnaires regarding personality and behaviour. Please be advised that some of the questionnaires contain items concerning behaviour that may be considered unlawful or socially unacceptable. However, your responses will be anonymous and confidential, and you have the right to refrain from responding to any questions that makes you feel uncomfortable.
<b>Purpose:</b>	To investigate the relationship between personality traits and specific behaviours
<b>Eligibility:</b>	All are welcome!
<b>Requirements:</b>	Participants must be at least 17 years old
<b>Sign up:</b>	on SONA or through e-mail at Ashley.Hosker2@brocku.ca
<b>Restrictions:</b>	Participants must be at least 17 years old
<b>Duration:</b>	Approximately 1 hour
<b>Pay:</b>	1 research participation credit Participants may also enter a draw to win a \$50 Tim Horton's gift certificate.
<b>Researchers:</b>	Ashley Hosker-Field, Tabitha Jones, Nathalie Gauthier
<b>Faculty Supervisor:</b>	Dr. Angela Book

This study has been reviewed and received ethics clearance through the Brock University Research Ethics Board (file #16-218).

## Consent Form

Date: 2016-2018 Academic Years

Project Title: Personality Traits and Behavioural Tendencies

### **Principle Investigator: Dr. Angela Book**

Department of Psychology

Brock University

(905) 688-5550 Ext. 5223

[abook@brocku.ca](mailto:abook@brocku.ca)

### **Principal Student Investigator: Ashley Hosker-Field**

Department of Psychology

Brock University

[Ashley.Hosker2@brocku.ca](mailto:Ashley.Hosker2@brocku.ca)

### **Co-Investigators: Tabitha Jones, Nathalie Gauthier**

Department of Psychology

Brock University

[tm06ti@brocku.ca](mailto:tm06ti@brocku.ca), [ng04bn@brocku.ca](mailto:ng04bn@brocku.ca)

## **INVITATION**

You are invited to participate in a study that involves empirical research. The purpose of this study is to examine the relationship between specific personality traits and behavioural tendencies

## **WHAT'S INVOLVED**

As a participant, you will be asked to complete several self-report questionnaires. Participation will take approximately 1 hour of your time. . Please be advised that some of the questionnaires contain items concerning behaviour that may be considered unlawful or socially unacceptable.

## **POTENTIAL BENEFITS AND RISKS**

You will be asked to answer some questions that may potentially cause you to experience some discomfort and it is your right to refrain from answering any such question. Further, if participation in this study causes an aversive emotional response, you may contact any of the researchers involved, or Brock University Counseling Services at (905)688-5550, ext. 3240, free of charge. The Crisis Outreach and Support Team (COAST) can also be contacted Toll Free at 1-800-263-4944. Your participation in this study will contribute to the advancement of knowledge regarding the relationship between specific personality traits and behavioural tendencies. You may also use this research participation experience to obtain research participation credits for eligible course, and/or to be entered into a draw for a \$50 Tim Horton's gift certificate. If you would like to be entered into the draw please enter your e-mail when prompted. If you do not want to take part in the draw, you do not need to provide your e-mail address. Be assured your e-mail contact information

will not be linked to your survey responses in any way. The draw will take place once all data collection is complete and e-mail records will be destroyed once the draw takes place.

### **CONFIDENTIALITY**

The data you provide during your participation in the present study will remain anonymous. Your questionnaire responses will be coded with an arbitrary number that will not be associated in any way with your name. Additionally, electronic data collected during this study will be password protected and will be accessible to Ashley Hosker-Field, Tabitha Jones, Nathalie Gauthier, and Dr. Angela Book. The data will be retained for 5 year. Please note that, Qualtrics (the data collection platform) is based in the United States and therefore are subject to American Homeland Security laws such as the Patriot Act; however, no identifying information will be collected.

### **VOLUNTARY PARTICIPATION**

As previously stated, your participation in the present study is completely voluntary and you may decline to respond to any questions asked of you. Additionally, you may withdraw at any point with no penalty or consequence. You will still be able to use your experience to obtain research participation credit and you can still opt to be included in the draw. Should you choose to withdraw, any data that has already been collected will not be utilized. In the event that you choose to withdraw from the study, please contact the researchers to obtain research participation credits (if necessary for course related requirements) and the debriefing form. Once the data have been submitted and the session is over, you will be unable to withdraw your responses as responses are anonymous and therefore cannot be linked to your name.

### **RESULTS**

The results of this study may be published in professional journals or academic books and presented at empirical research conferences. Feedback concerning the results of the study will be available in the summer of 2018 and you may contact Ashley Hosker-Field, Tabitha Jones, Nathalie Gauthier, or Dr. Angela Book if you wish to obtain a copy of the results.

### **CONTACT INFORMATION AND ETHICS CLEARANCE**

If you have any questions about this study or require further information, please contact the Principal Investigator or the Faculty Supervisor using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (REB #16-218). If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca. Thank you for your assistance with the completion of this project. Please keep a copy of this form for your records.

### **CONSENT FORM**

I agree to participate in the study described above and I have made this decision based on the information I have read in the Consent Form.

If I am a Brock University student, I confirm that I am at least 17 years of age.

If I am a member of the general community, I confirm that I am at least 18 years of age.  
I understand that I am able to contact the researchers prior to my participation to receive any additional details I would like to have about the study.

I understand that I may ask questions in the future

I understand that I may withdraw this consent at any time

**Demographics**

8. Male/Female

9. Age: \_\_\_\_\_

10. Race: \_\_\_\_\_

11. Nationality: \_\_\_\_\_

12. Please indicate your education level

- f. Some high school
- g. Completed high school
- h. Some post-secondary education
- i. Completed post-secondary education
- j. Graduate school (MA/PhD)

13. Occupation: \_\_\_\_\_

14. Are you currently a student enrolled at a post-secondary institution: \_\_\_\_\_

15. Relationship Status: \_\_\_\_\_

### HEXACO-PI-R

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 clean my office or home quite frequently.
- 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 \_\_\_\_\_ If I want something from a person I dislike, I will act very nicely toward that person in order to get it.
- 7 \_\_\_\_\_ I'm interested in learning about the history and politics of other countries.
- 8 \_\_\_\_\_ When working, I often set ambitious goals for myself.
- 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 like a job that requires following a routine rather than being creative.
- 14 \_\_\_\_\_ I often check my work over repeatedly to find any mistakes.
- 15 \_\_\_\_\_ People sometimes tell me that I'm too stubborn.
- 16 \_\_\_\_\_ I avoid making "small talk" with people.
- 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 \_\_\_\_\_ I am energetic nearly all the time.
- 23 \_\_\_\_\_ I feel like crying when I see other people crying.
- 24 \_\_\_\_\_ I am an ordinary person who is no better than others.
- 25 \_\_\_\_\_ I wouldn't spend my time reading a book of poetry.
- 26 \_\_\_\_\_ I plan ahead and organize things, to avoid scrambling at the last minute.
- 27 \_\_\_\_\_ My attitude toward people who have treated me badly is "forgive and forget".
- 28 \_\_\_\_\_ I think that most people like some aspects of my personality.
- 29 \_\_\_\_\_ I don't mind doing jobs that involve dangerous work.
- 30 \_\_\_\_\_ I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.
- 31 \_\_\_\_\_ I enjoy looking at maps of different places.
- 32 \_\_\_\_\_ I often push myself very hard when trying to achieve a goal.
- 33 \_\_\_\_\_ I generally accept people's faults without complaining about them.
- 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 be tempted to buy stolen property if I were financially tight.
- 37 \_\_\_\_\_ I would enjoy creating a work of art, such as a novel, a song, or a painting.
- 38 \_\_\_\_\_ When working on something, I don't pay much attention to small details.
- 39 \_\_\_\_\_ I am usually quite flexible in my opinions when people disagree with me.
- 40 \_\_\_\_\_ I enjoy having lots of people around to talk with.
- 41 \_\_\_\_\_ I can handle difficult situations without needing emotional support from anyone else.
- 42 \_\_\_\_\_ I would like to live in a very expensive, high-class neighborhood.
- 43 \_\_\_\_\_ I like people who have unconventional views.
- 44 \_\_\_\_\_ I make a lot of mistakes because I don't think before I act.
- 45 \_\_\_\_\_ I rarely feel anger, even when people treat me quite badly.
- 46 \_\_\_\_\_ On most days, I feel cheerful and optimistic.
- 47 \_\_\_\_\_ When someone I know well is unhappy, I can almost feel that person's pain myself.
- 48 \_\_\_\_\_ I wouldn't want people to treat me as though I were superior to them.
- 49 \_\_\_\_\_ If I had the opportunity, I would like to attend a classical music concert.
- 50 \_\_\_\_\_ People often joke with me about the messiness of my room or desk.
- 51 \_\_\_\_\_ If someone has cheated me once, I will always feel suspicious of that person.

- 52 \_\_\_\_\_ I feel that I am an unpopular person.
- 53 \_\_\_\_\_ When it comes to physical danger, I am very fearful.
- 54 \_\_\_\_\_ If I want something from someone, I will laugh at that person's worst jokes.
- 55 \_\_\_\_\_ I would be very bored by a book about the history of science and technology.
- 56 \_\_\_\_\_ Often when I set a goal, I end up quitting without having reached it.
- 57 \_\_\_\_\_ I tend to be lenient in judging other people.
- 58 \_\_\_\_\_ When I'm in a group of people, I'm often the one who speaks on behalf of the group.
- 59 \_\_\_\_\_ I rarely, if ever, have trouble sleeping due to stress or anxiety.
- 60 \_\_\_\_\_ I would never accept a bribe, even if it were very large.
- 61 \_\_\_\_\_ People have often told me that I have a good imagination.
- 62 \_\_\_\_\_ I always try to be accurate in my work, even at the expense of time.
- 63 \_\_\_\_\_ When people tell me that I'm wrong, my first reaction is to argue with them.
- 64 \_\_\_\_\_ I prefer jobs that involve active social interaction to those that involve working alone.
- 65 \_\_\_\_\_ Whenever I feel worried about something, I want to share my concern with another person.
- 66 \_\_\_\_\_ I would like to be seen driving around in a very expensive car.
- 67 \_\_\_\_\_ I think of myself as a somewhat eccentric person.
- 68 \_\_\_\_\_ I don't allow my impulses to govern my behavior.
- 69 \_\_\_\_\_ Most people tend to get angry more quickly than I do.
- 70 \_\_\_\_\_ People often tell me that I should try to cheer up.
- 71 \_\_\_\_\_ I feel strong emotions when someone close to me is going away for a long time.
- 72 \_\_\_\_\_ I think that I am entitled to more respect than the average person is.
- 73 \_\_\_\_\_ Sometimes I like to just watch the wind as it blows through the trees.
- 74 \_\_\_\_\_ When working, I sometimes have difficulties due to being disorganized.
- 75 \_\_\_\_\_ I find it hard to fully forgive someone who has done something mean to me.
- 76 \_\_\_\_\_ I sometimes feel that I am a worthless person.
- 77 \_\_\_\_\_ Even in an emergency I wouldn't feel like panicking.
- 78 \_\_\_\_\_ I wouldn't pretend to like someone just to get that person to do favors for me.
- 79 \_\_\_\_\_ I've never really enjoyed looking through an encyclopedia.
- 80 \_\_\_\_\_ I do only the minimum amount of work needed to get by.
- 81 \_\_\_\_\_ Even when people make a lot of mistakes, I rarely say anything negative.
- 82 \_\_\_\_\_ I tend to feel quite self-conscious when speaking in front of a group of people.

- 83 \_\_\_\_\_ I get very anxious when waiting to hear about an important decision.
- 84 \_\_\_\_\_ I'd be tempted to use counterfeit money, if I were sure I could get away with it.
- 85 \_\_\_\_\_ I don't think of myself as the artistic or creative type.
- 86 \_\_\_\_\_ People often call me a perfectionist.
- 87 \_\_\_\_\_ I find it hard to compromise with people when I really think I'm right.
- 88 \_\_\_\_\_ The first thing that I always do in a new place is to make friends.
- 89 \_\_\_\_\_ I rarely discuss my problems with other people.
- 90 \_\_\_\_\_ I would get a lot of pleasure from owning expensive luxury goods.
- 91 \_\_\_\_\_ I find it boring to discuss philosophy.
- 92 \_\_\_\_\_ I prefer to do whatever comes to mind, rather than stick to a plan.
- 93 \_\_\_\_\_ I find it hard to keep my temper when people insult me.
- 94 \_\_\_\_\_ Most people are more upbeat and dynamic than I generally am.
- 95 \_\_\_\_\_ I remain unemotional even in situations where most people get very sentimental.
- 96 \_\_\_\_\_ I want people to know that I am an important person of high status.
- 97 \_\_\_\_\_ I have sympathy for people who are less fortunate than I am.
- 98 \_\_\_\_\_ I try to give generously to those in need.
- 99 \_\_\_\_\_ It wouldn't bother me to harm someone I didn't like.
- 100 \_\_\_\_\_ People see me as a hard-hearted person.

### UPPS Impulsive Behavior Scale

Below are a number of statements that describe ways in which people act and think. For each statement, please indicate how much you agree or disagree with the statement.

Rating Scale:

- 1 = Agree Strongly
- 2 = Agree Somewhat
- 3 = Disagree Somewhat
- 4 = Disagree Strongly

Be sure to indicate your agreement or disagreement for every statement below. Also, there are a few more questions on the next page

1. I have a reserved and cautious attitude toward life.
2. I have trouble controlling my impulses.
3. I generally seek new and exciting experiences and sensations.
4. I generally like to see things through to the end.
5. My thinking is usually careful and purposeful.
6. I have trouble resisting my cravings (for food, cigarettes, etc.).
7. I'll try anything once.
8. I tend to give up easily.
9. I am not one of those people who blurt out things without thinking.
10. I often get involved in things I later wish I could get out of.
11. I like sports and games in which you have to choose your next move very quickly.
12. Unfinished tasks really bother me.
13. I like to stop and think things over before I do them.
14. When I feel bad, I will often do things I later regret in order to make myself feel better now.
15. I would enjoy water skiing.
16. Once I get going on something I hate to stop.
17. I don't like to start a project until I know exactly how to proceed.
18. Sometimes when I feel bad, I can't seem to stop what I am doing even though it is making me feel worse.
19. I quite enjoy taking risks.
20. I concentrate easily.

21. I would enjoy parachute jumping.
  22. I finish what I start.
  23. I tend to value and follow a rational, "sensible" approach to things.
  24. When I am upset I often act without thinking.
  25. I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional.
  26. I am able to pace myself so as to get things done on time.
  27. I usually make up my mind through careful reasoning.
  28. When I feel rejected, I will often say things that I later regret.
  29. I would like to learn to fly an airplane.
  30. I am a person who always gets the job done.
  31. I am a cautious person.
  32. It is hard for me to resist acting on my feelings.
  33. I sometimes like doing things that are a bit frightening.
  34. I almost always finish projects that I start.
  35. Before I get into a new situation I like to find out what to expect from it.
  36. I often make matters worse because I act without thinking when I am upset.
  37. I would enjoy the sensation of skiing very fast down a high mountain slope.
  38. Sometimes there are so many little things to be done that I just ignore them all.
  39. I usually think carefully before doing anything.
  40. Before making up my mind, I consider all the advantages and disadvantages.
  41. In the heat of an argument, I will often say things that I later regret.
  42. I would like to go scuba diving.
  43. I always keep my feelings under control.
  44. I would enjoy fast driving.
  45. Sometimes I do impulsive things that I later regret
-

## Barratt Impulsiveness Scale 11

DIRECTIONS: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and put an X on the appropriate circle on the right side of this page. Do not spend too much time on any statement. Answer quickly and honestly.				
	①	②	③	④
	Rarely/Never	Occasionally	Often	Almost Always/Always
1 I plan tasks carefully.	①	②	③	④
2 I do things without thinking.	①	②	③	④
3 I make-up my mind quickly.	①	②	③	④
4 I am happy-go-lucky.	①	②	③	④
5 I don't "pay attention."	①	②	③	④
6 I have "racing" thoughts.	①	②	③	④
7 I plan trips well ahead of time.	①	②	③	④
8 I am self controlled.	①	②	③	④
9 I concentrate easily.	①	②	③	④
10 I save regularly.	①	②	③	④
11 I "squirm" at plays or lectures.	①	②	③	④
12 I am a careful thinker.	①	②	③	④
13 I plan for job security.	①	②	③	④
14 I say things without thinking.	①	②	③	④
15 I like to think about complex problems.	①	②	③	④
16 I change jobs.	①	②	③	④
17 I act "on impulse."	①	②	③	④
18 I get easily bored when solving thought problems.	①	②	③	④
19 I act on the spur of the moment.	①	②	③	④
20 I am a steady thinker.	①	②	③	④
21 I change residences.	①	②	③	④
22 I buy things on impulse.	①	②	③	④
23 I can only think about one thing at a time.	①	②	③	④
24 I change hobbies.	①	②	③	④
25 I spend or charge more than I earn.	①	②	③	④
26 I often have extraneous thoughts when thinking.	①	②	③	④
27 I am more interested in the present than the future.	①	②	③	④
28 I am restless at the theater or lectures.	①	②	③	④
29 I like puzzles.	①	②	③	④
30 I am future oriented.	①	②	③	④

### The Self-Report Psychopathy Scale: Version 4

Please rate the degree to which you agree with the following statements about you. You can be honest because your name will be detached from the answers as soon as they are submitted.

Rating Scale:

1 = Disagree

2 = Disagree Strongly

3 = Neutral

4 = Agree

5 = Agree Strongly

1. I'm a rebellious person.
2. I'm more tough-minded than other people.
3. I think I could "beat" a lie detector.
4. I have taken illegal drugs (e.g., marijuana, ecstasy).
5. I have never been involved in delinquent gang activity.
6. I have never stolen a truck, car or motorcycle.
7. Most people are wimps.
8. I purposely flatter people to get them on my side.
9. I've often done something dangerous just for the thrill of it.
10. I have tricked someone into giving me money.
11. It tortures me to see an injured animal.
12. I have assaulted a law enforcement official or social worker.
13. I have pretended to be someone else in order to get something.
14. I always plan out my weekly activities.
15. I like to see fist-fights.
16. I'm not tricky or sly.

17. I'd be good at a dangerous job because I make fast decisions.
18. I have never tried to force someone to have sex.
19. My friends would say that I am a warm person.
20. I would get a kick out of 'scamming' someone.
21. I have never attacked someone with the idea of injuring them.
22. I never miss appointments.
23. I avoid horror movies.
24. I trust other people to be honest.
25. I hate high speed driving.
26. I feel so sorry when I see a homeless person.
27. It's fun to see how far you can push people before they get upset.
28. I enjoy doing wild things.
29. I have broken into a building or vehicle in order to steal something or vandalize.
30. I don't bother to keep in touch with my family any more.
31. I find it difficult to manipulate people.
32. I rarely follow the rules
33. I never cry at movies.
34. I have never been arrested.
35. You should take advantage of other people before they do it to you.
36. I don't enjoy gambling for real money.
37. People sometimes say that I'm cold-hearted.
38. People can usually tell if I am lying.
39. I like to have sex with people I barely know.



40. I love violent sports and movies
41. Sometimes you have to pretend like people to get something out of them.
42. I am an impulsive person.
43. I have taken hard drugs (e.g., heroin, cocaine).
44. I'm a soft-hearted person.
45. I can talk people into anything.
46. I never shoplifted from a store.
47. I don't enjoy taking risks.
48. People are too sensitive when I tell them the truth about themselves.
49. I was convicted of a serious crime.
50. Most people tell lies everyday
51. I keep getting in trouble for the same things over and over.
52. Every now and then I carry a (knife or gun) for protection.
53. People cry way too much at funerals.
54. You can get what you want by telling people what they want to hear.
55. I easily get bored.
56. I never feel guilty over hurting others.
57. I have threatened people into giving me money, clothes, or makeup.
58. A lot of people are "suckers" and can easily be fooled.
59. I admit that I often "mouth off without thinking.
60. I sometimes dump friends that I don't need any more.
61. I would never step on others to get what I want.
62. I have close friends who served time in prison.

63. I purposely tried to hit someone with the vehicle I was driving.

64. I have violated my probation from prison.

### Feed Back Form

Date: 2016-2018 Academic Years

Project Title: Personality and Behaviour

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The purpose of this form is to provide you with additional information about the current study. In this study you were asked to complete several self-report questionnaires. These questionnaires were designed to assess antisociality, actual and perceived risk taking, and impulsivity, and aggression.

The general purpose of this study is to investigate the relationships between antisociality, risk taking, and self-reported impulsivity and aggression. More specifically, we are interested in determining how certain aspects of antisociality are associated with specific forms or types of impulsivity, risk taking, and aggression. Moreover, we plan to examine whether impulsivity may help to explain the relationship between antisociality and aggression. Finally, we also hope to ascertain whether individual who demonstrate antisocial traits tend to engage in risk taking behaviour because the behaviours are perceived to be associated with low risk and high benefit. Results of the study will help to provide a clearer understanding of how the aforementioned constructs are related to one another.

Please be assured that the responses you provided in this study will remain anonymous. Your data will be given an arbitrary number and will in no way be linked to your name. Additionally, all electronic data provided will be password protected. Please note that Qualtrics is based in the United States and therefore are subject to American Homeland Security laws such as the Patriot Act.

This study has been reviewed and received ethical clearance from the Brock University Research Ethics Board (REB #16-218). If you have any questions regarding the purpose or results of the study, please contact Ashley Hosker-Field, Tabitha Jones, Nathalie Gauthier, or Dr. Angela Book. Results will be made available in the summer of 2018 and may be published in academic journals and/or presented at academic conferences. The draw for the \$50.00 Tim Hortons Gift Card will take place when all data collection is complete. If you have any questions concerning your rights as a research participant, please contact the Research Ethics Officer (mail to [reb@brocku.ca](mailto:reb@brocku.ca), 688-5550, ext. 3035).

Thank you for your participation!

## **Appendix G**

**Impulsivity Items removed from Self Report Psychopathy Scale 4 to calculate  
adjusted erratic lifestyle scores**

- 9. I've often done something dangerous just for the thrill of it.
- 14. I always plan out my weekly activities.
- 17. I'd be good at a dangerous job because I make fast decisions
- 22. I never miss appointments
- 25. I hate high speed driving
- 28. I enjoy doing wild things.
- 42. I am an impulsive person.
- 47. I don't enjoy taking risks
- 59. I admit that I often "mouth off" without thinking