

Responses to adversity in childhood: The effect of sex on attachment style and personality  
disorder traits

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## Dedication

To my husband, my family and my friends who are family. <3

## Abstract

The current study had 3 objectives; 1) examine the indirect effects of childhood adversity on personality disorder traits through attachment style, 2) examine the effect of biological sex on the relationship between adversity and attachment, and adversity and personality disorder traits and, 3) examine how personality disorder traits can be represented within a model of basic personality. For the first objective, I tested a structural equation model (SEM) examining the indirect effects of adversity (i.e., abuse and neglect) through attachment style (anxious and avoidant) to antisocial, borderline, and psychopathic traits (lifestyle and behavioural aspects). Specifically, the regression analyses found attachment to be a mediator in the relationships between adversity and borderline traits and Factor 1 psychopathic traits, yet the SEM model did not. Because biological sex may affect the relationship between adversity and attachment (Belsky et al., 1991; Del Giudice, 2009; Del Giudice & Belsky, 2010) and antisocial (Gawda & Czubak, 2017), borderline (Gawda & Czubak, 2017), and psychopathic personality outcomes (Cale & Lillienfeld, 2002), I examined sex as a potential moderator (Objective 2). No sex differences emerged in the relations between adversity and the other variables in the model. Finally, I explored antisocial, borderline, and psychopathic personality outcomes using the HEXACO model of personality (Objective 3; Ashton & Lee, 2009). Consistent with previous research (Book, Visser, & Volk, 2015; Book et al., 2016), I found that psychopathic traits were negatively related to Honesty-Humility, Emotionality, Agreeableness, and Conscientiousness. Antisocial behaviours were predicted by low Honesty-Humility, Agreeableness, and Conscientiousness in the current study. Borderline traits were found to be related negatively to Extraversion and Conscientiousness but had a significantly positive relationship with Emotionality. Limitations, future research, and implications are discussed.

*Keywords: Abuse, Neglect, Attachment, Borderline traits, Antisocial traits, psychopathic traits,*

*HEXACO*

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## Table of Contents

|  |          |
|--|----------|
| Dedication   | ii       |
| Abstract   | iii      |
| Acknowledgements   | v        |
| List of Tables   | xi       |
| List of Figures  | xii      |
| List of Appendices   | xiii     |
| List of Acronyms and Abbreviations   | xiv      |
| <b>Introduction</b>  | <b>1</b> |
| <b>Objective 1: Indirect Effects of Adverse Childhood Events on Personality Disorder Symptoms Through Attachment Style</b> | <b>2</b> |
| <b>Impact of adverse childhood events.</b>   | <b>2</b> |
| <b>Adverse childhood events and attachment style.</b>  | <b>3</b> |
| <b>Adverse childhood events, attachment style and personality disorder traits.</b>   | <b>5</b> |
| <i>Antisocial Personality Disorder.</i>  | 6        |
| <i>Psychopathy.</i>  | 6        |
| <i>Borderline Personality Disorder.</i>  | 7        |
| <b>The model.</b>  | <b>8</b> |

|   |    |
|---|----|
| <b>Objective 2: Sex as a Potential Moderator in the Relationships Between Adverse Childhood Events and Attachment/Personality Disorder Traits</b> | 9  |
| <b>Adversity and sex.</b>   | 10 |
| <b>Attachment and sex.</b>  | 10 |
| <b>Personality disorder traits and sex.</b>   | 11 |
| <b>Objective 3: Personality Disorder Traits and Basic Personality</b>   | 12 |
| <b>Summary of the Current Study</b>   | 15 |
| <b>Methods</b>  | 16 |
| <b>Participants</b>   | 16 |
| <b>Measures</b>   | 17 |
| <b>Adverse Childhood Events.</b>  |    |
| <i>Childhood Trauma Questionnaire.</i>  | 17 |
| <b>Attachment.</b>  |    |
| <i>Relationship Structures Questionnaire.</i>   | 18 |
| <b>Antisocial Behaviour.</b>  |    |
| <i>Lifestyle Survey.</i>  | 18 |
| <b>Borderline Personality Traits.</b>   |    |
| <i>Borderline Evaluation of Severity over Time.</i>   | 18 |

|  |    |
|--|----|
| <b>Psychopathy.</b>  |    |
| <i>Self Report Psychopathy Scale.</i>  | 19 |
| <b>Basic Personality.</b>  |    |
| <i>the HEXACO-60.</i>  | 19 |
| <b>Procedures</b>  | 20 |
| <b>Statistical Analyses</b>  | 20 |
| <b>SEM model.</b>  | 21 |
| <b>ANOVA.</b>  | 21 |
| <b>Moderation analyses.</b>  | 21 |
| <b>Basic personality predicting personality disorder traits.</b>   | 21 |
| <b>Results</b>   | 22 |
| <b>Preliminary Analyses</b>  | 22 |
| <b>Objective 1. Indirect Effects of Adverse Childhood Events on Personality Disorder Traits Through Attachment Style</b> | 22 |
| <b>The SEM model.</b>  | 22 |
| <i>Assumptions.</i>  | 23 |
| <i>Descriptive statistics and bivariate correlations.</i>  | 23 |
| <i>Model estimation.</i>   | 25 |



|   |    |
|---|----|
| <i>Direct effects.</i>  | 26 |
| <i>Indirect effects.</i>  | 26 |
| <b>Supplementary analyses.</b>  | 29 |
| <i>Borderline traits.</i>   | 30 |
| <i>Factor 1 psychopathy.</i>  | 31 |
| <i>Factor 2 psychopathy.</i>  | 32 |
| <i>Antisocial behaviours.</i>   | 33 |
| <b>Objective 2: Sex as a Potential Moderator in the Relationships Between Adverse Childhood Events and Attachment/Personality Disorder Traits</b> | 34 |
| <b>ANOVA.</b>   | 34 |
| <b>Moderation.</b>  | 35 |
| <b>Objective 3. Fitting Personality Disorder Traits into the HEXACO model of Personality</b>  | 38 |
| <b>Discussion</b>   | 40 |
| <b>Objective 1</b>  | 41 |
| <b>Objective 2</b>  | 43 |
| <b>Objective 3</b>  | 44 |
| <b>Limitations and Future Research</b>  | 46 |

|                     |    |
|---------------------|----|
| <b>Implications</b> | 48 |
| <b>Conclusions</b>  | 50 |
| <b>References</b>   | 52 |
| <b>Appendices</b>   | 65 |

## List of Tables

|   |    |
|---|----|
| Table 1. <i>Dimensional model of attachment (Bartholomew &amp; Horowitz, 1991; Main et al., 1985)</i>   | 5  |
| Table 2. <i>Psychopathy trait structure by (Hare, 1991)</i>   | 7  |
| Table 3. <i>HEXACO factors and corresponding description for high factor score (Ashton &amp; Lee, 2009) and Five Factor Model of Personality and corresponding trait description (Costa &amp; McCrea, 1995)</i>                       | 14 |
| Table 4. <i>Descriptive statistics and bivariate correlations</i>   | 28 |
| Table 5. <i>Direct effects of adversity on antisocial behaviours, borderline traits and psychopathic traits</i>   | 28 |
| Table 6. <i>Indirect effects of adversity on antisocial behaviours, borderline traits and psychopathic traits</i>   | 29 |
| Table 7. <i>Direct and indirect effects of childhood adversity (adversity) through anxious and avoidant attachment separately, on borderline traits</i>   | 31 |
| Table 8. <i>Direct and indirect effects of childhood adversity (adversity) through anxious and avoidant attachment separately, on Factor 1 psychopathy</i>  | 32 |
| Table 9. <i>Direct and indirect effects of childhood adversity (adversity) through anxious and avoidant attachment separately, on Factor 2 psychopathy</i>  | 33 |
| Table 10. <i>Direct and indirect effects of childhood adversity (adversity) through anxious and avoidant attachment separately, on antisocial behaviours</i>  | 34 |
| Table 11. <i>ANOVAs of the effects of sex on adversity, anxious attachment, avoidant attachment, borderline traits, Factor 1 psychopathic traits, Factor 2 psychopathic traits, total psychopathy score and antisocial behaviours</i> | 35 |
| Table 12. <i>Multiple regression predicting anxious attachment</i>  | 36 |
| Table 13. <i>Multiple regression predicting avoidant attachment</i>   | 36 |
| Table 14. <i>Multiple regression predicting borderline traits</i>   | 37 |
| Table 15. <i>Multiple regression predicting psychopathic traits</i>   | 37 |
| Table 16. <i>Multiple regression predicting antisocial behaviour</i>  | 38 |
| Table 17. <i>Multiple regression: HEXACO dimensions predicting borderline traits</i>  | 39 |
| Table 18. <i>Multiple regression: HEXACO dimensions predicting psychopathic traits</i>  | 39 |
| Table 19. <i>Multiple regression: HEXACO dimensions predicting antisocial traits</i>  | 40 |

## List of Figures

- Figure 1. *Hypothesized structural equation model of adversity (neglect and abuse), attachment (anxious and avoidant) and personality traits (borderline traits, psychopathic traits, and antisocial behaviour)* 9
- Figure 2. *Proposed moderation (sex) analyses model for adversity predicting attachment, borderline traits, psychopathic traits and antisocial behaviours* 12
- Figure 3. *Hypothesized structural equation model of adversity (neglect and abuse), attachment (anxious and avoidant) and personality traits (borderline traits, psychopathic traits, and antisocial behaviour)* 23
- Figure 4. *Structural equation model of adversity (neglect and abuse), attachment (anxious and avoidant) and personality traits (borderline traits, psychopathic traits, and antisocial behaviour); Standardized Solution; N = 166* 27
- Figure 5. *Proposed relationship between adversity (neglect and abuse) and various outcomes (borderline traits, Factor 1 psychopathy, Factor 2 psychopathy, and antisocial behaviour) as mediated by attachment (anxious or avoidant)* 30

## List of Appendices

|  |    |
|--|----|
| Appendix A. Letter of Invitation                               | 65 |
| Appendix B. Consent Form                                       | 66 |
| Appendix C. Demographic Information                            | 70 |
| Appendix D. Self Report Psychopathy Scale (SRPS)               | 71 |
| Appendix E. The HEXACO-60 PI R- Self Report form               | 80 |
| Appendix F. Borderline Evaluation of Severity over Time (BEST) | 83 |
| Appendix G. Relationship Structures (ECR-RS) Questionnaire     | 85 |
| Appendix H. Lifestyle Survey (Visser et al., 2012)             | 90 |
| Appendix I. Childhood Trauma Questionnaire (CTQ-SF)            | 93 |
| Appendix J. Debriefing Form                                    | 94 |

## List of Acronyms and Abbreviations

|           |  |
|-----------|--|
| AsPD      | Antisocial Personality Disorder  |
| BEST      | Borderline Evaluation of Severity over Time                                  |
| BPD       | Borderline Personality Disorder  |
| CTQ-SF    | Childhood Trauma Questionnaire   |
| DSM-5     | Diagnostic Statistical Manual 5  |
| ECR-RS    | Relationship Structures  |
| F1        | Factor 1 of Psychopathy  |
| F2        | Factor 2 of Psychopathy  |
| the Big 5 | The Five Factor Model of Personality   |
| HEXACO    | Honesty/Humility, Emotionality, Extraversion,<br>Conscientiousness, Openness |
| SRPS      | Self Report Psychopathy Scale  |
| SEM       | Structural Equation Modelling  |

## Introduction

Early life adversity can lead to disrupted attachment with primary caregivers (Finzi., Ram, Har-Even, Shnit, & Weizman, 2001; Raby, Labella, Martin, Carlson, & Roisman, 2017) and in more severe cases, disrupt the development of healthy personality (Fonagy, 2000). Previous research has found that abuse and neglect precede insecure attachment patterns (Finzi et al., 2001; Raby et al., 2017), and are associated with antisocial (Byrd & Manchuk, 2014; Jaffee, Caspi, Moffitt, & Taylor, 2004), borderline (Reed, Fitzmaurice, & Zanarini, 2015; Schmahl, Vermetten, Elzinga, & Douglas Bremner, 2003; Zodan, Hilsenroth, Charnas, Goldman, & Bornstein, 2014) and psychopathic (Craparo, Schimmenti, & Caretti, 2013; Marshall & Cooke, 1999; Schimmenti, 2015; Schimmenti et al., 2014) traits. Research has yet to examine the potential association between adversity and psychopathic, borderline, and antisocial traits that may be indirect via attachment styles. Specifically, higher levels of adversity may be associated with more insecure attachment styles which may be associated with higher levels of psychopathic, borderline, and antisocial traits, and these indirect associations may differ depending on the attachment style examined. Another important step in understanding the patterns of association found between variables within a nomologic network is to uncover the higher-order structure of personality disorder traits. As such, it is important to examine the associations that lower-order personality constructs share with higher-order personality factors, such as the six factors represented in the HEXACO model of personality. Research has yet to use the HEXACO in examining borderline traits. Consequently, the current research is based on three objectives designed to address these gaps in the literature. First, I wanted to determine whether specific responses to childhood adversity would indirectly predict personality disorder

traits (namely, antisocial, borderline, and psychopathic traits) through attachment style (as measured by anxious and avoidant attachment styles).

The second objective in this study was to examine the effect of sex on the relationship between adverse childhood events, attachment, and various personality outcomes. Specifically, I examined whether sex would moderate the relationships between adversity and attachment and various personality outcomes (borderline, antisocial and psychopathic personality).

The third objective in the present study was to examine how personality disorder traits relate to basic personality traits as measured on the HEXACO model of personality (Ashton & Lee, 2009).

The following sections will review a) how adverse childhood events relate to attachment, b) how adverse childhood events and attachment relates to personality disorder traits, c) sex differences in adversity, attachment and personality disorder traits and d) the prediction of personality disorder traits from basic personality traits using the HEXACO model of personality.

### **Objective 1: Indirect Effects of Adverse Childhood Events on Personality Disorder**

#### **Symptoms Through Attachment Style**

I wanted to examine whether different responses to adverse childhood events indirectly predict different personality disorder traits through attachment styles. In this section, I will discuss the negative impact of adverse childhood events, how adverse childhood events relate to attachment style, and how childhood adversity and attachment style relate to personality disorder traits.

**Impact of adverse childhood events.** Adverse childhood events have a negative impact on children that lasts into adulthood. Both abuse and neglect can have adverse consequences to the physical and psychological development of children (CDCP, 2013a; CDCP, 2013b), thus it is



imperative to understand these phenomena and offer supports for survivors of abuse and neglect. Child abuse is defined as “words or overt actions that cause harm, potential harm, or threat of harm” (CDC, 2018, para. 1), and can be sexual, physical, and/or emotional in its presentation (Bernstein, Ahluvalia, Pogge, & Handelsman, 1997; Bernstein et al., 2003). Neglect, which can be physical or emotional in nature (Bernstein et al., 1997; Bernstein et al., 2003), is defined as the “failure to provide needs or to protect from harm or potential harm” (CDC, 2018, para. 2). Neglect can be physical and/or emotional in nature (Bernstein et al., 1997; Bernstein et al., 2003). Victims of child abuse and neglect have been shown to experience academic, employment, financial, and physical health issues (CDCP, 2013a; CDCP, 2013b). Even more alarmingly, these individuals are at an increased risk of alcohol or drug abuse, depression, suicide, intimate partner violence, sexual violence, sexually transmitted diseases, unintended pregnancies, multiple sexual partners, and earlier onset of sexual activity (CDCP, 2013a; CDCP, 2013b). Childhood adversity can also affect attachment-related behaviours and the ability to regulate emotions and behaviours (Cook et al., 2017). Deficits in attachment behaviours can take the form of lack of trust, increased suspicion, socially isolative behaviour, boundary issues, problems with adjusting to other individuals’ emotional states, and taking others’ perspectives (Cook et al., 2017). Many of these issues can span the individual’s entire life (Cook et al., 2017).

**Adverse childhood events and attachment style.** One important consequence of people’s early environment is attachment. Healthy early attachments formed with caregivers are critical for a child’s well-being and positive development (Bowlby, 1958). Attachment can be defined as the ability to establish affectionate bonds with others (Bowlby, 1977). Attachment is said to occur when infants develop an internal representation (i.e., internal working model) of the caregiver as loving and responsive to their needs (Bowlby, 1958, 1977, 1980). In the

Dimensional Model of Attachment (see Table 1), children develop a positive view of themselves and others when they are securely attached (Bartholomew & Horowitz, 1991; Main, Kaplan, & Cassidy, 1985). This secure attachment in childhood translates into the ability to have healthy intimate relationships in adulthood (Cassidy, 2001). That is, attachment styles continue to unfold across a life-time (Ainsworth, 1982, 1989; Bartholomew & Horowitz, 1991; Bowlby, 1958, 1977, 1980).

Unfortunately, when attachment is disrupted, as in the instance of childhood abuse and neglect, children may form insecure attachment styles (Bartholomew & Horowitz, 1991; Main et al., 1985; Main & George, 1985). There are three types of insecure attachment styles: fearful, anxious and avoidant (see Table 1; Bartholomew & Horowitz, 1991). Fearful attachment occurs when the individual has a negative view of self and others (Bartholomew & Horowitz, 1991). These individuals can present as avoidant of relationships and as viewing others as dishonest and rejecting, resulting in fear of social interaction (Bartholomew & Horowitz, 1991). An anxious attachment style is characterized by a negative view of self and positive view of others (Bartholomew & Horowitz, 1991). Moreover, an individual who is anxious in his or her attachment style presents as preoccupied with relationships, attempts to have affection and security needs met through sexual intercourse, seeks constant approval from others, and can be exceedingly dependent in relationships (Bartholomew & Horowitz, 1991; Main et al., 1985). Finally, avoidant attachment develops when the individual has a positive view of self and negative view of others (Bartholomew & Horowitz, 1991). These individuals can present as disengaging with relationships, avoiding disappointment, valuing independence (Bartholomew & Horowitz, 1991), or even dismissing relationships altogether (Main et al., 1985).

Table 1. *Dimensional model of attachment (Bartholomew & Horowitz, 1991; Main et al., 1985)*

|                |   | View of self                    |                                |
|----------------|---|---------------------------------|--------------------------------|
|                |   | -                               | +                              |
| View of others | + | Anxious/preoccupied attachment  | Secure attachment              |
|                | - | Fearful/disorganized attachment | Avoidant/dismissive attachment |

Attachment naturally would be affected by adversity in childhood. Although early theorists took a more psychodynamic approach in examining the effects of abuse and neglect on subsequent attachment behaviours, the effects described were behavioural and cognitive in nature (Call, 1984). The effect on the attachment style that was described was repetitive compulsive behaviours, pseudo-independence between parent and child, role reversal between parent and child, somatic symptoms, and self harm (Call, 1984). Indeed, research has found that physically abused children show more avoidant attachment patterns, whereas neglected children are more anxiously attached (Finzi et al., 2001). In another more recent study, anxious attachment was predicted by abuse and neglect, however avoidant attachment was not (Raby et al., 2017). As the previous research appears to find associations between abuse and neglect with anxious and avoidant attachment styles the current study will focus on these two styles specifically. Overall, I seek to rectify the lack of agreement between these studies' results by examining these relationships.

**Adverse childhood events, attachment style and personality disorder traits.** Adverse childhood events and attachment style (Call, 1984; Finzi et al., 2001) are both related to different personality types, including antisocial, borderline, and psychopathic traits. Notably, in previous research these personality disorder traits have been related to abuse and neglect (Reed et al.,

2015; Schmahl et al., 2003) and personality disorder traits has been predicted by attachment style previously in the literature (Crawford et al., 2007; Meyer, Pilkonis, Proietti, Heape, & Egan, 2001). The sections below describe the personality disorder traits being examined in this study, expand on the relations between these traits and adverse childhood events and attachment styles.

***Antisocial Personality Disorder.*** In the clinical presentation of Antisocial Personality Disorder (AsPD), an individual exhibits egocentricity, callousness, deceptiveness, risk-taking, irresponsibility, and manipulateness, along with a failure to behave in a way that conforms to the standards of lawful and ethical behaviour (DSM 5, 2013). The Diagnostic Statistical Manual-5, the gold standard for diagnostic and prevalence information, cites prevalence rates from .2 to 3.3 percent in the general population (DSM 5, 2013; Goldstein et al., 2007; Lenzenweger, Lane, Loranger, & Kessler, 2007; Torgersen, Kringlen, & Cramer, 2001). Importantly, in previous studies it has been found that antisocial behaviour is predicted by abuse and neglect (Byrd & Manchuk, 2014; Jaffee et al., 2004; Reavis, Looman, Franco, & Rojas, 2013; Skeem, Poythress, Edens, Lilienfeld, & Cale, 2003). Similarly, AsPD has been predicted by avoidant attachment patterns (Meyer et al., 2001; Schimmenti et al., 2014). For these individuals, caring behaviours were not modelled, were punished, or invalidated, and further antisocial behaviours may have been reinforced by family members (McCann, Ball, & Ivanoff, 2000).

***Psychopathy.*** Although psychopathy has been conceptualized in different ways (Cleckley, 1941; Hare, 1991), the most widely used conceptualization in clinical settings is based on Hare's Psychopathy Checklist-revised (PCL-R; Hare, 1991). Psychopathy is defined as a set of traits characterized by interpersonal manipulation, callous affect, an erratic lifestyle, and a variety of antisocial behaviors (Hare & Neumann, 2008). Table 2 displays the trait structure of

psychopathy (Hare, 1991) being comprised of two factors that each include 2 facets, covering interpersonal, affective, lifestyle, and behavioural domains.

Table 2. *Psychopathy trait structure by Hare (1991)*

| Factor | Facet | Facet title                | Items   |
|--------|-------|----------------------------|---|
| 1      | 1     | Interpersonal manipulation | Glibness, grandiosity, pathological lying and conning/manipulative behaviour  |
| 1      | 2     | Callous affect             | Lack of remorse/guilt, shallow affect, callous disregard for others and failure to accept responsibility for actions                  |
| 2      | 3     | Erratic life style         | Stimulation seeking, parasitic lifestyle, unrealistic goals/lack of realistic goals, impulsivity and irresponsibility                 |
| 2      | 4     | Antisocial behaviour       | Poor behavioural controls, early behaviour problems, juvenile delinquency, revocation of conditional release and criminal versatility |

Importantly, psychopathy is related to both abuse and neglect (Craparo et al., 2013; Karpman, 1941; Marshall & Cooke, 1999; Schimmenti, 2015; Schimmenti et al., 2014), with most studies denoting that increased severity of psychopathy was associated with physically abusive outcomes (Schimmenti et al., 2014). Further, psychopathy has been predicted by avoidant attachment patterns (Meyer et al., 2001; Schimmenti et al., 2014).

***Borderline Personality Disorder.*** Borderline Personality Disorder (BPD) is defined as a pattern “of instability of self-image, personal goals, interpersonal relationships, and affects, accompanied by impulsivity, risk taking, and/or hostility” (DSM 5, 2013, p. 763). This disorder

has notable deficits in mindfulness, distress tolerance, ability to regulate emotions, and interpersonal skills (Linehan, 1993). The DSM-5 acknowledges prevalence rates in the general population between 0.7 and 5.9 percent for BPD (DSM 5, 2013; Grant et al., 2008; Torgersen et al., 2001). Importantly, BPD has been predicted by abuse and neglect (Reed et al., 2015; Schmahl et al., 2003; Zodan et al., 2014) and anxious attachment (Fonagy, 2000; Levy, 2005).

People with BPD are believed to have not experienced a good fit in the relationship between parent and child, creating attachment issues early in the child's life (Linehan, 1993). Further, the diathesis-stress model explains that these individuals may be predisposed to be at a reduced capacity for environmental stressors from the outset (Linehan, 1993). Thus, any form of adversity introduced to this relationship would only serve to disrupt functioning further and increase severity of the disorder overall.

Though these antisocial, psychopathic, and borderline traits are all distinct (but overlapping) constructs, what the research indicates is that adversity and insecure attachment styles are associated with one another (Finzi et al., 2001; Raby et al., 2017), as well as with various personality outcomes (Fonagy, 2000), namely antisocial (with avoidant attachment style; Meyer et al., 2001; Schimmenti et al., 2014), borderline (with anxious attachment style; Fonagy, 2000; Levy, 2005), and psychopathic personality traits (with avoidant attachment patterns; Meyer et al., 2001; Schimmenti et al., 2014).

**The model.** Based on the review of the literature above, I expected that adversity (comprising of both neglect and abuse) would differentially predict antisocial, psychopathic and borderline traits through avoidant and anxious attachment style. Figure 1 details the hypothesized structural equation model where neglect and abuse (represented as latent variable labelled adversity), relates to both anxious and avoidant attachment styles. Also based in the previous

literature, I hypothesize borderline traits to be predicted by anxious attachment in this model and both antisocial and psychopathic traits to be predicted by avoidant.

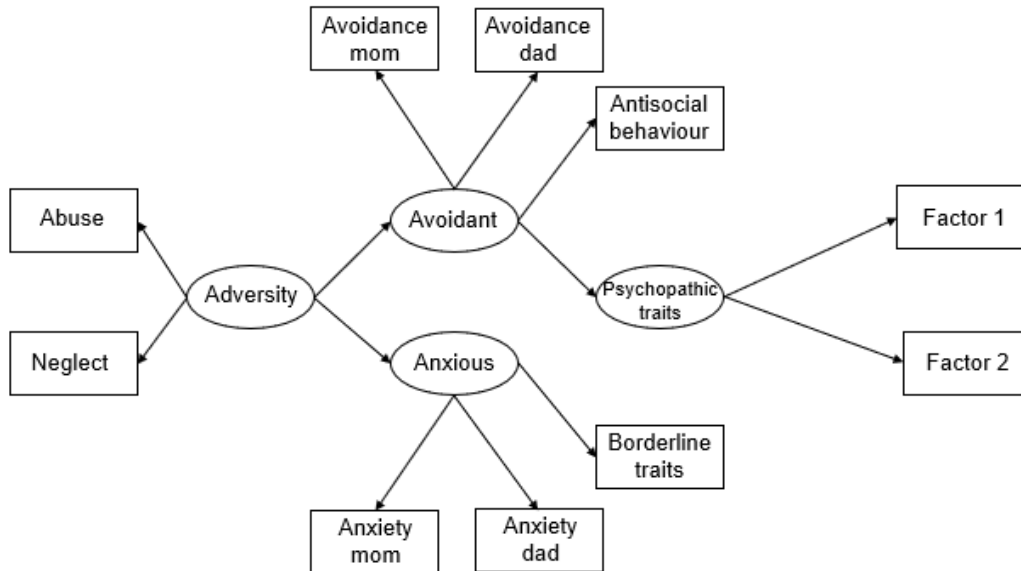


Figure 1. *Hypothesized structural equation model of adversity (neglect and abuse), attachment (anxious and avoidant) and personality traits (borderline traits, psychopathic traits, and antisocial behaviour)*

## **Objective 2: Sex as a Potential Moderator in the Relationships Between Adverse Childhood Events and Attachment/Personality Disorder Traits**

One potential moderator in the relationships described above is biological sex, which has been shown to relate to adversity, attachment style, personality traits, and behaviours. I seek to examine the relationships between adversity and attachment style and adversity and personality disorder traits act as a response to adversity in the analyses to follow.

**Adversity and sex.** In the literature, sex differences in sexual abuse histories have been noted, in that both children and adult women experience significantly more sexual abuse than

men (Bohl & deVogel, 2017). Risk of sexual abuse has been quoted as being as much as two to three times higher for women versus men in the regular population (Finkelhor, 1979). A large study was completed by the Centre for Disease Control concerning Adverse Childhood Experiences and other household and life stressors (CDCP, 2013a; CDCP, 2013b). It was found that women ( $n = 9367$ ) experienced physical abuse at a rate of 27%, sexual abuse 24.7%, emotional neglect 16.7%, emotional abuse 13.1%, and physical neglect 9.2% (CDCP, 2013a; CDCP, 2013b). Additionally, men ( $n = 7970$ ) experienced physical abuse at a rate of 29.9%, sexual abuse at 16%, emotional neglect at 12.4%, physical neglect at 10.7% and emotional abuse at 7.6% (CDCP, 2013a; CDCP, 2013b). The total sample ( $N = 17337$ ) experienced physical abuse at a rate of 28.3%, sexual abuse at 20.7%, emotional neglect at 14.8%, emotional abuse at 10.6%, and physical neglect at 9.9% of the time (CDCP, 2013a; CDCP, 2013b). In the present study, I hope to add some clarity to the specific role of sex in the context of adversity.

**Attachment and sex.** Sex may also be differentially related to attachment style.

According to Life History theory, men and women differ in terms of their reproductive strategies and responses to attachment disruptions (Belsky et al., 1991; Del Giudice & Belsky, 2010; Del Giudice, 2009).

Due to the biological function of the female reproductive system, women traditionally engage in slower life histories, whereas men's biological system endorses a faster life history strategy in terms of reproduction (Del Giudice, 2009). Faster life history encompasses less parental investment and more effort expended finding individuals to reproduce with (Del Giudice, 2009). Conversely, slow life history encompasses more parental investment and more resources devoted to subsequent offspring (Del Giudice, 2009). Life history may also be affected by the nature and quality of the attachment relationships in early life (Belsky et al., 1991; Del



Giudice, 2009; Del Giudice & Belsky, 2010). Thus, anxious and avoidant attachment patterns hold differential adaptive qualities. These insecure patterns lead individuals to engage in reproductive strategies that are atypical as women typically have a higher parental investment thus a slower life history than men (Del Giudice, 2009). For men it would be more adaptive to have shorter, uncommitted relationships focusing on copulation primarily (Del Giudice, 2009). Women, under moderate stress enter anxious attachment patterns (Del Giudice, 2009). Men engage in more avoidant patterns during environmental stressors as parental investment is naturally lower than women's (Del Giudice, 2009). Overall, attachment appears to differ in terms of sex, and may be rooted in biological function.

**Personality disorder traits and sex.** Sex differences have also been shown in rates of personality disorder traits (Cale & Lillienfeld, 2002; Gawda & Czubak, 2017). Of relevance to this study, women are more often diagnosed with BPD and men more often with ASPD (Gawda & Czubak, 2017). Further, in the literature men often have higher psychopathy scores and antisocial behaviour than women, however this is not consistently found (Cale & Lillienfeld, 2002). Inconsistent findings may be due to differences in gender roles, where women tend to be socialized towards relationships (Gilligan, 1993), women would engage in more interpersonal aggression (Hicks et al., 2010) or relational aggression, versus men who engage in more overt aggression (Cale & Lillienfeld, 2002).

Overall, in Objective 2, I predict that sex will moderate the relationships between adversity and the attachment and personality variables (see Figure 2). Specifically, based on the research, I predict that the relationship between adversity and anxious attachment (Belsky et al., 1991; Del Giudice, 2009; Del Giudice & Belsky, 2010) and borderline traits (Gawda & Czubak, 2017) will be stronger for women than men. Further, based on the previous research, I predict

that the relationship between adversity and avoidant attachment (Belsky, Steinberg, & Draper, 1991; Del Giudice, 2009; Del Giudice & Belsky, 2010), psychopathic traits (Cale & Lillienfeld, 2002) and antisocial behaviours (Gawda & Czubak, 2017) will be stronger for men versus women.

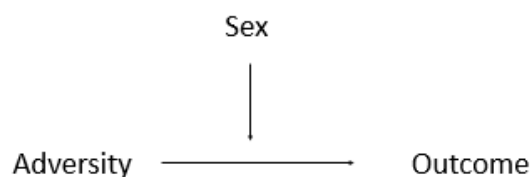


Figure 2. *Proposed moderation (sex) analyses model for adversity predicting attachment, borderline traits, psychopathic traits and antisocial behaviours*

### **Objective 3: Personality Disorder Traits and Basic Personality**

As I have examined the lower-order personality outcomes of antisocial, borderline and psychopathic personality in the previous two objectives, it is vital to study the relationship of these personality outcomes with higher-order personality factors, such as the six factors examined in the HEXACO model of personality. This is especially important as the fifth edition of the Diagnostic Statistical Manual has begun to examine a more dimensional model of personality disorders that focuses on lower-order personality constructs predicting higher-order personality (DSM 5, 2013). Thus, the final objective in the current study was to examine how personality disorder traits relate to basic personality traits. While I used the HEXACO model of personality in this study, there are many studies in the literature that have examined this issue using the Five Factor Model of Personality (McCrae & Costa, 1987).

The Five Factor Model of Personality (the Big 5) is comprised of five factors: Openness to Experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism (see Table 3; McCrae & Costa, 1987). Personality disorder traits have largely been examined using the Big 5 personality model. In the literature, BPD has been associated with increased Neuroticism, and decreased Agreeableness and Conscientiousness (Saulsman & Page, 2004). Similarly, ASPD has been associated with decreased levels of Agreeableness and Conscientiousness (Saulsman & Page, 2004). However, research investigating the higher-order personality structure of antisocial personality traits suggests that the HEXACO model of personality, with its sixth factor (Honesty-Humility), does a better job accounting for the variability within these constructs (Ashton & Lee, 2009; Ashton et al., 2000; Book et al., 2015; Book et al., 2016; Lee & Ashton, 2014).

Table 3. *HEXACO factors and corresponding description for high factor score (Ashton & Lee, 2009) and Five Factor Model of Personality and corresponding trait description (Costa & McCrea, 1995)*

| HEXACO factor              | High  | Five Factor Model trait | Description   |
|----------------------------|---|-------------------------|---|
| Honesty-Humility (H)       | Sincere, fair, greedy avoidant, and modest                            | NA                      | NA  |
| Emotionality (E)           | Fearful, anxious, dependent, and sentimental                          | Neuroticism             | Anxiety, Angry, hostility, depression, self-consciousness, impulsiveness, vulnerability |
| Extraversion (X)           | High on social self-esteem, socially bold, sociable, and lively       | Extraversion            | Warmth, gregariousness, assertiveness, activity, excitement seeking, positive emotions  |
| Agreeableness (A)          | Forgiving, gentle, flexible, and patient                              | Agreeableness           | Trust, straightforwardness, altruism, compliance, modesty, tender-mindedness            |
| Conscientiousness (C)      | Organized, diligent, perfectionistic, and prudent                     | Conscientiousness       | Competence, order, dutifulness, achievement striving, self-discipline, deliberation     |
| Openness to Experience (O) | Unconventional, creative, inquisitive, and has aesthetic appreciation | Openness to Experience  | Fantasy, aesthetics, feelings, actions, ideas, values                                   |

Table 3 examines the factor structure and corresponding description for individuals who score high on each of the HEXACO traits (Ashton & Lee, 2009). Some of the HEXACO factors are quite like their corresponding Big 5 constructs, whereas others differ more drastically. Table 3 displays the differences in definitions of traits between the HEXACO and Big 5. Specifically, Honesty-Humility may account for some variability in Agreeableness in the Five Factor Model of personality as Agreeableness accounts for altruism and modesty (Costa & McCrea, 1995), while Honesty-Humility also directly accounts for modesty (Ashton & Lee, 2009). Further, the HEXACO trait Emotionality may account for some variability in Neuroticism in that both traits

encompass anxiety (Costa & McCrea, 1995; Ashton & Lee, 2009), yet Neuroticism also deals with anger, hostility, impulsivity, self-consciousness, and vulnerability (Costa & McCrea, 1995).

Previous studies have examined dark personalities and their relationship with the HEXACO and Big 5 model (Book et al., 2015; Book et al., 2016). In the dark triad (comprising Machiavellianism, narcissism and psychopathy) and the dark tetrad (sadism, Machiavellianism, narcissism and psychopathy), the most variability is accounted for by the Honesty-Humility factor within the HEXACO model of personality (Book et al., 2015; Book et al., 2016). Previous research has also found that individuals scoring higher on psychopathy score lower on Honesty-Humility, Emotionality, Agreeableness, and Conscientiousness (Book et al., 2015; Book et al., 2016). I predicted that antisocial, psychopathic and borderline traits would all be negatively related to Honesty-Humility and Agreeableness, as previous overlaps have been noted between BPD and psychopathy (Roters & Marshall, 2015), and antisocial behaviour and psychopathy sharing a darker personality structure (Ashton & Lee, 2009; Ashton et al., 2000; Book et al., 2015; Book et al., 2016; Lee & Ashton, 2014). I further predicted that antisocial and psychopathic traits to be negatively related with Emotionality and Conscientiousness (as in previous research). Because of the emotional volatility often observed in people with borderline personality traits (DSM 5, 2013), I expected Emotionality to be positively related to these traits.

### **Summary of the Current Study**

**Objective 1.** I examined the relationships between adversity and attachment style and various personality outcomes (antisocial, borderline and psychopathic personality traits). Specifically, I predicted that childhood adversity would predict anxious and avoidant attachment, and that each of those attachment styles would lead to different outcomes. Anxious attachment

style would predict borderline personality traits whereas avoidant attachment would predict both antisocial and psychopathic personality traits.

**Objective 2.** I predicted that sex would moderate the relationships between adversity and anxious and avoidant attachment style and antisocial, borderline and psychopathic personality traits. Specifically, I expected that the relationships between adversity and avoidant attachment, adversity and psychopathic traits, and adversity and antisocial behaviours would be stronger for men. Conversely, I expected the relationships between adversity and anxious attachment, and adversity and borderline traits would be higher for women.

**Objective 3.** Finally, I examined how the lower-order personality disorder traits are represented in terms of the HEXACO model of personality. Specifically, and consistent with previous findings, I predicted that psychopathy and antisocial behaviours would be related negatively to Honesty-Humility, Emotionality, Agreeableness, and Conscientiousness (Book et al., 2015; Book et al., 2016), and that borderline traits would be negatively associated with Honesty-Humility and Agreeableness but positively associated with Emotionality (DSM 5, 2013; Roters & Marshall, 2015; Saulsman & Page, 2004).

## Methods

### Participants

A total sample of 350 individuals was collected from online sources (see Procedures). Data were removed if the individual did not consent or consented to participation in the study, then filled out no items on any measures. This left 271 respondents in the total sample. Of the total sample only 232 individuals responded to biological sex with 128 women and 102 men (55.7% and 44.3% respectively, with a mean age of 33.18 years,  $SD = 11.7$ , range: 18 to 68), and

2 additional individuals selecting that they preferred not to answer, with 39 individuals leaving this question blank. Of the total sample of ( $N = 271$ ), 145 (54.1%) indicated their gender was female, 123 (45.9%) indicated their gender was male, 1 indicated other and 2 preferred not to say. As there were more respondents who responded with their gender, gender was used as sex in analyses as responses were consistent across sex and gender. Additionally, individuals who responded “other” or “prefer not to say” to gender were excluded from analyses as there was not a large enough group to be analyzed separately.

Of all 271 respondents, 247 individuals lived in Canada whereas 24 endorsed not living in Canada. Survey respondents identified with the racial groups: “White” (87.8%), “other” (5.5%), “Asian” (3.0%), “American Indian or Alaska Native” (2.2%), and “African American or Black” (1.5%). Survey respondents’ education levels were: “a four-year degree” 34.3% of the time, “some college” 22.9% of the time, “a professional degree” 14% of the time, “a two-year degree” 12.2% of the time, “high school diploma” 8.5% of the time, “a doctorate degree” 5.5% of the time, and “less than high school” 2.6% of the time. Of note, history of mental illness was endorsed 44.4% of the time with 4.4% of individuals preferring not to say, leaving 51.1% of individuals endorsing no history.

## Measures

**Adverse Childhood Events.** The Childhood Trauma Questionnaire (CTQ-SF; Bernstein et al., 2003) is a 28-item measure assessing childhood histories for abuse (sexual, physical or emotional) and neglect (physical or emotional). Items are scaled as 1 = *never true*, 2 = *rarely true*, 3 = *sometimes true*, 4 = *often true*, and 5 = *very often true* (see Appendices). Some examples of items are “I believe that I was physically abused” and “I thought that my parents wished that I had never been born”. Cronbach’s  $\alpha$  (internal consistency scores) for the current

study was assessed at .85. Three items were not used from this questionnaire as they were the validity items.

**Attachment.** The Relationship Structures Questionnaire (ECR-RS; Fraley, Heffernan, Vicary, & Brumbaugh, 2011) measures avoidant or anxious attachment style in four different relationships: mother, father, romantic partner, and best friend (Fraley, Heffernan, Vicary, & Brumbaugh, 2011). All 9 items are asked for each relationship and are rated on a Likert scale from 1 to 7 corresponding to *strongly disagree* to *strongly agree* (see Appendices). Examples of items include "It helps to turn to this person in times of need" and "I often worry that this person doesn't really care for me". Internal consistency (Cronbach's  $\alpha$  coefficient) in this study was .68. In this study, only mother and father relationships were examined in the structural equation modeling, mediation, ANOVA, and moderation analyses.

**Antisocial Behaviour.** The Lifestyle Survey (Visser, Ashton, & Pozzebon, 2012) is a 46-item measure examining antisocial behaviours in a student sample. Antisocial behaviours assessed are competitive student behaviour, callous romantic behaviour, risky rule breaking, dishonesty for personal gain, relational aggression, and overt aggression (Visser et al., 2012). Items were scaled 1 = *I have never done this*, 2 = *I have done this once or twice*, 3 = *I have done this a few times*, and 4 = *I have done this frequently* (see Appendices; Visser et al., 2012). Examples of items include "I have gotten into a fight" and "I have used physical intimidation to get what I want". Internal consistency (Cronbach's  $\alpha$ ) for this study was assessed at .87. All items were used in this study.

**Borderline Personality Traits.** The Borderline Evaluation of Severity over Time (BEST; Pfohl et al., 2009) is a 15-item measure examining the cognitive, affective and behavioural components of BPD. There are three subscales: thoughts and feelings, negative



behaviours and positive behaviours (Pfohl et al., 2009). In this study, only two subscales were used as the third, positive behaviours, corresponds to therapeutic participation (see Appendices), which was not the focus of this study. Items were scaled from 1 = *causing little or no problems* to 5 = *the item caused extreme distress, severe difficulties with relationships, and/or kept you from getting things done*. Examples of items include “Severe mood swings several times a day. Minor events cause major shifts in moods” and “Feeling suicidal”. Internal consistency (Cronbach’s  $\alpha$  coefficient) in this study was assessed at .87.

**Psychopathy.** The Self Report Psychopathy Scale (SRPS; Paulhus, Hemphill, & Hare, 2017) is a 64-item questionnaire examining psychopathy. This measure mirrors the aforementioned PCL-R structure, with two factors each containing two facets (Hare & Neumann, 2008). The SRPS is scaled from 1 = *Disagree Strongly* to 5 = *Agree Strongly* (see Appendices). Examples of items include “I like to see fist-fights” and “It’s fun to see how far you push people before they get upset.” Internal consistency (Cronbach’s  $\alpha$  coefficients) in this study was assessed at .90.

**Basic Personality.** Finally, the HEXACO-60 (Ashton & Lee, 2009) is a shortened measure examining 6 conceptualized domains of personality: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientious, and Openness. Items are scaled as 1 = *strongly disagree*, 2 = *disagree*, 3 = *neutral, neither agree nor disagree*, 4 = *agree*, and 5 = *strongly agree* (see Appendices). Examples of items include “If I knew that I could never get caught, I would be willing to steal a million dollars” from the Honesty-Humility scale, “I remain unemotional even in situations where most people get very sentimental” for Emotionality, “Most people are more upbeat and dynamic than I generally am” from the Extraversion scale, “People sometimes tell me that I am too critical of others” for Agreeableness, “I make a lot of mistakes because I don’t

think before I act” for Conscientiousness, and “I would enjoy creating a work of art, such as a novel, a song, or a painting” for Openness to Experience. Internal consistency (Cronbach’s  $\alpha$  coefficients) for the HEXACO–60 in this study was .79 for Honesty-Humility, .84 for Emotionality, .78 for Extraversion, .82 for Agreeableness, .77 for Conscientiousness, and .79 for Openness to Experience.

## **Procedures**

All survey materials were self report (see Measures and Appendices for all posted materials) and were loaded onto Qualtrics software in the order that they appear in the Appendices. A link for this survey was generated and distributed online through three websites. Links were posted on one Canadian and three psychology online posting boards on Reddit, and Facebook and Kijiji links were posted using the primary researcher’s account on each website. Data collected from Kijiji were posted in various cities in Canada, specifically: Greater Vancouver area, British Columbia; Calgary, Alberta; Regina Area, Saskatchewan; Winnipeg, Manitoba; Sudbury and Greater Toronto area, Ontario; Greater Montreal area, Quebec; St. John’s, Newfoundland; Fredericton, New Brunswick; Halifax, Nova Scotia; Charlottetown, Prince Edward Island; Whitehorse, Yukon; Yellowknife, Northwest Territories; and Iqaluit, Nunavut.

## **Statistical Analyses**

Univariate assumptions and multivariate assumptions were checked and met. Further, there were no plans for re-specification if the initial model was rejected.

**SEM model.** Mplus (Muthén & Muthén, 1998-2011) was used to run the supplemental structural equation model detailed in Figure 1 previously. I hypothesized that abuse and neglect

would together predict borderline, antisocial and psychopathic traits. Indirect effects of adversity on personality outcomes were also examined.

**ANOVA.** In IBM SPSS statistics 25, men and women were compared to determine preliminary sex differences on a variety of outcomes: anxious and avoidant attachment styles, borderline traits, antisocial behaviours and psychopathic traits. Specifically, the initial F-tests were analysed to examine the specific effect of sex on each of these outcomes independently. Of note, I used a  $p$  value of .001 to gauge significance due to the high number of analyses run in this study

**Moderation analyses.** Using model 1 of the IBM SPSS statistics 25 PROCESS (Hayes, 2012) macro, I examined 5 moderation models examining adversity (comprised of abuse and neglect) and various attachment and personality outcomes. Of note, adversity was mean centered and was used to create an interaction term for all 5 analyses. I predicted that the relationship between adversity and anxious attachment and borderline traits separately will be stronger for women and that the relationship between adversity and avoidant attachment, antisocial and then separately psychopathic traits, will be stronger for men. Of note, I used a  $p$  value of .05 to gauge significance in these central analyses.

**Basic personality predicting personality disorder traits.** Lastly, I used IBM SPSS 25 to run three separate multiple regression analyses to examine the HEXACO traits of personality predicting borderline, psychopathic and antisocial outcomes. As the power to detect a medium effect (.99 using GPower 3.0; Erdfelder, Faul, & Buchner, 1996) would be much higher for these analyses, a conservative  $p = .01$  was used.

## Results

## **Preliminary Analyses**

Using IBM SPSS 25, univariate and multivariate assumptions were examined. The values for kurtosis and skewness did not exceed values of  $\pm 2.00$ , thus were in the normal range of expected values. Next, I examined multivariate outliers where case 191 was an outlier specifically on antisocial behaviour. This value was Winsorized (as per Tabachnick & Fidell, 2007). There were no other multivariate outliers and values for Cook's distance on all remaining variables were below 1.

### **Objective 1. Indirect Effects of Adverse Childhood Events on Personality Disorder Traits Through Attachment Style**

**The SEM model.** The hypothesized model is pictured again in Figure 3 with the full model appearing in Figure 4. Of note, the circles denote latent variables, and the rectangles denote measured variables. Adversity (a latent variable having 2 indicators: abuse and neglect) was hypothesized to predict avoidant attachment style (a latent variable having 2 indicators: father and mother avoidant attachment style) and anxious attachment style (a latent variable having 2 indicators: father and mother anxious attachment style). I hypothesized anxious attachment style to predict borderline traits. Further, I hypothesized avoidant attachment style to predict psychopathic traits (having 2 indicators: Factor 1 and Factor 2 of psychopathy) and antisocial behaviours.

**Assumptions.** As stated previously, all univariate and multivariate assumptions were checked before running any analyses using IBM SPSS 25. The full data set contains 271 individuals however the SEM model analyzed 166 participants due to missing data, thus all analyses in this current study were completed on this subset of the data. Completed participants

were compared to those with missing data on the variables of interest using independent t-tests. The only significant difference was on age,  $t(269) = 4.54, p < .001$ , with non-completers ( $M = 37.13, SD = 13.24$ ) being significantly older than completers ( $M = 30.72, SD = 9.89$ ). Future studies should use an incentive to increase the percentage of completers.

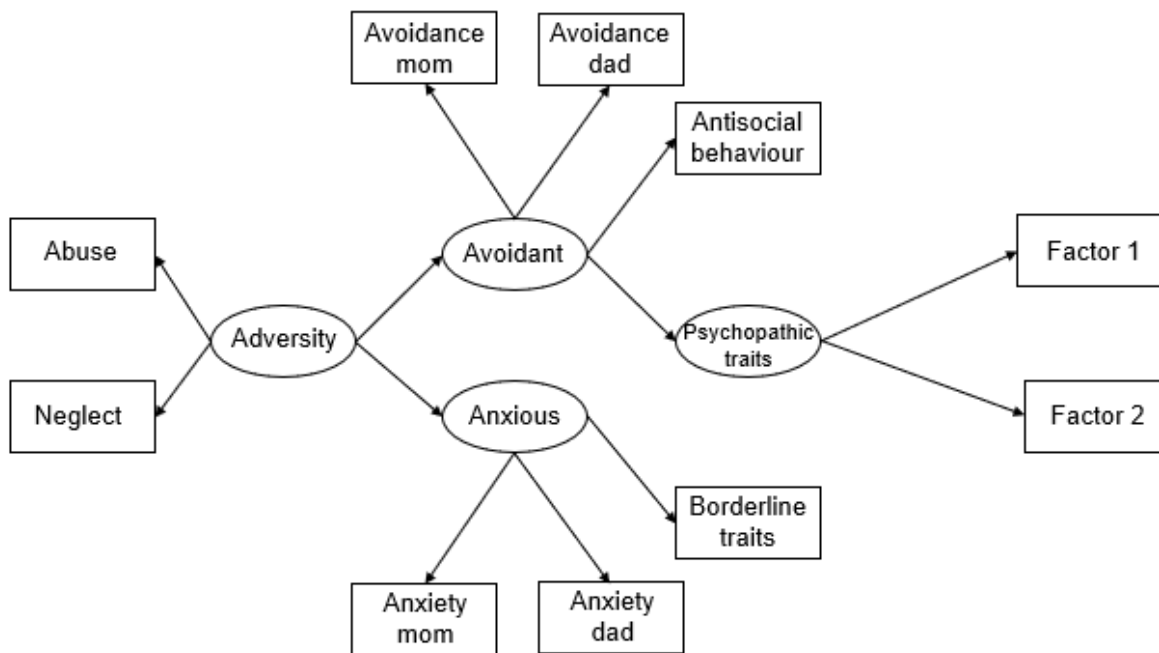


Figure 3. *Hypothesized structural equation model of adversity (neglect and abuse), attachment (anxious and avoidant) and personality traits (borderline traits, psychopathic traits, and antisocial behaviour)*

***Descriptive statistics and bivariate correlations.*** In Table 4, bivariate correlations and descriptive statistics are listed for the variables within the main analyses. Large significant bivariate correlations were found between neglect and abuse, neglect and Avoidance attachment with mom, neglect and Avoidant attachment with dad, and neglect and Anxious attachment with mom. Further, large significant correlations were found between Avoidant attachment with mom and Avoidant attachment with dad and Anxious attachment with mom and Anxious attachment with dad, and antisocial behaviours and Factor 2 psychopathy.

Moderate significant correlations were found between antisocial behaviour and abuse, and Factor 1 psychopathy. Borderline traits and abuse, neglect, Anxious attachment with mom, and Anxious attachment with dad were also found to be significantly moderately correlated. Factor 1 psychopathy was found to be associated moderately with neglect, Factor 2 psychopathy, and Avoidant attachment with mom. Factor 2 psychopathy was found to have significant moderate correlations with both abuse and neglect. Abuse was found to have moderate associations with Avoidant attachment with mom, Avoidant attachment with dad, Anxious attachment with mom, and Anxious attachment with dad. Neglect was moderately correlated with Anxious attachment with dad. Avoidant attachment with mom and Anxious attachment with mom, Anxious attachment dad with and Avoidant attachment with dad, and Anxious attachment with mom and Avoidant attachment with dad were all also moderately significantly correlated.

Small significant correlations were found between antisocial behaviour and borderline traits, Avoidant attachment with mom, Avoidant attachment with dad, and Anxious attachment with mom. Borderline traits were found to have small correlations with Factor 2 psychopathy, Avoidant attachment with mom, and Avoidant attachment with dad. Further, Factor 1 psychopathy had small significant associations with Anxious attachment with mom, and Avoidant attachment with dad. Factor 2 psychopathy had small correlations with Avoidant attachment with mom, Avoidant attachment with dad, Anxious attachment with mom, and Anxious attachment with dad. Lastly, Avoidant attachment with mom and Anxious attachment with dad were found to have small significant correlations.

***Model estimation.*** For this analysis, Maximum Likelihood estimation (ML) was utilized for its robustness to violations in multivariate normality; thus, the Maximum Likelihood Ratio chi-square is reported (Tabachnick & Fidell, 2007). Though the Goodness of fit test was

significant,  $\chi^2 (22, N=166) = 62.40, p < .001$ , it is uncommon for a model to be nonsignificant as values are contingent on sample sizes, thus it has been suggested in the literature that multiple fit indices should be used (Tabachnick & Fidell, 2007). In examining other fit indices, the SEM model had a relatively acceptable RMSEA of .11 where the literature cites values of .06 to .10 representing an acceptable fit, however this value is also affected by smaller sample size (Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996; Schubert, Hagemann, Voss, & Bergmann, 2017; Tabachnick & Fidell, 2007). Further, RMSEA is a fit index that measures exact fit, thus 0 would signify a perfect fit for the model (Schubert et al., 2017); however, a clearly defined upper limit has been debated and has largely been based on intuition (Marsh, Hau, & Wen, 2004). Somewhat controversially, some authors have cited an RMSEA value of .14 as an acceptable fit (Schubert et al., 2017). Lastly, the TLI value for my model was .867, falling short of the .95 cut-off denoting a good fit; however, this fit index is sensitive to small sample sizes as well (Hu & Bentler, 1999).

Both CFI and SRMR indicator values suggested a good fit for the model at .935 and .05 respectively, where CFI values close to 1 specify a very good fit index (Bentler, 1990) and SRMR values less than .08 indicate a good fit (Hu & Bentler, 1999; Tabachnick & Fidell, 2007). The SEM model with standardized coefficients is pictured in Figure 4.

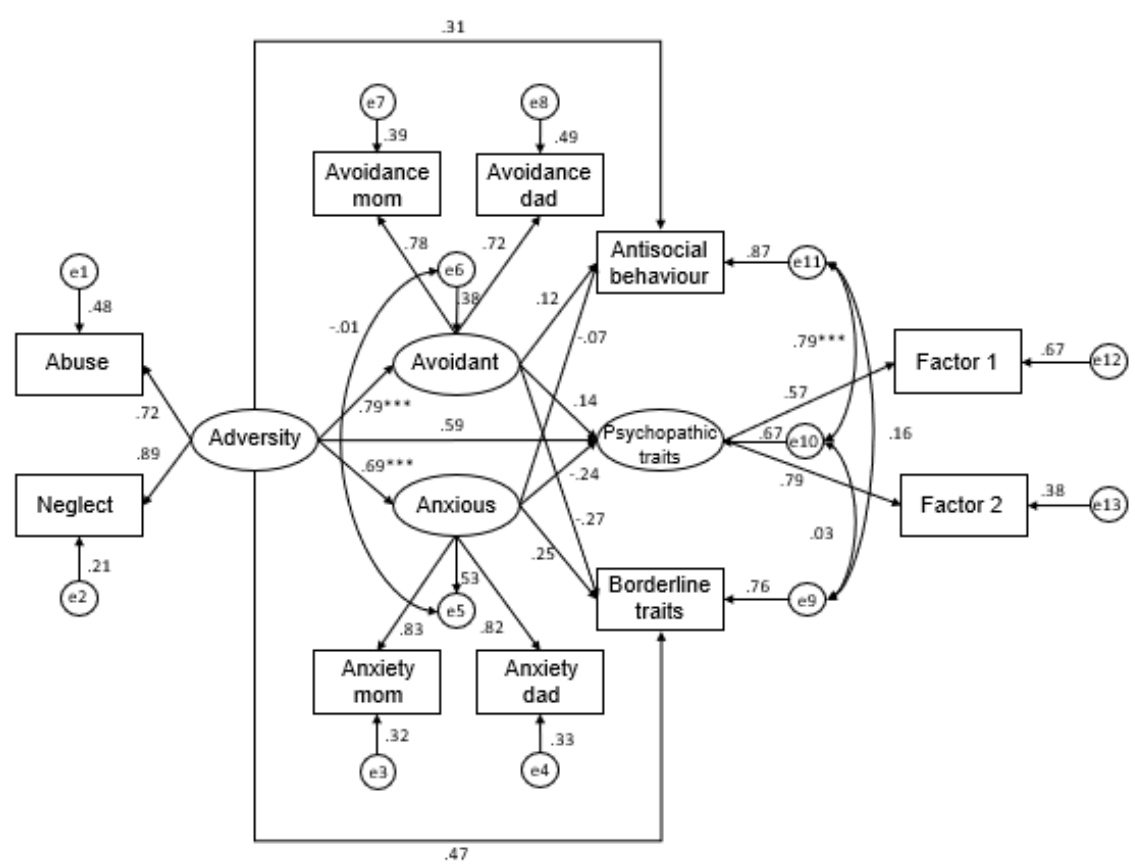
***Direct effects.*** As hypothesized, higher levels of adversity predicted both avoidant attachment (standardized coefficient = .79) and anxious attachment (standardized coefficient = .69). However, contrary to my hypotheses, higher levels of anxious attachment did not predict borderline traits (standardized coefficient = .25), and higher levels of avoidant attachment did not predict antisocial behaviour (standardized coefficient = .12) and psychopathic traits

(standardized coefficient = .14). For model standardized values, unstandardized values, and significance values, see Table 5.

***Indirect effects.*** Indirect paths from adversity to borderline, antisocial and psychopathic personality traits through avoidant and anxious attachment style were not significant (see Table 6). Particularly, adversity did not indirectly predict borderline personality traits (standardized coefficient = .17). Further, psychopathic traits (standardized coefficient = .11) and antisocial behaviour (standardized coefficient = .10) were not indirectly predicted by adversity. Last of all, nearly 23.7% of the variance in adversity was accounted for by borderline traits, 33.2% by psychopathic traits, and 13.2% by antisocial behaviours. It is likely that the lack of significant indirect effects is due to significant intercorrelation among the dependent variables (see Table 4).



Figure 4. Structural equation model of adversity (neglect and abuse), attachment (anxious and avoidant) and personality traits (borderline traits, psychopathic traits, and antisocial behaviour); Standardized Solution; N = 166



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

Table 4. *Descriptive statistics and bivariate correlations*

| Variable    | 1 | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9      | 10     | <i>M</i> | <i>SD</i> |
|-------------|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|-----------|
| 1) AsPD     | - | .25*** | .34*** | .28*** | .43*** | .65*** | .26*** | .19*   | .22**  | .15    | 1.50     | .33       |
| 2) BPD      |   | -      | .40*** | .34*** | .01    | .20**  | .18*   | .33*** | .17*   | .36*** | 29.67    | 11.66     |
| 3) Abuse    |   |        | -      | .64*** | .17*   | .37*** | .34*** | .43*** | .39*** | .44*** | 1.54     | .65       |
| 4) Neglect  |   |        |        | -      | .32*** | .35*** | .60*** | .50*** | .50*** | .48*** | 1.76     | .66       |
| 5) Factor 1 |   |        |        |        | -      | .45*** | .39*** | .14    | .26*** | .09    | 80.52    | 19.95     |
| 6) Factor 2 |   |        |        |        |        | -      | .25*** | .16*   | .22**  | .16*   | 66.93    | 14.84     |
| 7) AvoidMom |   |        |        |        |        |        | -      | .36*** | .56*** | .22**  | -.50     | 1.73      |
| 8) AnxMom   |   |        |        |        |        |        |        | -      | .34*** | .68*** | -2.14    | 1.39      |
| 9) AvoidDad |   |        |        |        |        |        |        |        | -      | .44*** | -.07     | 1.77      |
| 10) AnxDad  |   |        |        |        |        |        |        |        |        | -      | -2.03    | 1.46      |

*Note.* AsPD = antisocial behaviour, BPD = borderline traits, Factor 1 = Factor 1 psychopathy, Factor 2 = Factor 2 psychopathy, AvoidMom = avoidant attachment with mom, AnxMom = anxious attachment with mom, AvoidDad = avoidant attachment with dad, AnxDad = anxious attachment with dad. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 5. *Direct effects of adversity on antisocial behaviours, borderline traits and psychopathic traits*

| Dependent Variable   |           | <i>B</i> | <i>SE</i> | 95% CI |       | $\beta$ |
|----------------------|-----------|----------|-----------|--------|-------|---------|
|                      |           |          |           | LL     | UL    |         |
| Antisocial behaviour | Adversity | .17      | .21       | -.08   | .56   | .31     |
|                      | Avoidant  | .03      | .07       | -.07   | .16   | .12     |
|                      | Anxious   | -.02     | .06       | -.14   | .06   | -.07    |
| Borderline traits    | Adversity | 9.32     | 8.14      | .48    | 26.89 | .47     |
|                      | Avoidant  | -2.33    | 2.72      | -8.05  | .88   | -.27    |
|                      | Anxious   | 2.48     | 2.20      | -1.27  | 6.67  | .25     |
| Psychopathic traits  | Adversity | 11.61    | 8.69      | 1.19   | 30.74 | .59     |
|                      | Avoidant  | 1.22     | 2.81      | -3.60  | 6.57  | .14     |
|                      | Anxious   | -2.38    | 2.34      | -6.90  | .65   | -.24    |
| Avoidant             | Adversity | 1.83***  | .27       | 1.31   | 2.35  | .79     |
| Anxious              | Adversity | 1.36***  | .26       | .87    | 1.89  | .69     |

*Note:*  $\chi^2(22, N = 166) = 62.40, p < .001, CFI = .935, SRMR = .045, RMSEA = .11$ . Adversity is a latent variable comprising both neglect and abuse; where neglect measures physical and emotional neglect and abuse measures sexual, physical and emotional abuse. Both anxious and avoidant attachment styles are latent variables measured by attachment style with mother and father. Borderline traits are measured by thoughts and feelings and negative behaviours. Lastly psychopathic traits are a latent variable comprising both Factor 1 and Factor 2. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$

Table 6. *Indirect effects of adversity on antisocial behaviours, borderline traits and psychopathic traits*

| Dependent Variable   |          | Independent Variable | <i>B</i> | SE   | 95% CI |       | $\beta$ |
|----------------------|----------|----------------------|----------|------|--------|-------|---------|
|                      |          |                      |          |      | LL     | UL    |         |
| Antisocial behaviour | Avoidant | Adversity            | .06      | .13  | -.13   | .28   | .10     |
|                      | Anxious  |                      | -.03     | .10  | -.21   | .07   | -.05    |
| Borderline traits    | Avoidant | Adversity            | -4.27    | 5.30 | -15.88 | 1.36  | -.21    |
|                      | Anxious  |                      | 3.37     | 3.07 | -1.06  | 9.14  | .17     |
| Psychopathic traits  | Avoidant | Adversity            | 2.22     | 5.25 | -6.94  | 11.43 | .11     |
|                      | Anxious  |                      | -3.24    | 3.96 | -11.75 | .60   | -.17    |

*Note:* Adversity is a latent variable comprising both neglect and abuse; where neglect measures physical and emotional neglect and abuse measures sexual, physical and emotional abuse. Both anxious and avoidant attachment styles are latent variables measured by attachment style with mother and father. Borderline traits are measured by thoughts and feelings and negative behaviours. Lastly psychopathic traits are a latent variable comprising both Factor 1 and Factor 2.

**Supplementary analyses.** As mentioned above, the dependent variables were highly intercorrelated, which is one possible explanation for nonsignificant indirect paths in the model. Thus, I decided to examine each of the outcome variables (borderline traits, Factor 1 traits, Factor 2 traits, and antisocial behaviour) for each mediator (Anxious and Avoidant attachment) separately using PROCESS macros (Hayes, 2012), a program within SPSS that examines mediation through regression (see Figure 5 below). Composite scores for anxious attachment (mother and father) and avoidant attachment (mother and father) were calculated as these would address the issues of highly correlated variables, multicollinearity, and controlling for Type 1 error (Song, Lin, Ward, & Fine, 2013). Total childhood adversity score was used as the predictor, as both neglect and abuse loaded significantly on the latent variable in the previous SEM analysis, and PROCESS only allows for one predictor variable. Anxious and avoidant attachment were entered as mediators so that unique prediction of each could be established. Eight models were run in total, one for each of the dependent variables (borderline, antisocial, Factor 1 psychopathy and Factor 2 psychopathy) at each mediator (anxious and avoidant attachment).

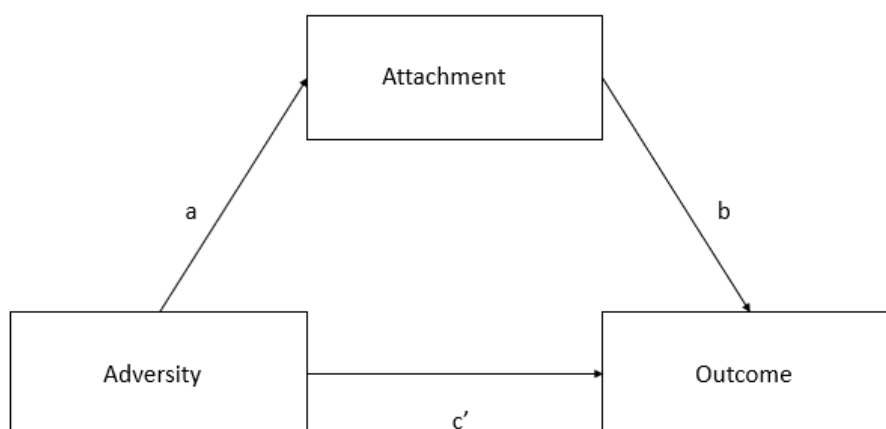


Figure 5. *Proposed relationship between adversity (neglect and abuse) and various outcomes (borderline traits, Factor 1 psychopathy, Factor 2 psychopathy, and antisocial behaviour) as mediated by attachment (anxious or avoidant)*

**Borderline traits.** Table 7 gives the regression coefficients and confidence intervals for the regression models predicting borderline traits. As expected, childhood adversity was a significant positive predictor of both anxious and avoidant attachment style (path a). Importantly, and as predicted, anxious attachment style was a significant predictor of borderline traits, while avoidant attachment was not (path b). Direct effects (path c') were observed between childhood adversity and borderline traits for both models, meaning that even when controlling for attachment style, there was a significant positive relationship between childhood adversity and borderline traits. It should be noted that this direct effect accounted for 17 to 20% of the variance in borderline traits. The main hypothesis, that there would be a significant indirect effect between childhood adversity and borderline traits through anxious (but not avoidant) attachment style was supported. In other words, part of the effect of childhood adversity on borderline traits was through its relationship to anxious attachment.

Table 7. *Direct and indirect effects of childhood adversity (adversity) through anxious and avoidant attachment separately, on borderline traits*

| Regression path                           | Anxious attachment |        |      | Avoidant attachment |        |       |
|---|--------------------|--------|------|---------------------|--------|-------|
|   | <i>B</i>           | 95% CI |      | <i>B</i>            | 95% CI |       |
|   |                    | LL     | UL   |                     | LL     | UL    |
| Mediation path <i>a</i> (adv on Av or An) | 2.44*              | 1.72   | 3.19 | 2.84*               | 2.16   | 3.63  |
| Mediation path <i>b</i> (Av or An on BPD) | .97*               | .31    | 1.71 | -0.15               | -.84   | .48   |
| Direct effect <i>c'</i>                   | 5.78*              | 2.51   | 9.05 | 8.58*               | 5.27   | 11.88 |
| Indirect effect <i>ab</i>                 | 2.37*              | .76    | 4.15 | -0.43               | -2.56  | 1.34  |

*Note:* adv is adversity, Av is avoidant attachment with both mom and dad, An is anxious attachment with both mom and dad, and BPD is borderline traits. \*  $p < .05$ , where confidence interval does not include zero

**Factor 1 psychopathy.** Table 8 gives the regression coefficients and confidence intervals for the regression models predicting Factor 1 traits. As expected, childhood adversity was a significant positive predictor of both anxious and avoidant attachment style (path a). Importantly, and as predicted, avoidant attachment style was a significant predictor of Factor 1 traits, while anxious attachment was not (path b). A direct effect (path *c'*) was observed between childhood adversity and Factor 1 traits for the anxious attachment model. The main hypothesis, that there would be a significant indirect effect between childhood adversity and Factor 1 traits through avoidant (but not anxious) attachment style was supported. In other words, part of the effect of childhood adversity on Factor 1 traits was through its relationship to avoidant attachment. In fact, when avoidant attachment is accounted for, the direct effect of childhood adversity on Factor 1 traits becomes nonsignificant.

Table 8. *Direct and indirect effects of childhood adversity (adversity) through anxious and avoidant attachment separately, on Factor 1 psychopathy*

| Regression path                                | Anxious attachment |        |       | Avoidant attachment |        |      |
|--|--------------------|--------|-------|---------------------|--------|------|
|  | B                  | 95% CI |       | B                   | 95% CI |      |
|  |                    | LL     | UL    |                     | LL     | UL   |
| Mediation path <i>a</i> (adv on Av or An)      | 2.44*              | 1.71   | 3.18  | 2.84*               | 2.19   | 3.63 |
| Mediation path <i>b</i> (Av or An on Factor 1) | -.18               | -1.51  | 1.14  | 2.06*               | .86    | 3.15 |
| Direct effect <i>c</i> '                       | 9.02*              | 2.96   | 15.07 | 2.75                | -3.03  | 8.52 |
| Indirect effect <i>ab</i> '                    | -.02               | -.19   | .14   | 5.84*               | 2.40   | 9.50 |

Note: adv is adversity, Av is avoidant attachment with both mom and dad, An is anxious attachment with both mom and dad. \*  $p < .05$ , where confidence interval does not include zero

**Factor 2 psychopathy.** Table 9 gives the regression coefficients and confidence intervals for the regression models predicting Factor 2 traits. As expected, childhood adversity was a significant positive predictor of both anxious and avoidant attachment style (path a). Unexpectedly, neither attachment style was significantly associated with Factor 2 traits (path b). Direct effects (path *c*' ) were observed between childhood adversity and Factor 2 traits for both models, meaning that even when controlling for attachment style, there was a significant positive relationship between childhood adversity and Factor 2 traits. The main hypothesis, that there would be a significant indirect effect between childhood adversity and Factor 2 traits through avoidant (but not anxious) attachment style was not supported.

Table 9. *Direct and indirect effects of childhood adversity (adversity) through anxious and avoidant attachment separately, on Factor 2 psychopathy*

| Regression path                                | Anxious attachment |        |       | Avoidant attachment |        |       |
|--|--------------------|--------|-------|---------------------|--------|-------|
|  | <i>B</i>           | 95% CI |       | <i>B</i>            | 95% CI |       |
|  |                    | LL     | UL    |                     | LL     | UL    |
| Mediation path <i>a</i> (adv on Av or An)      | 2.44*              | 1.72   | 3.19  | 2.84*               | 2.17   | 3.60  |
| Mediation path <i>b</i> (Av or An on Factor 2) | -.37               | -1.11  | .46   | .34                 | -.44   | 1.11  |
| Direct effect <i>c'</i>                        | 10.79*             | 6.52   | 15.07 | 8.93*               | 4.69   | 13.17 |
| Indirect effect <i>ab</i>                      | -.89               | -2.83  | 1.05  | .98                 | -1.23  | 3.43  |

*Note:* adv is adversity, Av is avoidant attachment with both mom and dad, An is anxious attachment with both mom and dad. \*  $p < .05$ , where confidence interval does not include zero

**Antisocial behaviours.** Table 10 gives the regression coefficients and confidence intervals for the regression models predicting antisocial behaviours. As expected, childhood adversity was a significant positive predictor of both anxious and avoidant attachment style (path a). As was the case for Factor 2, attachment style was not predictive of antisocial behaviours (path b). Direct effects (path *c'*) were observed between childhood adversity and antisocial behaviours traits for both models, meaning that even when controlling for attachment style, there was a significant positive relationship between childhood adversity and antisocial behaviours. The main hypothesis, that there would be a significant indirect effect between childhood adversity and antisocial behaviours through avoidant (but not anxious) attachment style was not supported.

Table 10. *Direct and indirect effects of childhood adversity (adversity) through anxious and avoidant attachment separately, on antisocial behaviours*

| Regression path                            | Anxious attachment |        |      | Avoidant attachment |        |      |
|--|--------------------|--------|------|---------------------|--------|------|
|  | <i>B</i>           | 95% CI |      | <i>B</i>            | 95% CI |      |
|  |                    | LL     | UL   |                     | LL     | UL   |
| Mediation path <i>a</i> (adv on Av or An)  | 2.44*              | 1.73   | 3.16 | 2.83*               | 2.15   | 3.62 |
| Mediation path <i>b</i> (Av or An on AsPD) | -.002              | -.02   | .02  | .01                 | -.006  | .03  |
| Direct effect <i>c'</i>                    | .20*               | .10    | .30  | .16*                | .06    | .26  |
| Indirect effect <i>ab</i>                  | -.006              | -.06   | .05  | .06                 | -.03   | .15  |

*Note:* adv is adversity, Av is avoidant attachment with both mom and dad, An is anxious attachment with both mom and dad, and AsPD is antisocial behaviours. \*  $p < .05$ , where confidence interval does not include zero

## Objective 2: Sex as a Potential Moderator in the Relationships Between Adverse Childhood

### Events and Attachment/Personality Disorder Traits

Preliminary ANOVAs (as seen in Table 11) showed that men ( $N = 77$ ) scored significantly higher on all aspects of psychopathic traits (Factor 1, Factor 2, and total score) using the pre-established  $p$  value cut-off of .001. Notably, antisocial behaviours and avoidant attachment were close to significance with men scoring higher than women, whereas women ( $N = 87$ ) scored higher on borderline traits yet did not meet the .001  $p$  value cut-off.



Table 11. ANOVAs of the effects of sex on adversity, anxious attachment, avoidant attachment, borderline traits, Factor 1 psychopathic traits, Factor 2 psychopathic traits, total psychopathy score and antisocial behaviours

| Variable                     | Sex   | <i>M</i> | <i>SD</i> | <i>F</i> | <i>p</i> | 95% CI |        |
|------------------------------|-------|----------|-----------|----------|----------|--------|--------|
|                              |       |          |           |          |          | LL     | UL     |
| Adversity                    | Men   | 1.63     | 0.59      |          |          | 1.50   | 1.77   |
|                              | Women | 1.62     | 0.59      |          |          | 1.50   | 1.75   |
| Anxious                      | Men   | -1.73    | 1.14      | .01      | .918     | -1.99  | -1.47  |
|                              | Women | -1.53    | 1.36      |          |          | -1.82  | -1.24  |
| Avoidant                     | Men   | -0.67    | 1.04      | 1.03     | .311     | -0.91  | -0.43  |
|                              | Women | -1.10    | 1.15      |          |          | -1.35  | -0.86  |
| Borderline traits            | Men   | 27.52    | 11.58     | 6.24     | .013     | 24.89  | 30.15  |
|                              | Women | 31.49    | 11.60     |          |          | 29.01  | 33.96  |
| Factor 1 psychopathic traits | Men   | 89.12    | 18.43     | 4.79     | .030     | 84.93  | 93.30  |
|                              | Women | 72.51    | 17.27     |          |          | 68.83  | 76.19  |
| Factor 2 psychopathic traits | Men   | 70.83    | 13.44     | 35.46    | <.001    | 67.78  | 73.88  |
|                              | Women | 62.87    | 14.49     |          |          | 59.78  | 65.96  |
| Total psychopathy            | Men   | 159.95   | 25.43     | 13.18    | <.001    | 154.18 | 165.72 |
|                              | Women | 135.38   | 27.11     |          |          | 129.61 | 141.16 |
| Antisocial behaviours        | Men   | 1.55     | 0.37      | 35.54    | <.001    | 1.47   | 1.63   |
|                              | Women | 1.44     | 0.26      |          |          | 1.39   | 1.50   |
|                              |       |          |           | 4.80     | .030     |        |        |

**Moderation.** The relationship between childhood adversity and anxious attachment was not moderated by sex. Altogether, the combined predictors explained a significant 31% of the variability in anxious attachment,  $F(3, 160) = 24.32, p < .001$ . Adversity was significant; however, sex and the interaction were not statistically significant predictors of anxious attachment (see Table 12). Of note in the following tables, squared semi-partial correlations show the unique variance accounted for by adversity, sex and the interaction term.

Table 12. *Multiple regression predicting anxious attachment*

| Predictor       | <i>B</i> | SE   | <i>t</i> | <i>p</i> | $r_{sp}^2$ |
|-----------------|----------|------|----------|----------|------------|
| Adversity       | 0.74     | 0.36 | 2.09     | .03      | .02        |
| Sex             | 0.01     | 0.38 | .04      | .96      | .000009    |
| Adversity X Sex | 0.12     | 0.22 | 0.54     | .59      | .002       |

In my second analysis, the relationship between adversity and avoidant attachment was not moderated by sex. Altogether, the combined predictors were significant and accounted for 31% of the variability in avoidant attachment,  $F(3, 160) = 23.69, p < .001$ . Adversity was significant; however, sex and the interaction term were not significant predictors of avoidant attachment (see Table 13).

Table 13. *Multiple regression predicting avoidant attachment*

| Predictor       | <i>B</i> | SE   | <i>t</i> | <i>p</i> | $r_{sp}^2$ |
|-----------------|----------|------|----------|----------|------------|
| Adversity       | 0.97     | 0.36 | 2.71     | .007     | .03        |
| Sex             | -0.18    | 0.38 | -0.48    | .63      | .0009      |
| Adversity X Sex | -0.04    | 0.22 | -0.18    | .86      | .0001      |

In the third analysis the relationship between adversity and borderline traits was not moderated by sex as hypothesized. Altogether, the combined predictors explained a significant 20% of the variability in borderline traits,  $F(3, 160) = 13.58, p < .001$ . Adversity was significant; however, sex and the interaction term were not (see Table 14).

Table 14. *Multiple regression predicting borderline traits*

| Predictor       | <i>B</i> | SE   | <i>t</i> | <i>p</i> | $r_{sp}^2$ |
|-----------------|----------|------|----------|----------|------------|
| Adversity       | 11.47    | 4.50 | 2.55     | .01      | .03        |
| Sex             | 7.53     | 4.84 | 1.56     | .12      | .01        |
| Adversity X Sex | -2.14    | 2.80 | -0.77    | .44      | .003       |

Next, I examined whether sex moderated the relationship between adversity and psychopathic traits (separate analyses for Factor 1 and Factor 2 scores). Overall analyses were significant,  $F(3, 160) = 16.64, p < .001$  and  $F(3, 160) = 16.35, p < .001$ , accounting for 24% and 23% of the variance for Factors 1 and 2, respectively. In both analyses, sex was the only significant predictor, with men scoring higher on both, and interactions were nonsignificant (see Table 15).

Table 15. *Multiple regression predicting psychopathic traits*

|          | Predictor       | <i>B</i> | SE   | <i>t</i> | <i>p</i> | $r_{sp}^2$ |
|----------|-----------------|----------|------|----------|----------|------------|
| Factor 1 | Adversity       | 5.18     | 7.37 | 0.70     | .48      | .003       |
|          | Sex             | -19.46   | 7.92 | -2.46    | .02      | .03        |
|          | Adversity X Sex | 1.80     | 4.58 | 0.39     | .69      | .0009      |
| Factor 2 | Adversity       | 2.89     | 5.47 | 0.53     | .60      | .002       |
|          | Sex             | -14.93   | 5.88 | -2.54    | .01      | .03        |
|          | Adversity X Sex | 4.34     | 3.40 | 1.28     | .20      | .008       |

My last analysis in this section tested whether sex moderates the relationship between adversity and antisocial behaviours. Altogether, the combined predictors explained a significant 15% of the variance in antisocial behaviours,  $F(3,160) = 9.29, p < .001$ . None of the predictors were significant, though adversity had a marginal significance level of .06 (see Table 16).

Table 16. *Multiple regression predicting antisocial behaviour*

| Predictor       | <i>B</i> | SE   | <i>t</i> | <i>p</i> | $r_{sp}^2$ |
|-----------------|----------|------|----------|----------|------------|
| Adversity       | 0.24     | 0.13 | 1.85     | .06      | .02        |
| Sex             | -0.05    | 0.14 | -0.40    | .69      | .009       |
| Adversity X Sex | -0.03    | .08  | -0.40    | .69      | .009       |

Overall, sex did not act as a moderator in the relationship between childhood adversity and my outcome variables (attachment styles and various personality disorder symptomatology). Adversity was predictive of attachment styles, borderline traits, and antisocial behaviour (marginally), but not psychopathic traits. Sex was only predictive of psychopathic traits (Factors 1 and 2).

### **Objective 3. Fitting Personality Disorder Traits into the HEXACO model of Personality**

Lastly, I investigated borderline, psychopathic and antisocial personality traits and how these overlap with the HEXACO model of personality. In the first simultaneous multiple regression, the subscales of Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness predicted borderline traits. Altogether the combined predictors explained a significant 36% of the variance in borderline traits,  $R = .60, F(6,159) = 15.05, p < .001$ . Emotionality had a significantly positive relationship (as hypothesized), and both

Extraversion (not hypothesized) and Conscientiousness (not hypothesized) had a significantly negative relationship with borderline traits (see Table 17). Agreeableness and Honesty-Humility were not significant predictors, counter to hypotheses.

Table 17. *Multiple regression: HEXACO dimensions predicting borderline traits*

| Predictor         | <i>B</i> | SE   | $\beta$ | <i>t</i> | <i>p</i> | $r_{sp}^2$ |
|-------------------|----------|------|---------|----------|----------|------------|
| Honesty-Humility  | -1.10    | 1.14 | -.29    | -2.28    | .024     | .08        |
| Emotionality      | 5.03     | 0.88 | -.49    | 5.73     | <.001    | .23        |
| Extraversion      | -4.81    | 1.03 | -.17    | -4.68    | <.001    | .03        |
| Agreeableness     | -0.48    | 1.11 | -.37    | -0.43    | .67      | .10        |
| Conscientiousness | -3.67    | 1.23 | -.16    | -3.00    | .003     | .02        |
| Openness          | 1.64     | 1.10 | -.02    | 1.49     | .14      | .0004      |

A second simultaneous multiple regression was performed, where the subscales of Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness predicted psychopathic traits (both Factor 1 and Factor 2 together). Altogether the combined predictors significantly explained 67% of the variance in psychopathy,  $R = .82$ ,  $F(6, 159) = 52.88$ ,  $p < .001$ . As hypothesized, Honesty-Humility, Emotionality, Agreeableness, and Conscientiousness were all statistically significantly lower for individuals scoring higher on psychopathy (see Table 18).

Table 18. *Multiple regression: HEXACO dimensions predicting psychopathic traits*

| Predictor         | <i>B</i> | SE   | $\beta$ | <i>t</i> | <i>p</i> | $r_{sp}^2$ |
|-------------------|----------|------|---------|----------|----------|------------|
| Honesty-Humility  | -9.31    | 2.11 | -.24    | -4.41    | <.001    | .04        |
| Emotionality      | -16.12   | 1.62 | -.46    | -9.95    | <.001    | .21        |
| Extraversion      | -3.51    | 1.90 | -.09    | -1.85    | .07      | .01        |
| Agreeableness     | -14.91   | 2.04 | -.38    | -7.31    | <.001    | .12        |
| Conscientiousness | -13.10   | 2.26 | -.29    | -5.79    | <.001    | .07        |
| Openness          | 2.07     | 2.02 | .05     | 1.02     | .31      | .002       |

The third and final simultaneous multiple regression was run where the HEXACO subscales predicted antisocial behaviours. Altogether the combined predictors significantly explained 36% of the variance in antisocial behaviours,  $R = .60$ ,  $F(6, 159) = 14.95$ ,  $p < .001$ . Honesty-Humility, Agreeableness, and Conscientiousness had significant negative associations with antisocial behaviours as hypothesized, however Emotionality was not significant (see Table 19).

Table 19. *Multiple regression: HEXACO dimensions predicting antisocial traits.*

| Predictor         | <i>B</i> | SE   | $\beta$ | <i>t</i> | <i>p</i> | $r_{sp}^2$ |
|-------------------|----------|------|---------|----------|----------|------------|
| Honesty-Humility  | -.12     | .20  | -.28    | -3.64    | <.001    | .05        |
| Emotionality      | -.02     | .03  | -.06    | -0.95    | .35      | .004       |
| Extraversion      | .03      | .025 | .06     | 0.87     | .39      | .004       |
| Agreeableness     | -.14     | .03  | -.32    | -4.37    | <.001    | .08        |
| Conscientiousness | -.13     | .035 | -.25    | -3.65    | .001     | .05        |
| Openness          | .03      | .03  | .07     | 0.97     | .34      | .004       |

Overall, all three lower-order personality outcomes had negative associations with Conscientiousness. Borderline outcomes differed in that they had a significant negative relationship with Extraversion and a significantly positive relationship with Emotionality, whereas both psychopathic and antisocial outcomes had significantly negative relationships with Honesty-Humility and Agreeableness, in addition to Conscientiousness as previously mentioned. Only psychopathy was significantly negatively associated with Emotionality.

## Discussion

The current study had three objectives: 1) to examine the indirect effects of adversity on personality disorder traits through attachment style; 2) to determine whether sex moderated relationships between adversity, attachment, and personality disorder traits; and 3) to examine

how different sets of personality disorder traits are represented within the HEXACO model of personality.

### **Objective 1**

The tested SEM model predicted that differential responses to childhood adversity (as measured by attachment style) would relate to different sets of personality disorder traits. More specifically, I expected that there would be a significant indirect path between adversity and borderline traits through anxious attachment. Similarly, I expected an indirect path from adversity to antisocial behaviours and psychopathic traits through avoidant attachment. Predictions were somewhat consistent with previous research where childhood adversity predicted insecure attachment styles (Finzi et al., 2001; Raby et al., 2017); however, anxious attachment style was not significantly associated with borderline traits, nor was avoidant attachment style associated with antisocial behaviour or psychopathic personality traits in the SEM model.

The model was found to fit the data fairly well, which is supportive of the previous research linking adversity and antisocial (Byrd & Manchuk, 2014; Jaffee et al., 2004; Reavis, Looman, Franco, & Rojas, 2013; Skeem, et al., 2003), borderline (Reed et al., 2015; Schmahl et al., 2003; Zodan et al., 2014), and psychopathic (Craparo et al., 2013; Marshall & Cooke, 1999; Schimmenti, 2015; Schimmenti et al., 2014) personality outcomes. Due to high correlations between the dependent variables, mediation was tested separately for each dependent variable using PROCESS (Hayes, 2012). As expected, the relationship between childhood adversity and borderline traits was mediated by anxious attachment (not avoidant attachment) and the relationship between childhood adversity and Factor 1 traits was mediated by avoidant

attachment. Interestingly, however, antisocial behaviour and Factor 2 psychopathic traits were predicted by childhood adversity, and neither analysis showed any evidence of mediation through attachment style. It should be noted that borderline and Factor 1 traits are both measures of personality disorder traits, whereas Factor 2 and antisocial behaviours are measuring behaviours. Perhaps mediation through attachment style is specific to personality variables rather than behaviours, where there is only a direct effect of childhood adversity. Personality moreover, is comprised of established patterns, whereas behaviour refers to observable actions. As the clinical diagnoses of these problematic personality traits centre on observable behaviours (DSM 5, 2013), it would explain why antisocial behaviours and Factor 2 of psychopathy may not be significant.

Attachment literature also points to fearful/disorganized attachment potentially being significant for individuals with higher psychopathy scores (Schimmenti et al., 2014). As this was not explicitly measured, perhaps fearful attachment may be more related to Factor 2 psychopathy and antisocial behaviours overall. Additionally, substance use and abuse were not explicitly examined in these analyses. Often, substances can influence the personality and behavioural outcomes of individuals who may be using. Substance use, abuse, and dependence have been shown to increase risk for antisocial behaviours (Paulhus, Hemphill, & Hare, 2017; Visser, Ashton, & Pozzebon, 2012) and are only briefly touched upon in the measures used in this study.

The findings for the first objective agree with previous research linking adversity and insecure attachment styles (Finzi et al., 2001; Raby et al., 2017). Overall, the nonsignificant indirect relationship between adversity and various personality outcomes (antisocial, borderline, and psychopathic personality traits) through attachment style in the overall model may be due to



low sample size, yet these findings contribute uniquely to the literature, as mediators in these relationships are not well known.

## **Objective 2**

Given that many of the relationships in the model above are influenced by biological sex (Cale & Lillienfeld, 2002; Del Giudice, 2009; Gawda & Czubak, 2017), I predicted that biological sex may act as a moderator in the relationships. The present study did not find any evidence for such moderation. It is possible that attachment style in response to adversity may act as a proxy for sex in the relationship between adversity and each outcome (antisocial, borderline and psychopathic traits) rendering sex redundant in the model. To support this idea, previous research has shown women traditionally score higher on anxious attachment and men on avoidant attachment style (Del Giudice, 2009). Additionally, women traditionally score higher on measures of BPD and men score higher on measures of AsPD (Gawda & Czubak, 2017) and psychopathy (Cale & Lillienfeld, 2002). Thus, having attachment in the model could account for pre-established sex differences (Del Giudice & Belsky, 2010). Lastly whereas women, typically, under moderate stress enter anxious attachment patterns, evidence has shown that under high stress situations women may enter avoidant attachment patterns, which may also be affecting my results (Del Giudice, 2009). As mentioned previously, sex differences were inconsistently found in the literature, this may be because the antisocial behaviour that women tend to exhibit is more covert in that it appears to manifest in relational or interpersonal aggression towards romantic partners and acquaintances (Miller & Meloy, 2006). My findings accentuate the need for assessment of social and/or environmental influences in addition to biologically determined function. Thus, it may be that the variance associated with biological sex is already taken up in measures of attachment style and personality disorder traits.

### Objective 3

The final goal in the present study was to examine how disordered personality types fit within the HEXACO model of personality. As expected, psychopathic traits and antisocial behaviours were both negatively related to Honesty-Humility, Agreeableness, and Conscientiousness. Further, psychopathic traits were also negatively related to Emotionality. This is in line with previous research on the Dark Triad and Dark Tetrad traits within the HEXACO model of personality, which found that psychopathic traits were related to lower scores on Honesty-Humility, Emotionality, Agreeableness, and Conscientiousness (Book et al., 2015; Book et al., 2016). My research supports the validity/utility of the HEXACO, as my findings show that Honesty-Humility, a trait unique to the HEXACO, predicts dark personality disorder traits (Ashton & Lee, 2009; Book et al., 2015; Book et al., 2016).

As this is the first time the HEXACO has been used to examine borderline traits, looking at the Big 5 traits and how they translate to the HEXACO is of importance. As expected, borderline traits were positively correlated with Emotionality (hypothesized) however negatively related to Conscientiousness (not predicted). As stated earlier, this may be due to the overlaps in the HEXACO trait of Emotionality and the Big 5 trait of Neuroticism in that anxiety is accounted for by both constructs (Ashton & Lee, 2009; Costa & McCrea, 1995). My findings are consistent with the previous literature where BPD has been related to higher levels of Neuroticism and lower levels of Conscientiousness on the Big 5 (Saulsman & Page, 2004). Agreeableness, however, was nonsignificant in the HEXACO model whereas in the Big 5 model of personality, BPD has been linked to lower levels of Agreeableness (Saulsman & Page, 2004). The HEXACO dimension Agreeableness encompasses anger and hostility (Lee & Ashton, 2004) whereas the Big 5 version of Agreeableness does not (Costa & McCrea, 1995). As my analyses found the

relationship between borderline traits and Agreeableness to be nonsignificant, this finding is somewhat surprising as BPD is known to include hostility and anger (DSM 5, 2013). In individuals with increased borderline traits, anger and hostility may arise out of an anxious response, and anxiety is accounted for by Emotionality within the HEXACO (Lee & Ashton, 2004). Additionally, it is well known within the literature that individuals with BPD require skills training as they are deficient in the skills necessary for mindfulness, distress tolerance, emotion regulation, and interpersonal effectiveness (Linehan, 1993), which are imperative in regulating negative responses such as anger and hostility. Of note, BPD has marked identity impairments that encompass dissociative states when the individual is under stress, which may impact the current results (DSM 5, 2013). These dissociative tendencies may appear as memory loss, perceptual difficulties and further issues with identity, emotion, behaviour and sense of self (DSM 5, 2013), all of which were not explicitly controlled for in this study.

Although the expected relationship between borderline traits and Honesty-Humility was nonsignificant (it was marginal with a  $p$  of .024 and I used the critical  $p$  value set to .01), this may also account for some of the variability in Agreeableness (Big 5) due to altruism and modesty being present in both traits.

Interestingly, borderline traits were also negatively correlated with Extraversion. This may be due to overlaps between Extraversion in the HEXACO and Neuroticism in the Big 5, in that low Extraversion would translate to lower social self-esteem whereas higher Neuroticism translates to increased self-consciousness (Costa & McCrea, 1995), which has previously been found to be related to BPD (Saulsman & Page, 2004). Further, the nature of anxious attachment would dictate that these individuals have a lower view of themselves and a higher view of others which would naturally overlap with the trait of Neuroticism (Bartholomew & Horowitz, 1991).

Overlaps have been suggested previously between psychopathy and borderline traits (Roters & Marshall, 2015), however, no research has explored borderline traits with the HEXACO model of personality (Ashton & Lee, 2009). All three personality outcomes share domains of impulsivity, affective impairments, and disregard for self and/or others; whereas AsPD and psychopathy share further domains of antisocial behaviours, lack of honesty, interpersonal manipulation, irresponsibility, and lack of guilt (DSM 5, 2013; Hare, 1991). In the present study there was a common significant correlation for borderline and psychopathic traits in the HEXACO domain of Conscientiousness, although Honesty-Humility was just below significance for borderline traits, expanding to a larger clinically relevant sample may observe a significant overlap in this domain.

Overall, Objective 3 utilizes the HEXACO to link together Objective 1 and 2, by examining lower-order personality constructs in the prediction of higher-order personality factors, within a nomological network. The lower-order psychopathic personality traits were found to be associated negatively with Honesty-Humility, Emotionality, Agreeableness, and Conscientiousness. Further, antisocial behaviours were negatively related to Honesty-Humility, Agreeableness, and Conscientiousness. Finally, borderline traits were found to be positively related to Emotionality, and negatively related to Extraversion (not hypothesized) and Conscientiousness (not hypothesized).

### **Limitations and Future Research**

One potential limitation of this study is its retrospective nature. Participants were asked to think back to their childhoods, thus memories may be inconsistent (Krinsley, Gallagher, Weathers, Kutter, & Kaloupek, 2003). Although this study was cross sectional, utilizing retrospective reporting, in the future, a longitudinal approach may reveal more accurate findings

concerning adversity and attachment throughout the lifespan. As behavioural patterns have been shown to be more susceptible to change when addressed earlier in life (McDonald, Dodson, Rosenfield, & Jouriles, 2011), intervening with problematic behaviours when they first arise may be an integral step in the treatment of psychopathic traits and antisocial behaviours. This may also generalize to borderline traits as they appear earlier in life however are not diagnosed until age 18 (DSM 5, 2013). Longitudinal research may disentangle intervention avenues and areas of focus for future research.

The current study is also limited in generalizability given the nature of the sample. Participants primarily identified as White (87.8%) and had a four-year degree (34.3%), which may limit generalizability to the population at large. A more diverse sample examining different ethnic backgrounds, lower socio-economic status individuals, and different sexual orientations may reveal interesting data concerning the adversity, attachment and personality outcome patterns in marginal groups. Moreover, 44.4% of the sample collected identified having a history of mental illness, this may confound personality symptoms with other relevant differential diagnoses, limiting generalizability.

Further, missing data may have also impacted the results of this study. However, the only variable that differed between completers and non-completers was age (with non-completers being significantly older), making it unlikely that the results were impacted. Future research could shed further light on the role of age. A larger sample size will allow for more paths to be analyzed; aside from age, the differential effects of neglect and abuse were not examined within this study. Though outside of the scope of the current work, in the future I also wish to expand the examination of the differential effects of the attachment mediator beyond just anxious and avoidant attachment to provide more information on the potential relationships between

variables. It appears from these results that attachment style as a response to childhood adversity is an important construct to examine; however, expanding to fearful/disorganized and secure attachment styles may provide a clearer picture of personality traits and corresponding behaviour overall. Future research may disentangle this relationship further utilizing a larger and more clinically oriented sample. Moreover, different attachment relationships beyond primary caregivers (mother and father) were not examined.

### **Implications**

Although frequently occurring, abuse and neglect are not part of normal or healthy human development. Statistics Canada reported that 33% of adult Canadians over age 15 have experienced childhood maltreatment (Stats Can, 2017). Maltreatment in this context was physical or sexual abuse by someone older than 18 years of age and/or witnessing violence by a caregiver towards another adult (Stats Can, 2017). Specifically, men reported rates of physical abuse more than women (32% versus 27%) and women reported more sexual abuse than men (12% and 4% respectively; Stats Can, 2017). A staggering 93% of victims who experienced physical/sexual abuse indicated that they had not reported or even spoken to Children's Aid or police before the age of 15 (Stats Can, 2017b). With Canadian child protection programs such as Children's Aid Society being underutilized and under funded, a clearer picture of the issues impeding services may increase positive outcomes for those children victimized at the hands of adult caregivers. As stated previously, victims of abuse and neglect tend to experience more negative life outcomes, with 10% of adults who experienced physical and/or sexual abuse disclosing a mental health disability and 14% experiencing poor physical health, rates higher than nonvictims who experienced psychological and physical disabilities 4% and 9% respectively (Stats Can, 2017). Notably, these differences disappeared when income, education,

and employment were controlled for (Stats Can, 2017). Thus, generating targeted interventions are of the utmost importance for positive outcomes.

My results highlight the importance of examining attachment as a response to childhood adversity (Bartz, Zaki, Bolger, & Ochsner, 2011). Moreover, my results may aid in the assessment of childhood adversity and may mitigate the deleterious outcomes concerning insecure attachment and disordered personality outcomes overall. Further, as my results suggest that adversity appears to indirectly affect negative personality outcomes through attachment style, these results could imply that early interventions may have an impact on the subsequent outcome variables (antisocial, borderline and psychopathic traits). Support can be offered to both children and families to preserve and foster the secure attachment relationship and increase healthy parenting roles. Potential therapeutic interventions could target caregiver's ability to cope/manage stress, provide healthy relationship training, offer educational support and planning, provide career/family planning, and educate on healthy child development. Positive nonpunitive support may aid in caregivers seeking support and engaging with services to strengthen positive attachment behaviours, as is evidenced in the Risk Needs Responsivity model used in forensic settings (Andrews & Bonta, 1994).

Previous research has demonstrated reductions in psychopathy in children with parental intervention (McDonald et al., 2011). However, Canadian data on abuse, neglect, attachment and personality traits is limited, thus more data must be gathered to formulate and disseminate knowledge, then subsequently provide tailored interventions to organizations supporting disenfranchised individuals.

Lastly, my findings utilizing the HEXACO model of personality are supportive of the alternative DSM 5 model for personality disorders, which takes a more dimensional approach to personality disorders, and examines specific pathological personality traits (DSM 5, 2013). These pathological personality traits (DSM 5, 2013) encompass lower-order personality traits, such as antisocial, borderline, and psychopathic outcomes, and inform lower-order personality constructs examined in this study (Lee & Ashton, 2004). Whereas most of the “dark” personalities are associated with low Emotionality, borderline traits are positively related to Emotionality. This difference is very important in treatment, intervention and prevention of disordered personality (Linehan, 1993).

## **Conclusions**

The role of attachment in personality traits is an important one. Given the aforementioned Statistics Canada descriptive statistics, it may be worthwhile to examine the practical applications of such findings. Involving Canadian community organizations that support children and families only serves to improve and create healthy attachment relationships between children and caregivers.

Interventions tailored towards the child can indeed have positive effects on psychopathy (Salekin, 2002; 2010) and overall problematic traits. McDonald and colleagues describe interventions that aid parents to develop and consistently use concrete responses to non-compliance (Cornell & Frick, 2007) and to do so within the environment of a warm and supportive relationship (Kochanska, 1997) that may reduce the development of psychopathic features, essentially fostering secure attachment.



This novel study paints a complex picture of adversity's importance in personality, both lower-order personality constructs and higher-level personality traits, and additionally, the indirect effects of adversity through attachment styles to personality disorder traits. Further research is desperately needed to discover the pathways in supporting victims of childhood abuse and neglect. This information will guide and tailor interventions, which are urgently needed to reduce the negative effects produced by these common and illegal behaviours, otherwise the cycle of adversity will inevitably continue.

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*Appendix A***Letter of Invitation**

Looking for people over the age of 18, whose first language is English and who live in North America to participate in a study looking at people's behaviours and how different factors can interact with personality traits. Participants will be asked to fill out some questionnaires about themselves.

Takes about 95 minutes, you will be able to take a break at any point in time throughout your participation. Potential participants wishing their identity to remain confidential should not comment or like the site page.

This research project has been reviewed and received ethics clearance through the Research Ethics Board at Brock, REB 16-254.

Survey link: [https://brocklrc.az1.qualtrics.com/jfe/form/SV\\_8Bmzuy55ZU2LZ0V](https://brocklrc.az1.qualtrics.com/jfe/form/SV_8Bmzuy55ZU2LZ0V)

**Appendix B****Consent Form**

Date: 2017/18

Project Title: Life Events, Personality, and Behaviour

Principal Student Investigator: Jennifer Roters

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Faculty Supervisor: Dr. Angela Book

Department of Psychology

Brock University

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

**INVITATION**

You are invited to participate in a study that involves research on personality and behaviour.

The purpose of this study is to examine the relationship between specific personality traits, childhood experience, relationships and behaviour.

**WHAT'S INVOLVED**



As a participant, you will be asked to complete several questionnaires about your personality traits and behaviour, relationships and various experiences when you were growing up.

Participation will take approximately 1.5 hours of your time.

#### POTENTIAL BENEFITS AND RISKS

You will be asked to answer some questions that may potentially cause you to experience some emotional discomfort. These questions concern early childhood adverse experiences, past criminal behaviour (i.e., I was convicted of a serious crime), self-harm behaviours, and illegal activities (i.e., I have violated my probation from prison).

If participation in this study causes you to feel upset, you may contact your local crisis line or present at your closest emergency room. In Canada the following resources are available:

<http://suicideprevention.ca/need-help/im-having-thoughts-of-suicide/>

Although your participation may not have any direct benefits to yourself, your participation in this study will contribute to the advancement of knowledge regarding the relationship between specific personality traits and behaviour. You may withdraw from the study at any time.

#### CONFIDENTIALITY

The data you provide during your participation in the present study will remain confidential. 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 and then sent via password protected excel sheet to the Forensic Research Lab at Brock University. 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 Jennifer Roters and Dr. Angela Book.

## VOLUNTARY PARTICIPATION

You are under no obligation to participate, and you may discontinue participation at anytime with no penalty for withdrawal. Only the named investigators will have access to the data. If you do want to participate, you are free to refuse to answer any questions asked of you (i.e.: you may skip over any questions you do not feel comfortable answering). You can withdraw at any point with no penalty or consequence by clicking the end survey button to be redirected to the debriefing form for more resources should you require. Should you choose to withdraw, any data that has already been collected will be destroyed immediately. You will be able to withdraw your participation up to the point that the survey has completed. At that point, it will no longer be possible to identify your data, and, thus, your data cannot be withdrawn.

*Note:* As Qualtrics is located on an American server, data are subject to American Homeland Security laws such as the Patriot Act; however, no risk is anticipated.

## RESULTS

The results of this study will be incorporated into a Masters 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 2018 and you can give the researcher your contact information if you would like to receive a summary of the results.

## CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact the Dr. Angela Book using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University (REB #). 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 up until the time that my data are not identifiable.

*Please print and keep a copy of this consent form for your records.*

\*\*\*\*Participant will check a box stating they consent or do not consent\*\*\*\*

*Appendix C***Demographic Information**

Geographic: Do you Live in Canada? Yes or No

What is your age? (Age restricted range of 18 to 99)

Background:

What is your Sex? Male/Female/Prefer not to say

What is your gender? Male/Female/Other/Prefer not to say

What race do you most identify with? White/Black or African American/American Indian or  
Alaska Native/Asian/Native Hawaiian or Pacific Islander/Other

What is your education level? Less than high school/Highschool graduate/Some college/2year  
degree/4 year degree/Professional Degree/Doctorate

Do you have a history of mental illness? Yes/Prefer not to say/No

*Appendix D***Self Report Psychopathy Scale (SRPS)**

Please rate the degree to which you agree with the following statements about you.

|   | Disagree<br>Strongly | Disagree | Neutral | Agree | Agree<br>Strongly |
|---|----------------------|----------|---------|-------|-------------------|
| 1. I'm a rebellious person.                                   | 1                    | 2        | 3       | 4     | 5                 |
| 2. I'm more tough-minded than<br>other people.                | 1                    | 2        | 3       | 4     | 5                 |
| 3. I think I could "beat" a lie<br>detector.                  | 1                    | 2        | 3       | 4     | 5                 |
| 4. I have taken illegal drugs<br>(e.g., marijuana, ecstasy).  | 1                    | 2        | 3       | 4     | 5                 |
| 5. I have never been involved in<br>delinquent gang activity. | 1                    | 2        | 3       | 4     | 5                 |
| 6. I have never stolen a truck,                               | 1                    | 2        | 3       | 4     | 5                 |

car or motorcycle.

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 7. Most people are wimps.   | 1 | 2 | 3 | 4 | 5 |
| 8. I purposely flatter people to get them on my side.             | 1 | 2 | 3 | 4 | 5 |
| 9. I've often done something dangerous just for the thrill of it. | 1 | 2 | 3 | 4 | 5 |
| 10. I have tricked someone into giving me money.                  | 1 | 2 | 3 | 4 | 5 |
| 11. It tortures me to see an injured animal.                      | 1 | 2 | 3 | 4 | 5 |
| 12. I have assaulted a law enforcement official or social worker. | 1 | 2 | 3 | 4 | 5 |

|  | Disagree<br>Strongly | Disagree | Neutral | Agree | Agree<br>Strongly |
|--|----------------------|----------|---------|-------|-------------------|
| 13. I have pretended to be someone else in order to get something. | 1                    | 2        | 3       | 4     | 5                 |
| 14. I always plan out my weekly activities.                        | 1                    | 2        | 3       | 4     | 5                 |
| 15. I like to see fist-fights.                                     | 1                    | 2        | 3       | 4     | 5                 |
| 16. I'm not tricky or sly.   | 1                    | 2        | 3       | 4     | 5                 |
| 17. I'd be good at a dangerous job because I make fast decisions.  | 1                    | 2        | 3       | 4     | 5                 |
| 18. I have never tried to force someone to have sex.               | 1                    | 2        | 3       | 4     | 5                 |
| 19. My friends would say that I am a warm person.                  | 1                    | 2        | 3       | 4     | 5                 |

- |   |   |   |   |   |   |
|---|---|---|---|---|---|
| 20. I would get a kick out of<br>‘scamming’ someone.                      | 1 | 2 | 3 | 4 | 5 |
| 21. I have never attacked someone<br>with the idea of injuring them.      | 1 | 2 | 3 | 4 | 5 |
| 22. I never miss appointments.  | 1 | 2 | 3 | 4 | 5 |
| 23. I avoid horror movies.  | 1 | 2 | 3 | 4 | 5 |
| 24. I trust other people to be honest.                                    | 1 | 2 | 3 | 4 | 5 |
| 25. I hate high speed driving.  | 1 | 2 | 3 | 4 | 5 |
| 26. I feel so sorry when I see a<br>homeless person.                      | 1 | 2 | 3 | 4 | 5 |
| 27. It's fun to see how far you can<br>push people before they get upset. | 1 | 2 | 3 | 4 | 5 |
| 28. I enjoy doing wild things.  | 1 | 2 | 3 | 4 | 5 |



|  | Disagree<br>Strongly | Disagree | Neutral | Agree | Agree<br>Strongly |
|--|----------------------|----------|---------|-------|-------------------|
| 29. I have broken into a building<br>or vehicle in order to steal<br>something or vandalize. | 1                    | 2        | 3       | 4     | 5                 |
| 30. I don't bother to keep in touch<br>with my family any more.                              | 1                    | 2        | 3       | 4     | 5                 |
| 31. I find it difficult to manipulate<br>people.   | 1                    | 2        | 3       | 4     | 5                 |
| 32. I rarely follow the rules.   | 1                    | 2        | 3       | 4     | 5                 |
| 33. I never cry at movies.   | 1                    | 2        | 3       | 4     | 5                 |
| 34. I have never been arrested.  | 1                    | 2        | 3       | 4     | 5                 |
| 35. You should take advantage of<br>other people before they do it to you.                   | 1                    | 2        | 3       | 4     | 5                 |

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 36. I don't enjoy gambling for<br>real money.                                      | 1 | 2 | 3 | 4 | 5 |
| 37. People sometimes say that<br>I'm cold-hearted.                                 | 1 | 2 | 3 | 4 | 5 |
| 38. People can usually tell if<br>I am lying.                                      | 1 | 2 | 3 | 4 | 5 |
| 39. I like to have sex with people<br>I barely know.                               | 1 | 2 | 3 | 4 | 5 |
| 40. I love violent sports and movies.  | 1 | 2 | 3 | 4 | 5 |
| 41. Sometimes you have to pretend you<br>like people to get something out of them. | 1 | 2 | 3 | 4 | 5 |
| 42. I am an impulsive person.  | 1 | 2 | 3 | 4 | 5 |
| 43. I have taken hard drugs<br>(e.g., heroin, cocaine).                            | 1 | 2 | 3 | 4 | 5 |

|  | Disagree<br>Strongly | Disagree | Neutral | Agree | Agree<br>Strongly |
|--|----------------------|----------|---------|-------|-------------------|
| 44. I'm a soft-hearted person.   | 1                    | 2        | 3       | 4     | 5                 |
| 45. I can talk people into anything.   | 1                    | 2        | 3       | 4     | 5                 |
| 46. I never shoplifted from a store.   | 1                    | 2        | 3       | 4     | 5                 |
| 47. I don't enjoy taking risks.  | 1                    | 2        | 3       | 4     | 5                 |
| 48. People are too sensitive when I tell<br>them the truth about themselves. | 1                    | 2        | 3       | 4     | 5                 |
| 49. I was convicted of a serious crime.                                      | 1                    | 2        | 3       | 4     | 5                 |
| 50. Most people tell lies everyday.  | 1                    | 2        | 3       | 4     | 5                 |
| 51. I keep getting in trouble for the same<br>things over and over.          | 1                    | 2        | 3       | 4     | 5                 |
| 52. Every now and then I carry a weapon                                      | 1                    | 2        | 3       | 4     | 5                 |

(knife or gun) for protection.

- |  |   |   |   |   |   |
|--|---|---|---|---|---|
| 53. People cry way too much at funerals.                                   | 1 | 2 | 3 | 4 | 5 |
| 54. You can get what you want by telling<br>people what they want to hear. | 1 | 2 | 3 | 4 | 5 |
| 55. I easily get bored.  | 1 | 2 | 3 | 4 | 5 |
| 56. I never feel guilty over hurting others.                               | 1 | 2 | 3 | 4 | 5 |
| 57. I have threatened people into giving me<br>money, clothes, or makeup.  | 1 | 2 | 3 | 4 | 5 |
| 58. A lot of people are “suckers” and can<br>easily be fooled.             | 1 | 2 | 3 | 4 | 5 |
| 59. I admit that I often “mouth off”<br>without thinking.                  | 1 | 2 | 3 | 4 | 5 |
| 60. I sometimes dump friends that<br>I don’t need any more.                | 1 | 2 | 3 | 4 | 5 |

|  | Disagree<br>Strongly | Disagree | Neutral | Agree | Agree<br>Strongly |
|--|----------------------|----------|---------|-------|-------------------|
| 61. I would never step on others to get what I want.                 | 1                    | 2        | 3       | 4     | 5                 |
| 62. I have close friends who served time in prison.                  | 1                    | 2        | 3       | 4     | 5                 |
| 63. I purposely tried to hit someone with the vehicle I was driving. | 1                    | 2        | 3       | 4     | 5                 |
| 64. I have violated my probation from prison.                        | 1                    | 2        | 3       | 4     | 5                 |

*Appendix E***The HEXACO-60 PI R- Self Report form**

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

5 = strongly agree

4 = agree

3 = neutral (neither agree nor disagree)

2 = disagree

1 = strongly disagree

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

- 1  I would be quite bored by a visit to an art gallery.
- 2  I plan ahead and organize things, to avoid scrambling at the last minute.
- 3  I rarely hold a grudge, even against people who have badly wronged me.
- 4  I feel reasonably satisfied with myself overall.
- 5  I would feel afraid if I had to travel in bad weather conditions.
- 6  I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.
- 7  I'm interested in learning about the history and politics of other countries.
- 8  I often push myself very hard when trying to achieve a goal.
- 9  People sometimes tell me that I am too critical of others.
- 10  I rarely express my opinions in group meetings.
- 11  I sometimes can't help worrying about little things.
- 12  If I knew that I could never get caught, I would be willing to steal a million dollars.
- 13  I would enjoy creating a work of art, such as a novel, a song, or a painting.

- 14 \_\_\_\_\_ When working on something, I don't pay much attention to small details.
- 15 \_\_\_\_\_ People sometimes tell me that I'm too stubborn.
- 16 \_\_\_\_\_ I prefer jobs that involve active social interaction to those that involve working alone.
- 17 \_\_\_\_\_ When I suffer from a painful experience, I need someone to make me feel comfortable.
- 18 \_\_\_\_\_ Having a lot of money is not especially important to me.
- 19 \_\_\_\_\_ I think that paying attention to radical ideas is a waste of time.
- 20 \_\_\_\_\_ I make decisions based on the feeling of the moment rather than on careful thought.
- 21 \_\_\_\_\_ People think of me as someone who has a quick temper.
- 22 \_\_\_\_\_ On most days, I feel cheerful and optimistic.
- 23 \_\_\_\_\_ I feel like crying when I see other people crying.
- 24 \_\_\_\_\_ I think that I am entitled to more respect than the average person is.
- 25 \_\_\_\_\_ If I had the opportunity, I would like to attend a classical music concert.
- 26 \_\_\_\_\_ When working, I sometimes have difficulties due to being disorganized.
- 27 \_\_\_\_\_ My attitude toward people who have treated me badly is "forgive and forget".
- 28 \_\_\_\_\_ I feel that I am an unpopular person.
- 29 \_\_\_\_\_ When it comes to physical danger, I am very fearful.
- 30 \_\_\_\_\_ If I want something from someone, I will laugh at that person's worst jokes.
- 31 \_\_\_\_\_ I've never really enjoyed looking through an encyclopedia.
- 32 \_\_\_\_\_ I do only the minimum amount of work needed to get by.
- 33 \_\_\_\_\_ I tend to be lenient in judging other people.
- 34 \_\_\_\_\_ In social situations, I'm usually the one who makes the first move.
- 35 \_\_\_\_\_ I worry a lot less than most people do.
- 36 \_\_\_\_\_ I would never accept a bribe, even if it were very large.
- 37 \_\_\_\_\_ People have often told me that I have a good imagination.
- 38 \_\_\_\_\_ I always try to be accurate in my work, even at the expense of time.
- 39 \_\_\_\_\_ I am usually quite flexible in my opinions when people disagree with me.
- 40 \_\_\_\_\_ The first thing that I always do in a new place is to make friends.
- 41 \_\_\_\_\_ I can handle difficult situations without needing emotional support from anyone else.
- 42 \_\_\_\_\_ I would get a lot of pleasure from owning expensive luxury goods.
- 43 \_\_\_\_\_ I like people who have unconventional views.
- 44 \_\_\_\_\_ I make a lot of mistakes because I don't think before I act.
- 45 \_\_\_\_\_ Most people tend to get angry more quickly than I do.

- 46 \_\_\_\_\_ Most people are more upbeat and dynamic than I generally am.
- 47 \_\_\_\_\_ I feel strong emotions when someone close to me is going away for a long time.
- 48 \_\_\_\_\_ I want people to know that I am an important person of high status.
- 49 \_\_\_\_\_ I don't think of myself as the artistic or creative type.
- 50 \_\_\_\_\_ People often call me a perfectionist.
- 51 \_\_\_\_\_ Even when people make a lot of mistakes, I rarely say anything negative.
- 52 \_\_\_\_\_ I sometimes feel that I am a worthless person.
- 53 \_\_\_\_\_ Even in an emergency I wouldn't feel like panicking.
- 54 \_\_\_\_\_ I wouldn't pretend to like someone just to get that person to do favors for me.
- 55 \_\_\_\_\_ I find it boring to discuss philosophy.
- 56 \_\_\_\_\_ I prefer to do whatever comes to mind, rather than stick to a plan.
- 57 \_\_\_\_\_ When people tell me that I'm wrong, my first reaction is to argue with them.
- 58 \_\_\_\_\_ When I'm in a group of people, I'm often the one who speaks on behalf of the group.
- 59 \_\_\_\_\_ I remain unemotional even in situations where most people get very sentimental.
- 60 \_\_\_\_\_ I'd be tempted to use counterfeit money, if I were sure I could get away with it.



**Appendix F****Borderline Evaluation of Severity over Time (BEST)**

Instructions: For the first 12 items, the highest rating (5) means that the item caused extreme distress, severe difficulties with relationships, and/or kept you from getting things done. The lowest rating (1) means it caused little or no problems. Rate items 13–15 (positive behaviors) according to frequency.

**A. THOUGHTS AND FEELINGS**

- 1** Worrying that someone important in your life is tired of you or is planning to leave you.
- 2** Major shifts in your opinions about others such as switching from believing someone is a loyal friend or partner to believing the person is untrustworthy and hurtful.
- 3** Extreme changes in how you see yourself. Shifting from feeling confident about who you are to feeling like you are evil or that you don't even exist.
- 4** Severe mood swings several times a day. Minor events cause major shifts in moods.
- 5** Feeling paranoid or like you are losing touch with reality.
- 6** Feeling angry.
- 7** Feelings of emptiness.
- 8** Feeling suicidal.

**B. BEHAVIORS (NEGATIVE)**

- 9** Going to extremes to try to keep someone from leaving you.
- 10** Purposefully doing something to injure yourself or making a suicide attempt.
- 11** Problems with impulsive behavior (not counting suicide attempts or injuring yourself on purpose). Examples include: over-spending, risky sexual behavior, substance abuse, reckless driving, binge eating, other \_\_\_\_\_ (circle those that apply).
- 12** Temper outbursts or problems with anger leading to relationship problems, physical fights, or destruction of property.

### C. BEHAVIORS (POSITIVE)

- 13** Choosing to use a positive activity in circumstances where you felt tempted to do something destructive or self-defeating.
- 14** Noticing ahead of time that something could cause you emotional difficulties and taking reasonable steps to avoid/prevent the problem.
- 15** Following through with therapy plans to which you agreed (e.g., talk therapy, “homework assignments, coming to appointments, medications, etc.)

## Appendix G

### Relationship Structures (ECR-RS) Questionnaire

Fraley, R. C., Heffernan, M. E., Vicary, A. M., & Brumbaugh, C. C. (2011). The Experiences in Close Relationships-Relationship Structures questionnaire: A method for assessing attachment orientations across relationships. *Psychological Assessment, 23*, 615-625.

<http://internal.psychology.illinois.edu/~rcfraley/measures/relstructures.htm>

This questionnaire is designed to assess the way in which you mentally represent important people in your life. You'll be asked to answer questions about your parents, your romantic partners, and your friends. Please indicate the extent to which you agree or disagree with each statement by circling a number for each item.

-----

Please answer the following questions about your mother or a mother-like figure.

Do you have a mother or a mother-like figure to answer questions about?

Yes / No

-----

1. It helps to turn to this person in times of need.

strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.

strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.

strongly disagree 1 2 3 4 5 6 7 strongly agree 21

8. I'm afraid that this person may abandon me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.

strongly disagree 1 2 3 4 5 6 7 strongly agree

-----

Please answer the following questions about your father or a father-like figure.

Do you have a mother or a mother-like figure to answer questions about?

Yes / No

-----

1. It helps to turn to this person in times of need.

strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.

strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me. 22

strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.

strongly disagree 1 2 3 4 5 6 7 strongly agree

-----  
Please answer the following questions about your dating or marital partner.

Note: If you are not currently in a dating or marital relationship with someone, answer these questions with respect to a former partner or a relationship that you would like to have with someone.

-----  
1. It helps to turn to this person in times of need.

strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.

strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.

strongly disagree 1 2 3 4 5 6 7 strongly agree 23

9. I worry that this person won't care about me as much as I care about him or her.

strongly disagree 1 2 3 4 5 6 7 strongly agree

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Please answer the following questions about your best friend.

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1. It helps to turn to this person in times of need.

strongly disagree 1 2 3 4 5 6 7 strongly agree

2. I usually discuss my problems and concerns with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

3. I talk things over with this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

4. I find it easy to depend on this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

5. I don't feel comfortable opening up to this person.

strongly disagree 1 2 3 4 5 6 7 strongly agree

6. I prefer not to show this person how I feel deep down.

strongly disagree 1 2 3 4 5 6 7 strongly agree

7. I often worry that this person doesn't really care for me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

8. I'm afraid that this person may abandon me.

strongly disagree 1 2 3 4 5 6 7 strongly agree

9. I worry that this person won't care about me as much as I care about him or her.

strongly disagree 1 2 3 4 5 6 7 strongly agree

*Appendix H***Lifestyle Survey (Visser et al., 2012)**

*The following behaviors have been known to occur on many campuses. Using the scantron sheet, please rate the frequency that you engage in these behaviours using the following scale.*

*1 = I have never done this.*

*2 = I have done this once or twice.*

*3 = I have done this a few times.*

*4 = I have done this frequently.*

1. I have “punished” someone who didn’t do what I wanted by excluding them from my group of friends.
2. I have indicated to someone that I wasn’t going to be their friend any more if they didn’t do what I wanted them to do.
3. I have spread a rumor about someone, even though I knew it probably wasn’t true.
4. I have made fun of (and/or encouraged my friends to make fun of) another person’s abilities, attractiveness, or clothing.
5. I have revealed a “secret” to make the person look bad.
6. I have lied about my accomplishments, skills, or qualifications in a job interview.
7. I have lied about my education or work history on my resume.
8. I have lied about myself to attract a potential romantic partner.
9. I have lied to a friend to get him or her to do something for me.



10. I have lied on a government form (e.g., OSAP application, income tax, scholarship application)
11. I have intentionally hit someone in the past two years.
12. I have threatened to hurt someone physically in the past two years.
13. I have gotten into a fight.
14. I have used physical intimidation to get what I want.
15. I have carried a weapon.
16. I have refused to let other students borrow my lecture notes.
17. When asked for help by a classmate, I have tried to reveal as little helpful information as possible.
18. I have withheld information from or misled classmates about study information in order to improve my chances on the exam.
19. I have hidden library materials so other students could not have access to them.
20. I have tried to “sabotage” another student’s presentation.
21. I have pretended to care about someone because I wanted to have sex with them.
22. I have pretended to be romantically interested in someone because I wanted something from them.
23. I have cheated on a boyfriend or girlfriend.
24. I have had a “one night stand”.
25. I have agreed to date someone, knowing that I was waiting for someone “better” to come along.
26. I have cheated on exams

27. I have I have "lifted paragraphs" from others' written works in my term papers (i.e., plagiarized)
28. I have "padded" my timesheets (i.e., added hours for work I didn't do).
29. I have taken money from a friend or family member without their knowledge.
30. I have managed to jump ahead of my place in a line-up.
31. I have vandalized property
32. I have stolen office supplies from my employer
33. I have intentionally left a restaurant without paying for my meal.
34. I have skipped work or school because I just didn't feel like going.
35. I have been late for work or school in the past year.
36. I was smoking prior to the age of 17
37. I have driven without a license.
38. I have sneaked into a movie, bar, or other event without paying the admission or cover charge.
39. I have gotten carried away and not practiced safe sex.
40. I have driven or been a passenger in a vehicle while the driver was "under the influence"
41. I have driven way over the speed limit just for fun.
42. I have failed to wear a seatbelt, as passenger or driver in a motorized vehicle.
43. I have spent way more money than I could afford to on unnecessary items.
44. I have risked more money gambling than I could afford.
45. In the past year, I have gotten so drunk that I vomited or passed out.
46. I have a sport/hobby that other people consider risky or dangerous.

## Appendix I

## Childhood Trauma Questionnaire (CTQ-SF)

| When I was growing up...   | Never True | Rarely True | Sometimes True | Often True | Very Often True |
|--|------------|-------------|----------------|------------|-----------------|
| 1. I didn't have enough to eat.  |            |             |                |            |                 |
| 2. I knew that there was someone to take care of me and protect me.                                  |            |             |                |            |                 |
| 3. People in my family called me things like "stupid", "lazy", or "ugly".                            |            |             |                |            |                 |
| 4. My parents were too drunk or high to take care of the family.                                     |            |             |                |            |                 |
| 5. There was someone in my family who helped me feel that I was important or special.                |            |             |                |            |                 |
| 6. I had to wear dirty clothes.  |            |             |                |            |                 |
| 7. I felt loved.   |            |             |                |            |                 |
| 8. I thought that my parents wished that I had never been born.                                      |            |             |                |            |                 |
| 9. I got hit so hard by someone in my family that I had to see a doctor or go the hospital.          |            |             |                |            |                 |
| 10. There was nothing I wanted to change about my family.  |            |             |                |            |                 |
| 11. People in my family hit me so hard that it left me with bruises or marks.                        |            |             |                |            |                 |
| 12. I was punished with a belt, a cord, or some other hard object.                                   |            |             |                |            |                 |
| 13. People in my family looked out for each other.   |            |             |                |            |                 |
| 14. People in my family said hurtful or insulting things to me.                                      |            |             |                |            |                 |
| 15. I believe that I was physically abused.  |            |             |                |            |                 |
| 16. I had the perfect childhood.   |            |             |                |            |                 |
| 17. I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor. |            |             |                |            |                 |
| 18. I felt that someone in my family hated me.   |            |             |                |            |                 |
| 19. People in my family felt close to each other.  |            |             |                |            |                 |
| 20. Someone tried to touch me in a sexual way, or tried to make me touch them.                       |            |             |                |            |                 |
| 21. Someone threatened to hurt me or tell lies about me unless I did something sexual with them.     |            |             |                |            |                 |
| 22. I had the best family in the world.  |            |             |                |            |                 |
| 23. Someone tried to make me do sexual things or watch sexual things.                                |            |             |                |            |                 |
| 24. Someone molested me.   |            |             |                |            |                 |
| 25. I believe that I was emotionally abused.   |            |             |                |            |                 |
| 26. There was someone to take me to the doctor if I needed it.                                       |            |             |                |            |                 |
| 27. I believe that I was sexually abused.  |            |             |                |            |                 |
| 28. My family was a source of strength and support.  |            |             |                |            |                 |

*Appendix J***Debriefing Form**

Date: 2017/18

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. The purpose of this study is to investigate the relationships between personality traits, attachment style, negative childhood experience and behaviour, especially criminal and antisocial behaviour.

If you feel distressed at all about the questions in this study, you should feel free to contact your local crisis line or present at your closest emergency room. In Canada the following resources are available:

<http://suicideprevention.ca/need-help/im-having-thoughts-of-suicide/>

Please be assured that the responses you provided in this study will remain confidential. 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 #16-254). If you have any questions regarding the purpose or results of the study, please contact Dr. Angela Book. Results will be made available in the summer of 2018. 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!

*Note:* Please print a copy of the debrief for your records