

The Relationship Between Childhood Victimization and Physical Health in Women:

The Mediating Role of Adult Attachment

by

Lianne Rosen

B.A., University of Ottawa, 2010

A Thesis Submitted in Partial Fulfillment  
of the Requirements for the Degree of

MASTER OF SCIENCE

in the Department of Psychology

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University of Victoria

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**Supervisory Committee**

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Dr. Marsha G. Runtz (Department of Psychology)

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## Abstract

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This study investigated links between childhood victimization, adult attachment style, and adult physical health outcomes among women. Existing research has found that female survivors of childhood abuse are more likely than non-abused women to experience a host of negative long-term sequelae, particularly in terms of mental and physical health concerns. Examining the attachment security of abuse survivors may facilitate our understanding of the relationship between early victimization and later health. Attachment theory posits that the security of childhood relationships with caregivers influences the quality of later interpersonal relationships. As a consequence of childhood abuse, normal attachment patterns are thought to be disrupted. Furthermore, insecure adult attachment has been linked to poorer physical health in community samples. Using structural equation modeling (SEM), adult attachment insecurity was found to partially mediate health outcomes among female survivors of childhood victimization in an undergraduate sample. Findings suggest that the experience of childhood maltreatment is tied to an increase in women's physical health concerns in a holistic manner, where victimization affects later perceptions of symptoms, functional impairment, and illness behaviour. Furthermore, adult attachment and relational behaviour appears to be a pathway through which this association is formed. Implications for health practitioners, clinicians and researchers are discussed.

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## Introduction

Interpersonal violence occurring within families has become a major topic of concern in recent years. Specifically, rising awareness of the prevalence of child maltreatment has stimulated much research surrounding its etiological origins and potential risk factors. Studies have also examined the long-term correlates of child maltreatment in an effort to better address the needs of abuse survivors. Of particular importance is the unique pattern of health risks throughout the lifespan that have been associated with a history of early childhood trauma. Recent work has focused on examining factors that potentially affect these negative health outcomes; in particular, the role of attachment security may be significant in understanding this relationship. The current study will examine the links between childhood victimization, attachment, and health; specifically, this investigation tests the validity of a hypothesized model in which attachment security mediates the association between childhood abuse and physical health symptoms in adulthood.

### Abuse in Childhood

Conventional discussions of childhood maltreatment tend to utilize vague terms such as *child abuse* to depict largely heterogeneous phenomena. However, differentiating between abuse types is crucial to an accurate conceptualization of the issue since qualitative differences between various forms of abuse may influence the type and incidence of specific outcomes. Simply categorizing distinct forms of child maltreatment has proven to be a difficult task, and the absence of a standardized classification system has led to significant variability in the operational definitions used in research contexts. Subsequently, the establishment of universal abuse categories or accurate prevalence rates remains incomplete. The act of defining abuse has itself been problematic; the National Research Council Panel on Research on Child Abuse and Neglect (NRCP; 1993) noted that existing definitions of child abuse can be based on a variety of criteria including adult characteristics, adult behaviour,

child outcome, environmental context, or some combination of the above. Furthermore, there is a lack of social consensus on dangerous or unacceptable parenting, as reflected in continuing widespread debate over the acceptability of spanking and the physical punishment of children. Similarly, definitions of abuse may also differ according to cultural norms surrounding appropriate child care. For instance, procedures such as the genital circumcision of children can be perceived as anathema or acceptable in accordance with the sociocultural environment.

Another major issue lies in determining what age range constitutes the category of *child*. For example, one meta-analytic review of research in child sexual abuse describes an assortment of upper-age criteria ranging from 12 to 18 (Irish, Kobayashi, & Delahanty, 2010). The presence of maltreatment can also be dependent on the age and developmental stage of the child in question; for instance, leaving a 6-year old alone for the evening would be considered neglectful, while the same would not be true for a 16-year old (NRCP, 1993). The severity of an abusive act can also be determined relative to the child's developmental level. Considering appropriate age criteria is essential in formulating operational definitions of child abuse as use of a higher age cut-off has been linked to higher reported prevalence rates of abuse (Goldman & Padayachi, 2000). In essence, extending the allotted time span allows for a greater frequency of incidents to take place.

Despite these issues, researchers generally agree on four basic categories of child maltreatment: physical abuse, sexual abuse, psychological maltreatment, and neglect. Zuravin (1991) outlined several general principles for constructing and operationalizing these categories of child abuse within research contexts. First, the definition must be formulated based on the specific objectives of the research, as opposed to definitions used within legal or medical spheres. Next, Zuravin recommends that the four basic categories of child abuse be further subdivided into homogenous subtypes; for instance, while child neglect generally refers to an omission in care, neglecting to adequately nourish one's child qualitatively differs from neglecting childhood educational needs. In order to provide conceptual

clarity, these subtypes require specific behavioural criteria, which in turn ensure high reliability and validity of classification. Lastly, the conceptual definition must be able to be converted into specific, measurable behaviours – in other words, the definition has to be associated with a consistent set of operational criteria. However, these recommendations have yet to be universally adopted; the resulting assortment of definitional approaches have impeded the generalizability of research findings and often hampered the development of useful interventions (Portwood, 1999). Nonetheless, further insight can be gained by examining the current legal definitions of the four general categories of child maltreatment.

Definitions of child physical abuse (CPA) usually focus on the presence or risk of acts of violence on the part of the caregiver that may cause physical harm to the child. However, legal definitions vary as distinguishing between physical discipline by parents (i.e., spanking) and abusive acts has been a matter of contention. In the United States, legal definitions of physical abuse differ between states in terms of risk of injury, parental intentions, the specificity of bruising, and the inclusion of other unique forms of physical violence (McCoy & Keen, 2009). In Canada, the Criminal Code subsumes child physical abuse under the general offences of assault or forcible restraint (Department of Justice Canada, 2001). While these laws do not contain any specific provision for family violence, any individual who commits CPA can be charged with the offense that best suits the incident in question. Provincial legislation outlines the appropriate response in terms of state intervention once an allegation of abuse has been made (for instance, the Child, Family and Community Service Act [1996] in British Columbia). The most recent official prevalence data reports 2.86 confirmed cases for every 1,000 children in Canada, although it is likely that actual rates are higher based on estimates of unreported and unsubstantiated cases (Trocmé et al., 2010). Estimated cumulative population prevalence rates of CPA range from 5% to 35% (Gilbert, Widom, Browne, Fergusson, Webb & Janson, 2009).

Child sexual abuse (CSA) is also subject to definitional difficulties; an accurate definition must address the degree of coercion (i.e., unwanted or forced), the type of sexual encounter (i.e., noncontact, touch, penetration), and the age of those involved (Leserman, 2005). Historic definitions of CSA have been quite broad, incorporating anything participants deemed sexual that occurred within the desired age range (Haugaard, 2000). The subsequent research output has led to elevated estimates of the incidence and prevalence of CSA as well as a vast range of abuse severity within the category. This heterogeneity has made it difficult to determine the short- and long-term effects of CSA in isolation from other factors. Current Canadian laws describe sexual abuse in terms of a child's exploitation by an older individual for all types of sexual purposes (Department of Justice Canada, 2005). Age is also an important concern; sexual activity with an individual under the age of 16 is considered a criminal offence, regardless of the child's consent (Barnett, MacKay, & Valiquet, 2007). However, there are also close in age or peer group exemptions. An individual of 14 or 15 years of age can consent to sexual activity if their partner is less than 5 years older; similarly, a 12 or 13-year old can also consent if their partner is less than 2 years older (Department of Justice Canada, 2010). Lastly, sexual encounters with individuals aged 12 to 17 are considered criminal and exploitative when the perpetrator is in a position of trust, dependency, or authority. CSA prevalence is reported as 0.43 substantiated cases per 1,000 Canadian children (Trocmé et al., 2010). Again, these figures are likely quite conservative as a result of underreporting; recent meta-analytic estimates across more than 100 studies suggest that contact CSA is experienced by 13.2% of girls and 3.7% of boys (Andrews, Corry, Slade, Issakidis, & Swanston, 2004).

Child psychological maltreatment (CPM) is a more recent categorization that remains under conceptual debate in the research literature. This area has proven difficult to examine due to the lack of immediate and observable negative consequences; in addition, psychological maltreatment rarely occurs in isolation from other forms of abuse (Osofsky, 2003; Trocmé et al., 2005). Indeed, any form

of abusive behaviour is likely to have emotional or psychological effects on the victim, such as feeling unsafe (McCoy & Keen, 2009). Nonetheless, general guidelines tend to focus on negative parental behaviours that damage (or risk damaging) a child's mental, emotional or developmental state. Initial practice guidelines outlined by the American Professional Society on the Abuse of Children (APSAC, 1995) emphasized the intentionality of CPM in that the behaviours of abusive caregivers convey to children that they are worthless or flawed. APSAC outlined six forms of CPM: verbal spurning, terrorizing, isolating, exploiting/corrupting, denying emotional responsiveness, and health/educational neglect. However, Glaser (2002) argued that the APSAC definition lacked a theoretical basis and that there was significant behavioural overlap between forms of CPM. Instead, Glaser suggested an alternative typology based on a conceptual framework of child needs; these categories of CPM included emotional unavailability, negative attributions towards the child, developmentally inappropriate/inconsistent interactions with the child, failure to recognize the child's individuality and boundaries, and failure to promote the child's social adaptation. Nonetheless, there are definite similarities and categorical overlap between both systems. While no consistent typology has been instituted, subsequent research often employs a combination of both approaches in defining CPM (e.g., Kairys et al., 2002). The Canadian Incidence Study of Reported Child Abuse and Neglect – 2008 utilized a typology of emotional abuse (hostile, punitive treatment), non-organic failure to thrive (early developmental difficulties without an identifiable biological cause), and emotional neglect (inadequate nurturing); the incidence of emotional maltreatment as the primary concern was substantiated in 1.23 cases per 1,000 children (Trocmé et al., 2010). An estimated 10.3% of children experience CPM annually in the United States (Finkelhor, Ormrod, Turner & Hamby, 2005).

The category of child neglect differs from other forms of child maltreatment in that it is typically perceived as an act of omission rather than an act of commission; in other words, neglect is often believed by the general public to be unintentional (Barnett, Miller-Perrin, & Perrin, 2005). More

specifically, child neglect is usually defined as the failure to meet a child's basic physical, emotional and developmental needs. It has also been argued that parents' ability to provide for their children must be considered in cases of neglect, although this remains a matter of debate (McCoy & Keen, 2009). Types of neglect can vary from concrete deficits in nutrition, shelter and household safety to neglect in provision of education or in parental supervision. The subcategory of emotional neglect is often subsumed under CPM in terms of emotional unavailability or lack of nurturing. Child neglect is the most frequently reported form of maltreatment, accounting for approximately 71% of all official cases in the United States in 2008; in general, population prevalence estimates range from 6% to 15.4% (Gilbert et al., 2009; U.S. Department of Health and Human Services). In Canada, the incidence of child neglect was substantiated in 4.81 cases per 1,000 children (Trocmé et al., 2010).

As evidenced in the qualitative differences among forms of abuse, it is essential that researchers account for types of maltreatment in evaluating research outcomes. The issue becomes further compounded when one recognizes the elevated proportion of co-occurring abuse types. Multiple categories of abuse were reported in 18% of substantiated cases in Canada in 2008 (Trocmé et al., 2010). Multi-type maltreatment is correlated with significant increases in adjustment problems and is consistent with the general effects model of child maltreatment, which states that "...the increased burden associated with each additional traumatic event will reduce psychological functioning and lead to greater adverse outcomes" (Senn & Carey, 2010, p. 325). However, an additive model seems overly simplistic in predicting the type and severity of negative outcomes; specific combinations of abuse type, duration and severity may exert greater influence on negative outcomes than the sum of the parts.

### **Early Childhood Trauma Exposure and Associated Health Outcomes**

In general, childhood experiences of trauma have been strongly correlated with increased health concerns in adulthood. In addition to the forms of abuse mentioned above, childhood exposure to trauma can include witnessing traumatic events such as natural disasters or violence, experiencing life-

threatening events such as illness or accidents, and traumatic bereavement (Goodman, Corcoran, Turner, Yuan, & Green, 1998). While the majority of childhood trauma research surrounding natural disasters utilizes one- or two-year follow-up designs, some longitudinal research has been conducted. One such study performed a 33-year follow up of a mining disaster in Wales, where a coal slag heap had collapsed on an elementary school and resulted in the deaths of over 100 children (Morgan, Scourfield, Williams, Jasper, & Lewis, 2003). The researchers found that half of the affected sample had experienced post-traumatic stress disorder (PTSD) at some point in their lives, while a similar proportion continued to have PTSD symptoms at the time of the follow-up. A four-year follow up of a school bus kidnapping in the United States also found that children continued to experience posttraumatic stress symptoms long after this event; furthermore, the study found evidence of enduring cognitive change, including decreased school performance, affect displacement, and temporal distortions (i.e., belief in omens or foreshortened futures; Terr, 1983). However, these studies were characterized by low sample sizes and problematic or nonexistent control groups. McFarlane and Van Hooff (2009) addressed these issues in a twenty year follow-up of over 400 schoolchildren who had experienced a major bushfire. The results indicated that while some trauma symptoms and distress remained present more than two decades after the incident, rates of mental disorders were not significantly different between bushfire survivors and matched controls.

Additional research has examined the impact of life-threatening illness or injury in early life, although this research tends to focus on the immediate outcomes of such trauma on child and family. A meta-analysis by Alisic, Jongmans, van Wesel, and Kleber (2011) found medium effect sizes for several predictors of long-term posttraumatic stress in traumatically injured children. Specifically, the severity of children's acute stress, anxious and depressive symptoms, as well as their parents' degree of acute stress, was linked to the increased severity of post-traumatic stress symptoms in later childhood. Limited research has also examined the longitudinal resilience of this finding. For example, Zatzick

and colleagues (2008) studied adolescents hospitalized after traumatic injury and found that elevated baseline rates of PTSD and depressive symptoms were associated with increased functional impairment at a one year follow-up.

Lastly, significant attention has been paid to childhood bereavement and adult health outcomes, although such research has tended to utilize a more biomedical rather than trauma-oriented approach. Early parental loss has been a major focus of study; for instance, a case control study by Agid and colleagues (1999) found that early parental death or separation significantly increased the likelihood of developing major depression in adulthood. Similar findings were reported by Tyrka, Weir, Price, Ross, and Carpenter (2008), who found that participants who had experienced early parental loss were significantly more likely than controls to report the onset of depressive or anxious symptoms in adulthood, even when controlling for parental relationships and the incidence of childhood maltreatment. Subsequent research by Tyrka and colleagues (2008) attributed this link to adult hypothalamic-pituitary-adrenal (HPA) function, where childhood parental loss was associated with increased cortisol responding. The HPA axis is activated in response to stress and is thought to be associated with major depression and other mental disorders (e.g., Ehlert, Gaab, & Heinrichs, 2001). In general, research in this area has focused on mental health correlates; the examination of physical health outcomes associated with early childhood trauma exposure tends to be restricted to studies of child maltreatment and will be addressed presently.

Similar to the issue of multi-type child abuse, the incidence of multiple types of trauma exposure is also essential to consider. For instance, childhood abuse, domestic violence and household dysfunction can occur within the same context; such cumulative trauma exposure has been correlated with a graded increase in later health concerns (e.g., Dube et al., 2001; Felitti et al., 1998). Research by Chapman and colleagues (2004) examined the cumulative impact of adverse childhood events in terms of adult depressive disorders. This study found a strong dose-response relationship between the number



of adverse childhood experiences and the probability of lifetime and recent depressive disorders. Cumulative childhood trauma exposure has also been linked to an increase in trauma symptomology; Briere, Kaltman, & Green (2008) found a linear relationship between the number of childhood traumas and adult trauma symptom complexity, operationalized as the number of significant subscale elevations on an inventory of such symptoms. In addition, this relationship remained significant when statistically controlling for the contributions of individual traumas, indicating that cumulative traumas may exert unique effects throughout the lifespan.

In the same vein, a study of inpatients with comorbid substance abuse and mental health problems found a significantly elevated incidence of childhood traumatic events among this group compared to a primary health care sample (Wu, Schairer, Dellor, & Grella, 2010). Furthermore, the degree of exposure to such trauma increased the likelihood of a variety of adverse outcomes in adulthood, including PTSD, alcohol dependence, injection drug use, tobacco use, and involvement in the sex trade. However, pervasive physical health concerns were elevated among all inpatients regardless of early trauma exposure, suggesting that this finding may be more closely linked to the physical toll of long-term substance use. Studies are beginning to investigate the role of substance use as a mediator of later negative outcomes linked to childhood maltreatment; however, evidence in support of this pathway for physical health problems remains limited (Widom, Schuck, & White, 2006). Nonetheless, substance use has been consistently associated with early childhood trauma and the resulting health complications remain an important consideration in this field (e.g., Dube et al., 2003).

### **Child Abuse and Adult Health**

More specifically, correlations between abuse in childhood and negative health outcomes have been the focus of much research in this field. While empirical data exist on the health correlates of all forms of child maltreatment, sexual abuse has been the focus of the majority of investigations (Gordon,

Holmes, & Maly, 1999). One key area of attention has been the link between child abuse and psychopathology; survey data indicate that between 34% and 53% of individuals suffering from severe mental illness report a history of CPA or CSA (Mueser et al., 1998). A review of meta-analyses by Hillberg, Hamilton-Giachritsis, and Dixon (2011) found small to moderate effect sizes for CSA as a nonspecific risk factor for adult psychopathology; however, the range of study and abuse characteristics examined by the meta-analyses suggests that other factors may affect the relationship between CSA and adult psychopathology. In general, mechanisms of action linked to this association depict some variant of the diathesis-stress model, where the interaction of internal biogenetic factors and external influences contributes to the development of adverse outcomes (Markward, Dozier, Hooks, & Markward, 2000).

In terms of mood disorders, CSA has been strongly correlated with the incidence of major depression even when controlling for other childhood adversities (Hill, 2003; Molnar, Buka, & Kessler, 2001). Psychological abuse and neglect have also been independently associated with early-onset depression (Manning & Stickley, 2009). Furthermore, childhood victimization may affect the course of adult depression; Gladstone and colleagues (2004) found that depressed women who had experienced CSA were more likely to have attempted suicide and/or self-harm than the non-abused control group. These women were also more likely to become depressed at an earlier age and to have a comorbid anxiety disorder. Similar findings have been reported in terms of bipolar disorder; Garino, Goldberg, Ramirez, and Ritzler (2005) found that in a sample of 100 bipolar patients, more than half had experienced severe abuse in childhood and one third reported multi-type abuse. Specific negative outcomes were reported with histories of physical, sexual and/or emotional abuse in terms of earlier age of onset, rapid cycling, and heightened depressive symptoms. Furthermore, a history of multi-type abuse was associated with greater increases in outcome severity, notably in terms of suicidality. Although the mechanism of action associated with the relationship between childhood victimization

and adult mood disorders remains somewhat unclear, studies of genetic and physiological factors may provide some insight. For instance, Bradley and colleagues (2008) found distinct differences in DNA sequencing among adult victims of childhood abuse that appeared to moderate the risk of adult depressive symptoms.

In addition, various anxiety disorders have been associated with the experience of childhood maltreatment. Individuals with a lifetime history of panic disorder, generalized anxiety disorder, social phobia, social anxiety disorder, and post-traumatic stress disorder (PTSD) report an elevated incidence of CSA and CPA compared to the general population, even when controlling for comorbid conditions (Cogle, Timpanoa, Sachs-Ericssona, Keougha, & Riccardia, 2010). In particular, this study found that when controlling for multi-type abuse histories, social phobia and PTSD were associated with CPA, while social anxiety disorder, PTSD, generalized anxiety disorder and panic disorder were independently linked to CSA. Similar findings have been reported in a number of studies, indicating the strength of the relationship between childhood victimization and anxiety (e.g., Mancini, Van Ameringen, & MacMillan, 1995; Safren, Gershuny, Marzol, Otto, & Pollack, 2002; Stein et al., 1996). Elevated symptom severity in anxiety disorders has also been linked to the severity of childhood victimization; a study by Simon et al. (2009) found an additive effect for multi-type maltreatment in the severity of social anxiety disorder within a clinical population, although base rates of maltreatment were significantly elevated within this sample. PTSD is unique among the anxiety disorders as it is directly linked to the experience of trauma. As such, the incidence of PTSD has been a major research focus in the child maltreatment literature and has been uniquely correlated with CPA, CSA, and neglect (Widom, 1999). Briggs and Joyce (1997) noted that the severity of CSA is linked to the severity of PTSD symptoms, particularly in terms of heightened dissociation, intrusive thoughts, and hyperarousal. Again, while the mechanisms of action are still being studied, childhood maltreatment has been reported as a risk factor moderating genetic predisposition for anxiety sensitivity, specifically in terms

of a serotonin transporter gene polymorphism (Stein, Schork, & Gelernter, 2008).

The incidence of schizophrenia spectrum disorders has also been linked to a history of child abuse. A literature review of studies examining schizophrenia and child abuse concluded that the presence of psychotic symptoms, particularly hallucinations, is strongly correlated with a history of CPA or CSA (Read, van Os, Morrison, & Ross, 2005). The content of the hallucinations or delusions reported by abuse survivors is often related to the details of their experiences. In addition, experiencing both types of abuse is linked to an increase in range and severity of psychotic symptoms. Research conducted by Schenkel and colleagues (2005) on inpatients with schizophrenia spectrum disorders found associations between childhood maltreatment and increased hospitalizations, earlier age of hospitalization, and severity of depressive and suicidal symptoms. While the presence of childhood maltreatment was dichotomized in the analysis, the greatest proportion of participants experienced CPA, CSA, or both. However, a review by Bendall, Jackson, Hulbert, and McGorry (2008) noted several methodological difficulties in studying childhood abuse among individuals with psychotic disorders; in particular, retrospective self-reports of trauma may be distorted among individuals with schizophrenia spectrum disorders or psychosis if reality testing is impaired. Nonetheless, more recent work has supported the existence of the relationship between schizophrenia and childhood victimization by utilizing longitudinal designs and confirmed abuse cases (Cutajar et al., 2010a). Specific to this study, researchers found that the risk of developing psychosis or schizophrenia was highest among adult victims of CSA whose abuse had involved penetration. Given existing research indicating that both genetic and environmental influences play a role in the development of schizophrenia (e.g., Walker & Diforio, 1997), the incidence of childhood victimization may act as a stressor and could trigger the illness in individuals who have a genetic vulnerability to develop such symptoms.

The high prevalence rate of substance abuse among adult survivors of childhood victimization

is an area of concern. Early research in this area was plagued with methodological issues; retrospective studies tended to support the association between child maltreatment and substance abuse problems, while prospective studies examining the same relationship often obtained non-significant results (Downs & Harrison, 2002). However, as prospective studies tend to utilize officially-reported data, it is likely that the underreporting bias influenced their results. Multivariate research also demonstrates the significance of association between child abuse and substance abuse when controlling for other adverse childhood events (i.e., parental alcohol dependency). Research by Dube and colleagues (2003) demonstrated that a history of CSA, CPA or neglect increases the likelihood of illicit drug use twofold by age 14. Approximately 30% of a population sample of over one thousand twins reported some type of CSA experience; these individuals were three times more likely to develop alcohol and drug dependencies than twins who had not experienced CSA (Kendler et al., 2000). There is also significant evidence surrounding nicotine usage; a retrospective cohort study by Nichols and Harlow (2004) found that women who experienced either CSA or CPA were 40% more likely to begin smoking compared to those without a history of abuse. Some have theorized that substance usage, notably cigarette smoking, may serve a self-medicating function in order to help the individual cope with the trauma of the abuse (e.g., Sapp & Vandeven, 2005). Interestingly, profiles of individuals presenting with histories of abuse compared to those with substance dependency are quite similar, particularly in terms of low self-esteem and difficulty with trust (Plant, Miller, & Plant, 2004). Nonetheless, a historical retrospective study of confirmed CSA cases found that adult survivors had an elevated relative risk of fatal substance overdose, indicating that the problem of substance abuse is of significant concern within this population (Cutajar et al., 2010b).

Lastly, the development of long-term physical health problems is a concern for survivors of child abuse. Research by Springer and colleagues (2007) found that self-reported CPA is significantly correlated with a range of physical symptoms up to 40 years after the abuse took place. Controlling for

other childhood adversities, this study reported that survivors of CPA were far more likely to experience allergies, arthritis, asthma, bronchitis, heart/liver concerns, and ulcers compared to the non-abused sample. Another population-based study found that CPA was linked to chronic fatigue and chronic pain syndromes when controlling for other forms of abuse; CSA was independently associated with headache/migraines, asthma, diabetes, cardiovascular symptoms and chronic fatigue (Romans, Belaise, Martin, Morris, & Raffi, 2002). Furthermore, a study by Rohde and colleagues (2008) found that a history of CSA or CPA increased the likelihood of adult obesity in a sample of middle-aged women. While studies examining this relationship in terms of CPM are still relatively rare, Irving and Ferraro (2006) found a significant association between emotional abuse and lower self-ratings of health. Disability and health service utilization is also a concern; data from a representative community sample found a moderate association between childhood victimization and functional disability due to health problems, in addition to increased emergency room and health professional visits (Chartier, Walker, & Naimark, 2007).

In particular, sexual and reproductive health concerns have been found to be a significant outcome for women with histories of childhood maltreatment. CSA has been most frequently studied in this domain and has been independently linked to the incidence of dysfunctional sexual behaviours and reproductive health symptoms (Noll, Trickett, & Putnam, 2003; Runtz, 2002). Risky sexual behaviours, such as earlier onset of sexual activity, increased numbers of sexual partners, and elevated rates of sexually transmitted infections (STI), have been associated with maltreatment in general across a number of studies (Gilbert, Widom, Browne, Fergusson, Webb, & Janson, 2009). Some evidence also suggests that the experience of maltreatment is a risk factor for pregnancy in adolescence, although findings are somewhat contradictory (Blinn-Pike, Berger, Dixon, Kuschel, & Kaplan, 2002). Given the particularly distressing and sensitive nature of these concerns in a relational context, further study of this association is necessary.

Research by Heim et al. (2009a) further investigated the biological underpinnings of the childhood abuse-physical health relationship in the context of chronic fatigue syndrome. Decreased salivary cortisol concentrations were found among abuse survivors compared to non-abused controls; this dysfunction of the hypothalamic-pituitary axis, which acts as the body's stress-response system, has been associated with increased immune activation and inflammatory responses, which in turn may provoke symptoms of fatigue and pain (e.g., Raison & Miller, 2003). While evidence suggests that survivors of abuse may report more physical symptoms and health care utilization as a function of emotional distress and somatization, it is essential to recall that such symptoms are present and distressing regardless of their origin (Salmon & Calderbank, 1995).

### **Attachment Theory in the Context of Child Abuse**

Attachment theory provides a potential avenue for exploring the relationship between childhood maltreatment and adverse health outcomes. Rooted in the work of John Bowlby (1982), the theory posits that infants exhibit innate behaviours designed to assure physical proximity to caregivers or attachment figures. These behaviours are adaptive to survival as infants depend on caregivers to fulfill their basic needs for protection, sustenance, and social interaction. In this context, children interact with attachment figures in the expectation of receiving support, comfort and encouragement in times of stress or need, which in turn enables the child to "...restore emotional balance and return to effective behaviour in the wider social and physical environment" (Shaver & Mikulincer, 2008, p. 19). Successful reductions in stress as a result of caregiver attention restore the individual's sense of security and reinforce the importance of relational closeness. This reduction in negative stimuli also informs later coping mechanisms for stress in terms of emotional regulation and resilience.

Specific attachment patterns were operationalized in Ainsworth and colleagues' (1967) "Strange Situation" assessment of separation responses in mother-infant dyads. Infants classified as secure (Type B) react to separation from their mothers with some distress, but are quickly reassured

upon her return and recommence creative play. By contrast, infants exhibiting insecure-avoidant attachment patterns (Type A) do not show distress upon separation and actively avoid their caregiver when reunited. Insecure-ambivalent or anxious attachment (Type C) is displayed when infants have an extreme reaction to the separation and are difficult to soothe upon the caregiver's return. Subsequently, a fourth attachment pattern was identified: insecure-disorganized or disoriented attachment (Type D), which is characterized by contradictory behaviours in response to the attachment figure (Main & Solomon, 1986). Children who fall into this category vacillate between approach and avoidance behaviours and often display fear or apprehension towards the attachment figure.

While this behavioural system is established in childhood, Bowlby (1988) theorized that early attachment patterns remain consistent throughout the lifespan and are mirrored in adult responses to stress. However, instead of parents or caregivers, adult attachment figures are more likely to be long-term romantic partners, who provide companionship, familiarity, and emotional security in the context of a bond that is perceived as unique and irreplaceable (Berscheid, 2006). One of the earliest measures operationalizing adult attachment was created by Hazan and Shaver (1987). Respondents were asked to choose which of three statements, based on Ainsworth's secure/avoidant/anxious attachment typology, most accurately represented their general feelings and behaviours in intimate relationships. Hazan and Shaver subsequently found that individuals endorsing the secure attachment statement were more likely to have a history of secure childhood attachment and to have more positive perceptions of their current intimate relationships. Overall, categorizations of secure, avoidant, ambivalent and disorganized relational styles were found to be associated with similar patterns in childhood (Sable, 2008).

Further empirical testing and construction of similar measures allowed for more continuous systems of examining adult attachment; however, significant variability exists among the theoretical models underlying these measures. Griffin and Bartholomew (1994) propose a four-category model of



adult attachment that is based on two underlying dimensions: the individual's positive or negative perception of the self and their similarly dimensional perception of hypothetical others. The model of self indicates the internalization of a positive or negative sense of self-worth, which leads to the expectation of similar responses from others; the model of others reflects the extent to which others can be expected to be available and supportive. Thus, the four categories of the model are termed secure (positive other and self), preoccupied (positive other and negative self), fearful (negative other and self), and dismissing (positive self and negative other). The Relationship Questionnaire (RQ; Bartholomew & Horowitz, 1991) is the associated measure that is designed to provide continuous scores of each of these four attachment styles. A second approach classifies adult relational patterns according to an alternative two-dimensional continuum, consisting of attachment-related avoidance and attachment-related anxiety (Shaver & Mikulincer, 2008). The avoidance dimension relates to decreased closeness and dependence on others and the endorsement of emotional distance, while the anxiety dimension focuses on intense desire, preoccupation, and worry surrounding perceived relational security. Individuals who endorse neither dimension are considered securely attached. The Experiences in Close Relationships (ECR; Brennan, Clark & Shaver, 1998) is a popular self-report questionnaire that is derived from this theoretical perspective.

In the context of childhood maltreatment, normal attachment patterns are disrupted as the perpetrator of abuse often tends to be an attachment figure, subsequently negating any provision of comfort and security. Indeed, CPA, CPM and neglect are defined based on parental behaviours. Nonetheless, victims of child abuse do develop some form of attachment to their primary caregiver, although such relationships are characterized as insecure in the vast majority of cases (Cicchetti, Rogosch, & Toth, 2006). Research has shown that disorganized attachment styles are most common among survivors of child abuse; for example, Barnett and colleagues (1999) found that disorganized attachment styles were dominant among children experiencing abuse, even when controlling for

socioeconomic status, and remained consistent when re-evaluated after one year. Parental behaviours associated with Type D (disorganized) attachment are characterized by highly atypical responses, such as hostility or helplessness, which serve to further distress rather than reassure the child (Lyons-Ruth, Yellin, Melnick, & Atwood, 2005). Such parental responses are consistent with abusive behaviour, although it is important to note that not all children exhibiting disorganized attachment have been maltreated. While specific abusive episodes undoubtedly contribute to the formation of insecure attachment styles, the general relational context between child and abuser/attachment figure is often dysfunctional, characterized by low levels of engagement, reciprocity and emotional sensitivity (Tarabulsky et al., 2008). In this environment, insecure attachment styles are continuously reinforced.

Evidence also suggests that insecure attachment styles remain consistent across the lifespan in individuals with a history of childhood maltreatment. Weinfield, Sroufe, and Egeland (2000) found that in general, while insecure infants in their high-risk sample tended to become securely-attached adults, a history of maltreatment was associated with the long-term maintenance of insecure attachment styles. This relational insecurity manifests in a number of ways; a qualitative study found that adult survivors of abuse reported limited social networks, difficulty with initiating and maintaining friendships, and unstable, sometimes violent intimate relationships (Frederick & Goddard, 2008). Furthermore, the endurance of attachment patterns across the lifespan may be linked to biological factors; preliminary research has shown that adult survivors of maltreatment have decreased cerebrospinal concentrations of the neuropeptide oxytocin, a hormone associated with maternal behaviour, social affiliation, and attachment (Heim et al., 2009b).

### **Insecure Attachment and Health**

Insecure attachment has itself been correlated with a range of long-term negative sequelae, although less research has been performed in this area. Maunder and Hunter (2001) suggested three possible mechanisms through which insecure attachment affects the incidence of physical illness. First,

individuals with insecure attachment may display a greater reactivity to stress, particularly in terms of increased perceived stress and heightened physiological responding. In addition, insecurely-attached individuals may have a greater tendency to utilize external rather than internal methods of affective regulation; the use of strategies such as substance use and disordered eating are linked to increases in health concerns. Lastly, insecure attachment has been associated with a reduction in effective help-seeking behaviour, particularly in terms of social support and health care utilization. Similarly, Cloitre, Stovall-McClough, Zorbas, and Charuvastra (2008) found empirical support for the relationship between insecure attachment and mental health disorders through the pathways of poor emotion regulation and decreased expectations of support. These approaches closely mirror research findings associated with childhood maltreatment and health that have been previously discussed.

In a large community sample, avoidant attachment was associated with a higher prevalence of chronic pain conditions (i.e., migraines), while anxious attachment was linked to cardiovascular conditions (McWilliams & Bailey, 2010). Even when controlling for mood, anxiety, and substance use disorders, anxious attachment was uniquely associated with higher rates of chronic pain, stroke, heart attack, high blood pressure, and ulcers. As well, a study of chronic pain patients found that insecure attachment was linked with significantly elevated rates of depressive symptoms, catastrophizing cognitions, and pain-related healthcare visits (Ciechanowski, Sullivan, Jensen, Romano, & Summers, 2003). Research has also indicated that individuals who report more suffering from and less tolerance of physical pain are more likely to have higher levels of anxious attachment (MacDonald & Kingsbury, 2006).

There is also some evidence linking insecure attachment to increased rates of psychopathology; several studies have linked anxious attachment styles with increases in depressive symptoms (eg, Carnelley, Pietromonaco, & Jaffe, 1994; Roberts, Gotlib, & Kassel, 1996). Furthermore, Zuroff and Fitzpatrick (1995) found specific associations between attachment type and depressive symptom

patterns; anxious attachment was positively correlated with interpersonal factors such as a lack of autonomy, while avoidant attachment was linked to perfectionism and self-criticism. Recent research analyzing an inpatient sample found significant associations between anxious attachment and anxiety disorders (Manicavasagar, Silove, Marnane, & Wagner, 2009). Lastly, insecure attachment behaviours have also been linked to eating disorder symptom patterns and treatment outcomes (Illing, Tasca, Balfour, & Bissada, 2010).

### **Childhood Abuse, Attachment, and Health**

Due to the significant conceptual and empirical overlap between outcomes of both childhood maltreatment and insecure attachment, some research has further investigated the complexity of this relationship in terms of adult health. Studies have found some empirical support for the mediational effects of attachment on a variety of psychological outcomes associated with childhood maltreatment, including substance use, psychopathology, adult revictimization, and adult psychological adjustment (Feerick, Haugaard, & Hien, 2002; Limke, Showers, & Zeigler-Hill, 2010; Muller, Lemieux, & Sicoli, 2001; Reinert & Edwards, 2009; Roche, Runtz, & Hunter, 1999). For instance, attachment anxiety in the context of interpersonal trauma has been linked to PTSD (e.g, Sandberg, Suess, & Heaton, 2010). Attachment styles that endorse a negative view of the self in relation to others (i.e., anxious attachment) have been shown to have a significant positive correlation with PTSD symptomology among adult survivors of maltreatment (Muller, Sicoli, & Lemieux, 2000). There have been very limited investigations into the role of these associations in terms of physical health; however, Pierrehumbert and colleagues (2009) found that women with both a history of abuse and a disorganized attachment style were more likely to have decreased salivary cortisol and increased perceived stress ratings compared to abuse survivors who reported other types of attachment. As such, it is plausible to hypothesize that childhood maltreatment and adult attachment may affect physical health in terms of stress-response system dysfunctions in the body.

## **Limitations of Existing Research**

While the field of research surrounding childhood victimization, adult attachment and health is demonstrably vast, there remain some significant limitations in the existing literature. Primarily, many studies focus on the effects of a single type of abuse; in particular, the literature has focused extensively on CSA although this is one of the least prevalent forms of maltreatment. However, multi-type abuse has been shown to be relatively common and studies often fail to account for these interactions. When studies do control for multiple types of abuse in an attempt to isolate the specificity of negative sequelae, results are can be contradictory or difficult to interpret (e.g., Gibb, Chelminski, & Zimmerman, 2007). Furthermore, statistically controlling for additional abuse types in regression designs can drastically affect the proportion of variance that can be accounted for by the variable of interest, which in turn affects statistical power. Lastly, isolating a single type of abuse can reduce the ecological validity of the findings.

In addition, sampling is also an issue within clinical populations; the relatively low population prevalence of both child maltreatment and specific health concerns may encourage researchers to seek participants from settings where the condition of interest has already been established (i.e., medical clinics). However, data from these settings may not accurately depict the full breadth of symptom patterns as participants from clinical settings are already seeking treatment and therefore tend to represent more severe or debilitating cases. Furthermore, research in this field often employs correlational or likelihood ratio designs that are also retrospective in nature. While such designs support relational hypotheses between variables, they are unable to examine the directionality of the relationship. For example, a significant positive correlation between insecure adult attachment and subjective ratings of pain cannot determine whether attachment issues beget increased pain or elevated pain levels influence attachment.

Lastly, very little research incorporates attachment theory into investigations of childhood

maltreatment and adult health; virtually none examine this relationship in terms of physical health. This is somewhat surprising as research findings on the sequelae of child maltreatment and insecure attachment suggest relatively similar symptom patterns, and hypothetical mechanisms of action for both factors refer to similar systems, notably the body's physiological response to stress and the hypothalamic-pituitary-axis. The interactions between child abuse, adult attachment, and physical health for women remain an ongoing area of investigation that is yet to be fully explored.

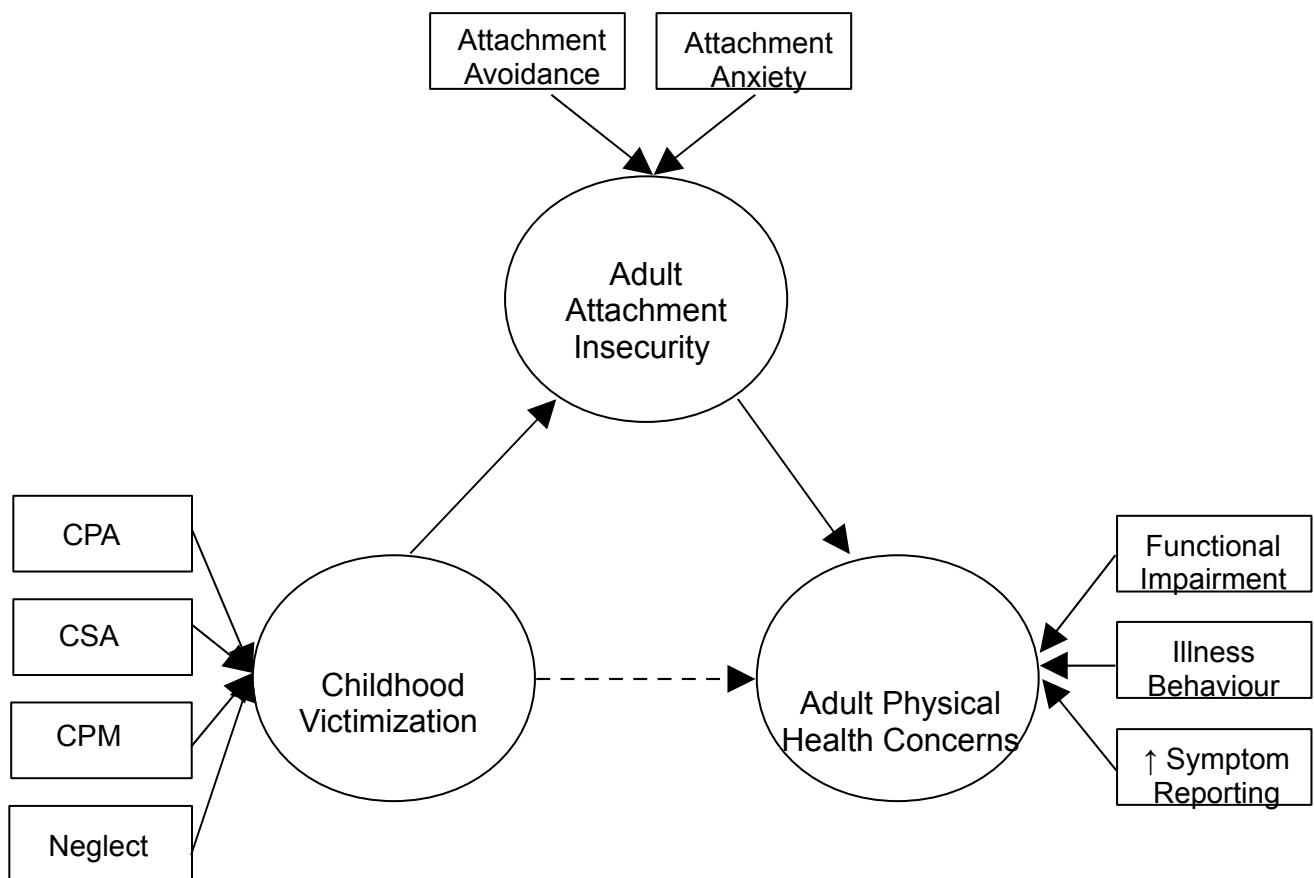
### **Current Study**

Based on the empirical evidence outlined above, the production of additional research surrounding attachment, childhood victimization and health would be of great utility in both clinical and research contexts. Other important considerations include the incorporation of multi-type abuse into the research framework, the investigation of perceived physical health outcomes specific to women, the usage of non-clinical samples, and the implementation of statistical analyses that allow for directional inferences.

The current study examines the influence of adult attachment in the relationship between childhood victimization and adult physical health among women. In particular, this study investigates whether childhood maltreatment and insecure adult attachment mediate the form and severity of physical health outcomes using structural equation modeling (SEM). Specific hypotheses include:

1. Women who report increased levels of childhood victimization, defined as the incidence of physical, sexual, and emotional abuse and/or neglect, will score higher on measures of adult attachment anxiety and avoidance.
2. Women who report increased levels of childhood victimization will also report greater physical health concerns in adulthood, notably in terms of increased general symptom reporting, reproductive symptoms, functional impairment and illness behaviour (i.e., behaviours that indicate to others that an individual has health problems).

3. Women who describe more insecure attachment patterns (i.e., elevated scores on measures of attachment anxiety and avoidance) will report more physical health concerns than those with more secure attachment.
4. Adult attachment will mediate the relationship between childhood maltreatment and adult physical health among women. Specifically, the best fitting model for these variables will occur when adult attachment insecurity mediates the association between childhood abuse and overall physical health concerns in adulthood (see Figure 1).



*Figure 1.* Hypothesized model of the mediation of adult attachment insecurity in the relationship between childhood maltreatment and physical health. Each latent variable is operationalized through several observable variables and their associated measures.

## Method

### Participants

Participants for the study were recruited as part of the Life Experiences, Health and Relationships (LEHR) study, an ongoing investigation conducted by Dr. Marsha Runtz. The LEHR project was designed to aid in the validation of the newly developed Clinical Attachment Inventory (CAI), as well as to examine links between interpersonal trauma, health risk behaviours, physical health, and psychological functioning. Undergraduate students were recruited using an online system (SONA) within the psychology department at the University of Victoria and received bonus marks towards their final grade in an introductory psychology course. In order to be eligible, participants were required to be over age 19 and be fluent in English; these criteria were outlined in an online research announcement accessed via SONA.

The total sample from the first year of data collection consisted of 551 undergraduate students. Data from male participants were excluded for the purposes of this research, leaving a sample of 407 women. Of these, data from 14 participants were omitted prior to analysis due to missing information on entire measures of interest. The remaining 393 participants had a mean age of 21.2 years ( $SD = 3.3$ , median = 20), and ranged between 18 and 46. The majority of the sample (67.2%) identified as Caucasian and 16.0% identified as Asian, with the remaining participants endorsing African-Canadian, Hispanic, or mixed heritage. Most women in the sample also identified as native English speakers (90.3%) and heterosexual (94.7%). The majority of participants were either single (45.3%,  $n = 178$ ) or currently in a romantic relationship (41.0%;  $n = 161$ ).

More than half (62.6%) of the sample reported that they earned \$10,000 or less per year. The median category of highest level of parental education was reported as the completion of an undergraduate degree; however, 38.9% of participants reported that at least one of their parents had completed advanced degrees (e.g., Master's or M. D.). The median level of combined parental income



fell between \$90,000 and \$99,000 per year. More detailed demographic characteristics of the sample are presented in Table 1.

## **Procedures**

The methodology for the LEHR study received approval from the Human Research Ethics Board at the University of Victoria, file number 07-097. This study was described to potential participants as a confidential and anonymous series of questionnaires designed to provide better insight into the relationship between interpersonal experiences and physical and psychological health, as well as to examine the utility of a new measure of interpersonal relationships.

Undergraduate participants were asked to attend one of many research sessions at a computer lab on campus, where small groups of individuals worked at individual computer stations that were appropriately spaced to ensure confidentiality. Participants then read an online informed consent form (see Appendix A) and clicked on the appropriate box to indicate their consent. The computer screen subsequently advanced to the first page of the questionnaire. In addition, undergraduate participants completed a separate sheet with their name and student number in order to receive their bonus marks. Upon completion of the survey, participants viewed an online debriefing form (see Appendix B) and also received a paper copy. The debriefing form provided further information about the goals of the study and reiterated researcher contact information. In addition, due to the sensitive nature of some questions, the debriefing form provided information about available psychological services should participants wish to explore these issues in further detail.

## **Measures**

All measures of childhood victimization, perceived physical health and attachment insecurity are discussed below. Descriptive statistics for each measure are presented in Table 2.

Table 1. *Selected Demographic Characteristics of Participants*

Variable	<i>N</i>	<i>n</i>	%
Ethnicity	393		
Asian		63	16.0
African-Canadian		3	0.8
Caucasian		264	67.2
Hispanic		10	2.5
Other		8	2.0
Mixed		45	11.5
Primary Language	393		
English		355	90.3
French		5	1.3
Spanish		7	1.8
Asian (e.g., Chinese)		22	5.6
East Indian (e.g., Hindi)		4	1.0
Annual Personal Income	393		
Less than \$10,000		246	62.6
\$10,000 - \$19,999		71	18.1
\$20,000 - \$29,999		11	2.8
\$30,000 - \$39,999		11	2.8
No answer		54	13.7
Relationship Status	393		
Single		178	45.3
In a relationship		161	41.0
Married/living together		51	13.0
Separated/divorced/widowed		3	0.8
Sexual Orientation	393		
Heterosexual		372	94.7
Other (Lesbian, bisexual)		21	5.3

*Table continues*

Variable	<i>N</i>	<i>n</i>	%
Parent's Education	393		
Some high school		15	3.8
Completed high school		26	6.6
Trade school		46	11.7
Some university		36	9.2
Undergraduate degree		117	29.8
Master's degree		89	22.6
Doctoral degree		30	7.6
Other professional degree (e.g., M.D.)		34	8.7
Parent's Annual Income	393		
Less than \$10,000		10	2.5
\$10,000 - \$19,999		7	1.8
\$20,000 - \$29,999		9	2.3
\$30,000 - \$39,999		10	2.5
\$40,000 - \$49,999		20	5.1
\$50,000 - \$59,999		32	8.1
\$60,000 - \$69,999		27	6.9
\$70,000 - \$79,999		25	6.4
\$80,000 - \$89,999		35	8.9
\$90,000 - \$99,999		25	6.4
\$100,000 or more		141	35.9
Not applicable		52	13.2

*Note.* Parent's education = highest level of education attained by either parent

Table 2. *Descriptive Statistics for Continuous Measures of Interest*

Variable	<i>M</i>	<i>SD</i>	Range
CPA	.71	1.84	0 – 14
Psychological Abuse	25.6	22.09	0 – 110
Psychological Neglect	18.45	22.66	0 – 107
General Health Symptoms	48.45	24.10	0 – 142
Reproductive Health Symptoms	34.78	6.95	25 – 66
Illness Behaviour	53.37	14.15	20 – 94
Functional Impairment	11.28	5.61	7 – 35
TSI-2 Insecure Attachment	19.59	6.32	10 – 40
ECR Anxious	63.23	20.90	19 – 122
ECR Avoidant	52.88	19.04	18 – 112
RQ Self	-1.98	4.04	-12 – 9
RQ Other	.24	3.92	-11 – 10

*Note.* CPA= child physical abuse

**Demographic information.** A variety of demographic data were collected from participants in order to examine the characteristics of the sample and allow for the control of potentially confounding variables (see Appendix C). These variables include age, gender, ethnicity, nationality, education, income, parental education, parental income during childhood, relationship status, and sexual orientation. Participants also answered questions about their status within the university (i.e., program and year of study).

**Measures of childhood victimization.**

***Psychological Maltreatment Review (PMR; formerly Psychological Abuse and Neglect Scales [PANS]).*** The PMR/PANS (Briere, 2006; Briere, Godbout, & Runtz, 2012) is a 30-item retrospective measure that assesses psychological abuse and neglect by parents (see Appendix D). This measure is an adaptation of the Psychological Maltreatment scale from the Childhood Maltreatment Interview Schedule – Short Form (CMIS-SF; Briere, 1992a). Subscales of the PMR that were analyzed for this study include psychological abuse (PA) and psychological neglect (PN), although the PMR also

assesses parental psychological support. Participants are asked to report the frequency of specific parental behaviours over the course of an average year, prior to the age of 17. Respondents answer separately for maternal and paternal behaviours (or for the behaviours of maternal/paternal figures). The three subscales of the PMR each consist of 10 statements; psychological abuse statements include such items as “Yelled at you” and “Insulted you”, while psychological neglect items include “Didn't seem to love you” and “Left you alone for long periods of time when they shouldn't have”. Participants rate the frequency of these parental behaviours along a 7-point Likert scale, ranging from 0 (never) to 7 (over 20 times a year), with a range of scores of 0-60 per subscale.

The reliability and validity of the PMR have been examined in several studies. Briere and colleagues (2012) found good internal consistency ( $\alpha = \geq .89$  for all subscales) for the measure in a sample of over 1000 undergraduate participants. Structural and convergent validity of the measure were also demonstrated, and a confirmatory factor analysis showed that items loaded appropriately onto a 3-factor solution. Similar results were found by Van Bruggen (2009) in a sample of approximately 250 young adult women, where Cronbach's alpha was greater than or equal to .91 for all subscales.

***Family Violence Screening Questionnaire (FVSQ).*** The FVSQ is a measure that screens for the presence of family violence – more specifically, the measure assesses the frequency of physical abuse in childhood, witnessing domestic violence between parental figures, and the incidence of intimate partner violence in current adult relationships. Given the purposes of this study, only the two items assessing CPA were included in the analyses. These items ask individuals to rate the frequency of two types of abusive parental behaviours (hitting/kicking/beating and seriously threatening life) over the course of an average year prior to the age of 17 (see Appendix E). The frequency of such behaviours is assessed on a 6-point Likert-type scale, ranging from 0 (never) to 6 (more than 20 times per year). Similar to the PMR, participants rate the frequency of behaviours for both maternal and

paternal figures. These items were adapted from an abuse screening tool created by Drossman, Leserman, and Li (1995), which was found to have acceptable test-retest reliability and convergent validity in a sample of women recruited from a health care clinic.

***Childhood Sexual Experiences (CSE).*** A modified version of a sexual victimization screening tool (Drossman, Leserman, & Li, 1995) acted as a measure of unwanted sexual experiences during childhood. Participants are asked to report whether any of six nonconsensual sexual experiences have happened to them prior to the age of 14 (see Appendix F). Additional questions assess the context of these experiences, including the age of the participant, the gender and age of the other person, the relationship between participant and the other person, the use of physical force, and the frequency of these events. Drossman and colleagues reported sufficient sensitivity (71%) and specificity (91%) for their original measure; test-retest reliability was also shown to be adequate ( $r = .81$ ). Furthermore, 81% agreement was found between the instrument and a semi-structured interview assessing sexual abuse history, suggesting acceptable convergent validity.

#### **Measures of adult physical health.**

***Health Symptom Checklist (HSC).*** The HSC (Runtz, 2002) is a frequency measure of 54 varied health symptoms occurring within the past 6 months (see Appendix G). Participants rate their symptom patterns according to a 6-point Likert-type scale ranging from 0 (“not at all”) to 5 (“occurs daily”); total scores for the measure can range from 0 – 270. In addition, participants are asked whether they have sought formal health care for each specific symptom within the past 6 months. The HSC has 5 subscales, determined by principal component analysis and reflecting general symptom type: Muscular/Skeletal (14 items; e.g., muscle weakness, joint pain), Sensory/Nervous System (12 items; e.g., blurred vision, fainting), Stomach/Abdominal (9 items; e.g., bloating, stomach aches), Vaginal/Genital (8 items; e.g., painful urination, bleeding between menstrual periods), and Allergy/Cold/Flu (8 items; e.g., eczema, sore throat).

The measure has shown good internal consistency in several studies ( $\alpha = .89$  [Runtz, 2002b];  $\alpha = .88$  [Eadie, Runtz, & Spencer-Rodgers, 2008]). In addition, validity of the HSC has been demonstrated through significant correlations with other health-related variables, notably disease conviction, functional impairment, use of both prescription and non-prescription drugs, and health-care utilization.

***Reproductive Health Questionnaire (RHQ).*** The RHQ (Eadie & Runtz, 2007) is a 40-item self-report measure designed to assess the frequency of women's reproductive and sexual health concerns within the past 6 months (see Appendix H). Participants rate the frequency of their symptoms using a 4-point Likert-type scale ranging from 1 (“never”) to 4 (“often”); in addition, 9 items specifically referring to sexual intercourse also have a N/A response category to account for possible sexual inactivity during the requested time period. Similar to the HSC, participants who endorse items are subsequently asked whether they have sought health care for the particular symptom. The range of scores for this measure is from 0-160; however, should participants endorse N/A for one or more sexual intercourse items, these responses are termed missing data for calculation purposes and their total score is computed as a proportion of the remaining items.

Good internal consistency has been found for this measure among samples of undergraduate women ( $\alpha = .88$  [Eadie & Runtz, 2007];  $\alpha = .89$ , [Eadie, Runtz, & Spencer-Rodgers, 2008]). An exploratory factor analysis also suggested a four-factor solution for this measure, with proposed subscales including Sexual Dysfunction (9 items), Menstrual Cycle Symptoms (10 items), Urogenital Concerns (9 items), and Atypical/Irregularity Symptoms (11 items; Eadie, 2006). While reliabilities for these subscales were good, ranging from .74 to .88, further confirmatory research is required to validate the utility of the proposed subscales.

***Functional Impairment Scale (FIS).*** Functional impairment, or the extent to which physical health affects normal functioning, was assessed using seven items adapted from existing functional

impairment measures (e.g., the Oswestry Low Back Pain Disability Questionnaire; Fairbank, Couper, Davies, & O'Brien, 1980; the Illness Behaviour Questionnaire; Pilowsky & Spence, 1976).

Participants are asked to rate how extensively their health problems have affected their regular activities over the past six months (for instance, "My health problems have interfered with my social life"; see Appendix I). Responses are categorized according to a 5-point Likert-type scale, ranging from 1 ("not at all") to 5 ("extremely"). This measure was developed for a previous study, where Hager and Runtz (2012) found that a single-factor solution accounted for 63% of the variance ( $\alpha = .90$ ) in a community sample of women.

***Illness Behaviour Inventory (IBI)***. The IBI is a 20-item self-report measure designed to assess illness behaviour, defined as "...overt behaviour[s] performed by the individual which indicates that he or she is physically ill or in physical discomfort" (Turkat & Pettegrew, 1983, *p.* 36). Illness behaviour offers insight into how perceived ill health is expressed behaviourally and functionally. Respondents are asked to rate the extent to which they agree or disagree with statements relating to personal illness behaviours; these responses are rated along a 6-point Likert scale ranging from 1 ("strongly disagree") to 6 ("strongly agree"; see Appendix J). There are two subscales within this measure, as identified by the authors through elementary linkage analysis: Work-Related Illness Behaviour (9 items, e.g. "I stay in bed when I feel ill") and Social Illness Behaviour (11 items, e.g. "My illness or aspects of it is a frequent topic of conversation"). Overall scores on the measure range from 20 to 120.

Research findings surrounding the validity and reliability of the IBI are extensive. The pilot study for the IBI reported strong internal consistency for both subscales ( $\alpha = .88$ , Social Illness Behaviour;  $\alpha = .89$ , Work-Related Illness Behaviour) and good test-retest reliability of .90 over a two-week interval (Turkat & Pettegrew, 1983). Discriminant validity was found when comparing the scores of a group of diabetic neuropathy patients; those who had been previously identified as high illness-behaviour individuals scored significantly higher on the IBI than low illness-behaviour individuals.



Concurrent validity was also tested in a sample of individuals with lower back pain; the IBI was found to correlate positively with the number of days of hospitalization, the percentage reduction of daily work activities, the frequency of physician visits, and other such outcome measures. Lastly, in terms of predictive validity, regression analyses performed on the IBI and other associated measures found that the IBI significantly predicted outcomes such as bed disability days and medication-seeking from physicians in a sample of healthy undergraduate women. However, a significant limitation for this series of findings is the use of relatively small sample sizes. Nonetheless, the measure has been used in a variety of populations and settings, including with individuals with chronic pelvic pain and in studies of illness communication styles (Hodgkiss & Watson, 1993; Shattell, 2004).

#### **Measures of adult attachment.**

*Experiences in Close Relationships (ECR).* The ECR (Brennan, Clark & Shaver, 1998) is a widely-used self-report measure of adult attachment, where participants are asked to rate how much they agree or disagree with statements of beliefs about intimate relationships (see Appendix K). This 36-item measure uses a 7-point Likert scale, which codes responses ranging from 1 (“strongly disagree”) to 7 (“strongly agree”). The ECR consists of two equal-length subscales that measure dimensions of attachment anxiety and avoidance. The Anxiety subscale includes items such as “I worry a fair amount about losing my partner”, while the Avoidance dimension refers to statements such as “I try to avoid getting too close to my partner”. Scores on each subscale can range from 18 to 126.

Both subscales of the ECR were found to have robust internal consistencies, with a Cronbach's alpha of .94 for the Avoidance subscale and .91 for the Anxiety subscale (Brennan, Clark & Shaver, 1998). Furthermore, good test-retest reliability was found for both subscales over a six month period, with reliabilities of .71 and .68 for the Avoidance and Anxiety subscales respectively (Lopez & Gormley, 2002). Lastly, there is some evidence to support the convergent validity of the ECR as attachment anxiety and avoidance have been shown to correlate with aversion to touch, ineffective

coping, and maladaptive perfectionism (Brennan, Clark & Shaver, 1998; Wei, Heppner & Malinckrodt, 2003; Wei, Heppner, Russell, & Young, 2006). The ECR has been used in a variety of experimental contexts, including the study of post-traumatic stress disorder, body image, and borderline personality disorder (Cash, Theriault, & Annis, 2004; Critchfield, Levy, Clarkin, & Kernberg, 2008; Dieperink, Leskela, Thuras, & Engdahl, 2001). The popularity of the ECR is also evidenced through the development of a short-form version as well as a Spanish translation (Alonso-Arbiol, Balluerka, & Shaver, 2007; Wei, Russell, Mallinckrodt, & Vogel, 2007).

***Trauma Symptom Inventory (TSI-2)***. The TSI-2 (Briere, 2011) is an updated version of a widely-used measure designed to examine symptoms and behaviours associated with traumatic experiences. The measure consists of 136 items rated on a 4-point Likert-type scale ranging from 0 (“never”) to 3 (“often”); items examine a variety of symptom clusters including post-traumatic stress, dissociation, somatization, and dysfunctional behaviour. The Insecure Attachment scale is a new addition to the TSI-2 and was used to examine adult relational behaviour. Items examine current adult relational dysfunction in the context of attachment security; the scale is comprised of two subscales, Rejection Sensitivity and Relational Avoidance, which reflect the general typology of attachment anxiety and avoidance. The Rejection Sensitivity (IA-RS) subscale focuses on individuals' concern and preoccupation surrounding the potential for rejection and abandonment by others; in contrast, the Relational Avoidance (IA-RA) subscale examines the degree of discomfort and avoidance of intimacy within relationships (see Appendix L).

The Insecure Attachment scale was found to have strong internal consistency ( $\alpha = .91$ ), as did the two subscales ( $\alpha$  [IA-RS] = .88;  $\alpha$  [IA-RA] = .87). Test-retest reliability has also been documented. When re-administered to a subset of the standardization sample over a target interval of one week, the Insecure Attachment scale was shown to have a strong stability coefficient of .92. Lastly, the scale has displayed convergent validity; Runtz, Godbout, Eadie, and Briere (2008) found that the Rejection

Sensitivity and Relational Avoidance subscales, respectively, were significantly correlated with the Anxiety and Avoidance subscales of the ECR-R, a revised version of the ECR (Fraley, Waller & Brennan, 2000).

***Relationship Questionnaire (RQ)***. The RQ (Bartholomew & Horowitz, 1991) is another self-report measure of adult romantic attachment. Participants are asked to read short paragraphs about four prototypical attachment styles (Secure, Fearful, Preoccupied and Dismissing) and must then indicate which paragraph best describes their personal relationship styles (see Appendix M). Respondents are then asked to rate the degree to which they resemble each prototypical style along a 7-point Likert scale, ranging from 1 (“not at all like me”) to 7 (“very much like me”). The measure is intended to provide continuous ratings of the individual's attachment behaviours and feelings rather than a strict categorization of attachment style. The RQ can also be interpreted according to two underlying dimensions: the Model of Others and the Model of Self (Griffin & Bartholomew, 1994). Scores on the RQ Self subscale are calculated as positive self scores (secure + dismissive) subtracted from negative self scores (fearful + preoccupied), in order to correspond with the directionality of the two-dimensional attachment model (i.e., the ECR). Similarly, scores on the RQ Other subscale are calculated by subtracting positive other scores (secure + preoccupied) from negative other scores (dismissing + fearful). Despite the differing theoretical perspectives underlying the RQ and the ECR, Sibley, Fischer, and Liu (2005) analyzed the attachment dimensions of both measures using exploratory factor analysis. Results showed that the RQ Other and the ECR-R Avoidance subscales loaded solely on one factor, while the RQ Self and the ECR-R Anxiety subscales both loaded solely on a second factor. Thus, the RQ Self and the RQ Others subscales can also be considered to measure anxious and avoidant dimensions of adult attachment, respectively.

The RQ has displayed convergent validity through moderate correlations with interview ratings of the four attachment prototypes, as well as with scores on the Relationship Scales Questionnaire and

the ECR-R (Griffin & Bartholomew, 1994; Sibley, Fischer, & Liu, 2005). Cross-cultural validation for the RQ subscales has also been documented; the Self and Other dimensions were found to have both convergent and discriminant validity across more than 55 nations worldwide (Schmitt et al., 2004). The RQ has been used to measure adult attachment in a number of health-related contexts; significant associations have been found between scores on the RQ and measures of negative affectivity, depressive and anxious symptoms, and health care provider relationships (Ravitz, Maunder, Hunter, Sthankiya, & Lancee, 2010).

## **Results**

The results section addresses the following topics: (1) missing data procedures, (2) prevalence rates of childhood victimization within the sample, (3) associations between demographic variables and measures of interest, (4) correlations among measures, and (5) structural equation model testing. Analyses were conducted using SPSS 19.0 with the exception of the structural equation modeling, which was performed using Mplus version 6.12 (Muthén & Muthén, 2011).

### **Missing Data Procedures**

Missing data analyses revealed that the measures of interest had less than 5% missing data, with the exception of the Functional Impairment Scale (FIS) and Illness Behavior Inventory (IBI; Turkat & Pettegrew, 1983). However, since both of these measures presuppose existing health concerns, individuals in good health would be likely to input a non-response. Participants who responded with “no answer” to the entirety of the FIS were assumed to have no health problems; for these cases, their responses were recoded to one (1), indicating an absence of functional impairment. Similarly, item #12 on the IBI presumes ongoing use of medication; in cases where participants responded with “no answer” to that item alone, their responses were recoded to zero (0) to reflect their lack of medication use.

For the remaining health and attachment measures, analysis of response patterns suggested

missing at random (MAR) and missing data were imputed using the expectation maximization (EM) algorithm. In accordance with scoring procedures for the Reproductive Health Questionnaire (RHQ; Runtz, Eadie, & Spencer-Rodgers, 2002), non-responses to items regarding sexual experiences were left blank and total scores were calculated based on the proportion of completed items. Furthermore, missing values on the victimization measures were also left blank in an effort to accurately reflect the experiences of participants. Imputation methods may overstate the experience of victimization, while replacing missing values with zero may not account for instances where participants could be reluctant to disclose abusive episodes. As a result, total scores for abusive experiences were calculated for 94.4% (psychological maltreatment), 92.1% (neglect), 97.2% (physical abuse) and 99.2% (sexual abuse) of participants.

### **Childhood Maltreatment Prevalence Rates**

**Psychological abuse (PA).** Most women (96.9%,  $n = 381$ ) endorsed at least one item on the Psychological Abuse subscale of the Psychological Maltreatment Review (PMR; Briere, 2006; Briere, Godbout, & Runtz, 2012). Mean scores by parental figure were 13.4 (SD = 13.0) for maternal PA and 12.2 (SD = 11.8) for paternal PA. However, PA is widely understood as a pervasive pattern of negative parental behaviours as opposed to an isolated incident (Glaser, 2002). Accordingly, 38.7% ( $n = 152$ ) of participants reported that at least one of the emotionally abusive parental behaviours identified by the PMR occurred 11 to 20 times per year, and 35.4% ( $n = 139$ ) reported that at least one behaviour occurred more than 20 times per year.

Certain parental behaviours in this category were also identified based on elevated frequency of occurrence. Approximately 18% ( $n = 73$ ) of participants reported that their mothers or maternal figures yelled at them more than 20 times per year. Similarly elevated behavioural frequencies were also reported for mothers' criticizing (10.4%;  $n = 41$ ). Similarly, 12% ( $n = 47$ ) of participants reported that their fathers or paternal figures yelled at them more than 20 times per year. Detailed response

frequencies per item for both psychological abuse and psychological neglect are presented in Table 3.

**Psychological neglect (PN).** Again, the majority of participants (84.5%,  $n = 332$ ) endorsed one or more items on the Psychological Neglect subscale of the PMR (Briere, 2006; Briere, Godbout, & Runtz, 2012). Mean scores on this measure were 8.8 (SD = 12.3) for maternal PN and 10.1 (SD = 12.7) for paternal PN. Similar to PA, neglect is generally associated with a recurrent pattern of incidents. As such, 20.6% ( $n = 81$ ) of the sample reported that some type of psychologically neglectful parental behaviour occurred more than 20 times per year and 21.6% ( $n = 85$ ) reported that at least one behaviour occurred 11 to 20 times per year.

In addition, 10.4% ( $n = 41$ ) of the sample reported that their fathers or paternal figures “weren't around when they needed them” more than 20 times per year. Approximately six percent ( $n = 26$ ) of participants reported the same for their mothers or maternal figures. Furthermore, 6.4% ( $n = 25$ ) of the sample reported that their mothers “let them down” more than 20 times per year.

**Child physical abuse (CPA).** Participants were coded as having experienced CPA if they endorsed either of the FVSQ items at a frequency of “once per year” or greater. Based on these criteria, 23.2% ( $n = 91$ ) of respondents experienced some form of physical victimization in childhood. Similar proportions of women reported that their mothers or maternal figures and fathers or paternal figures had “hit, kicked or beaten” them once or more per year [16.3% ( $n = 64$ ) and 16.0% ( $n = 63$ ), respectively]. The incidence of parental figure(s) seriously threatening one's life was much lower, with 2.8% ( $n = 11$ ) and 3.8% ( $n = 15$ ) of the sample reporting these incidents for maternal and paternal figures, respectively.

Table 3. *Percentage Endorsement of Items on the PMR Psychological Abuse and Neglect Subscales*

Scale	Item	Mother							Father						
		0	1x	2x	3-5x	6-10x	11-20x	>20x	0	1x	2x	3-5x	6-10x	11-20x	>20x
PA	Yelled at you	11.5	10.4	13.7	19.6	14.5	11.7	18.6	12.5	15.8	14.0	21.4	13.5	9.2	12.0
	Insulted you	62.1	10.7	9.2	6.4	4.1	2.3	5.1	57.8	15.3	7.9	8.1	2.5	2.0	3.8
	Criticized you	28.5	15.0	10.2	19.8	7.9	7.9	10.5	30.5	14.8	12.5	17.3	8.4	6.4	6.9
	Said mean things about you	66.2	10.9	4.3	5.6	4.8	3.6	3.8	64.9	10.7	6.4	6.6	2.5	2.3	3.3
	Called you names	64.6	9.2	8.4	5.9	2.3	2.5	6.4	63.4	9.4	6.6	6.4	4.8	2.5	3.3
	Said you were stupid	80.2	5.3	3.3	4.6	1.8	1.8	2.3	76.1	5.9	4.8	5.1	1.5	2.0	1.5
	Made fun of you	66.9	10.4	4.8	9.4	3.3	2.0	2.8	61.6	7.1	11.5	8.7	3.1	2.8	2.8
	Tried to make you feel guilty	49.1	11.5	10.7	9.9	4.3	8.4	6.1	53.7	12.0	9.7	10.2	3.1	4.8	3.8
	Ridiculed or humiliated you	77.6	6.9	4.3	4.1	1.0	2.3	3.1	74.3	6.6	5.9	4.8	2.0	1.5	1.5
PN	Embarrassed you in front of others	47.8	16.8	13.5	10.9	3.6	3.8	3.3	49.6	16.0	13.0	10.4	4.3	2.3	1.5
	Left you alone for long periods of time, when they shouldn't have	79.6	6.1	3.6	3.8	1.5	2.0	3.1	74.3	6.6	4.6	4.3	1.5	1.5	3.3
	Acted like they didn't seem to care about you	74.0	6.6	4.3	5.6	3.1	2.3	3.8	68.2	7.9	3.8	6.1	3.8	4.1	3.3
	Ignored you	60.6	12.2	6.9	8.4	3.8	3.6	3.8	57.3	12.7	7.4	6.9	4.1	2.8	5.1
	Didn't do things for you that they should have	60.3	12.0	7.1	7.9	4.1	1.3	5.6	54.7	12.0	6.4	9.7	3.6	3.8	5.9
	Acted like you weren't there, even though you were	78.4	4.6	3.8	5.9	2.3	2.5	1.9	77.9	3.3	3.6	4.1	3.3	3.1	1.5
	Weren't around when you needed them	59.0	10.9	7.6	7.4	3.8	3.3	6.6	51.1	8.9	7.6	10.7	5.1	2.3	10.4
	Didn't do things they said they would do for you	44.3	19.6	14.5	8.9	5.6	3.8	3.1	43.8	17.6	11.2	10.2	7.4	3.3	4.1
	Let you down	46.6	18.8	10.4	9.4	5.3	1.8	6.4	41.2	16.3	11.7	10.7	6.9	3.6	6.1
Didn't seem to love you	84.2	4.1	2.0	2.8	1.8	1.3	2.3	77.6	6.1	2.8	3.1	2.5	1.3	3.1	
Didn't take care of you when they should have	81.7	5.1	2.5	1.5	1.5	1.8	4.8	74.6	4.6	4.1	2.5	3.3	2.0	5.1	

*Note.* Response categories indicate frequency of incidents per year. PA = Psychological abuse; PN = psychological neglect.

**Child sexual abuse (CSA).** Participants who reported any incidence of non-consensual sexual contact prior to the age of 14 (e.g., inappropriate touching, oral sex) were considered to have met criteria for CSA. Accordingly, 11.2% ( $n = 44$ ) of the sample reported some form of contact childhood sexual victimization. 11.5% ( $n = 45$ ) of participants were also non-consensually exposed to another's sex organs prior to the age of 14, while 4.1% ( $n = 16$ ) reported that someone had threatened to have sex with them against their will.

Participants were a mean age of 9.6 years ( $SD = 3.17$ ) when these incidents first occurred. Of the cases where criteria for CSA had been met, 36.4% ( $n = 16$ ) reported repeated incidents with the same person and 36.4% ( $n = 16$ ) reported multiple perpetrators. A smaller proportion (27.3%,  $n = 12$ ) experienced an isolated incident. Acts of CSA were perpetrated most frequently by males (88.6%;  $n = 39$ ) and perpetrators had a mean age of 18.7 years ( $SD = 10.1$  years) at the time of the incident. Perpetrators were most often a known, older individual who was not an adult (e.g., older acquaintance; 50.0%,  $n = 22$ ) or a stranger (18.2%,  $n = 8$ ). CSA was committed by an immediate family member (i.e., parent) in 6.8% ( $n = 3$ ) of incidents, while extended family members (i.e., cousin, aunt or uncle) perpetrated 11.4% ( $n = 5$ ) of cases. In addition, physical force was used in 18.2% ( $n = 8$ ) of incidents.

### **Demographic Variables**

Next, relationships among demographic, victimization, attachment, and health variables were analyzed. Correlations between continuous demographic variables (i.e., age) and all other model variables were calculated; the influence of categorical demographic variables was also analyzed using independent-samples t-tests and one-way ANOVAs. Due to low cell frequencies on certain demographic variables, categories were collapsed or dichotomized as necessary. All significant results are discussed below.

**Age.** Age was significantly associated with all abuse variables. Older participants were more likely to score higher on both the Emotional Abuse ( $r = .12, p = .02$ ) and Neglect ( $r = .13, p = .01$ )



subscales of the PMR, suggesting that older participants reported experiencing a greater frequency of these parental behaviours in childhood. Age was also significantly associated with scores on the FVSQ ( $r = .10, p = .04$ ), indicating that older participants reported a greater proportion of physical abuse in childhood. Similarly, participants with a history of CSA were more likely to be older than those who had not experienced this form of victimization (Welch's  $t [46] = -2.42, p = .02$ ). Levene's test for equality of variances was significant ( $F [2, 390] = 18.1, p < .001$ ), indicating unequal variances between groups; therefore, Welch's  $t$  test was used.

Age was also positively correlated with functional impairment ( $r = .11, p = .03$ ), indicating that older participants reported increased difficulties in their daily functioning due to their physical health status. Age was not related to the other health measures or to any measures of adult attachment.

**Ethnicity.** Significant differences between ethnic affiliation and a number of health measures were obtained. Given small cell sizes, ethnicity was collapsed into categories of Caucasian, Asian, and Other ethnic affiliation. One-way ANOVA showed a significant association between ethnicity and general health symptoms,  $F (2, 390) = 5.47, p = .005$ . The Games-Howell post hoc test, a comparison procedure that offers the best performance when group sizes differ and population variances are suspected to be unequal (Field, 2009), determined that the only significant difference was between Asian ( $M = 40.0, SD = 21.8$ ) and Caucasian ( $M = 50.9, SD = 24.1$ ) participants, with Asian individuals reporting less general physical health concerns. Similar findings were also observed in a one-way ANOVA between ethnicity and reproductive health symptoms,  $F (2, 390) = 12.02, p < .001$ , where the Games-Howell test showed that Asian participants ( $M = 31.0, SD = 5.15$ ) reported significantly less reproductive health concerns than Caucasian ( $M = 35.6, SD = 6.71$ ) participants. Furthermore, a significant association was found between ethnicity and illness behaviour,  $F (2, 390) = 4.35, p = .014$ . Post-hoc testing revealed that Caucasian participants ( $M = 54.2, SD = 13.4$ ) reported more illness behaviours than participants from other or mixed ethnic backgrounds ( $M = 48.7, SD = 13.9$ ).

Lastly, a one-way ANOVA demonstrated a significant relationship between ethnic affiliation and childhood physical abuse,  $F(2, 379) = 9.53, p < .001$ . The Games-Howell test showed that Asian participants ( $M = 1.48, SD = 2.92$ ) had elevated scores on the measure of CPA compared to Caucasian participants ( $M = 0.44, SD = 1.37$ ). Ethnicity was unrelated to all other abuse, attachment, and health measures.

**Country of origin.** A significant association was found between country of origin (e.g., whether born in Canada or elsewhere) and several health variables. Participants who were born in Canada had higher scores on the measure of general physical health concerns than those who were born in any other country,  $t(391) = 3.56, p < .001$ . Similarly, participants born in Canada also reported significantly more reproductive health symptoms than participants coming from other countries,  $t(391) = 3.54, p < .001$ . No associations were found between country of origin and the victimization or attachment variables.

**Primary language.** Participants' primary language (i.e., the language they use most or feel most comfortable with) was collapsed into three groups for analytic purposes: English, French/Spanish, and Asian/East Indian languages (i.e., Mandarin Chinese, Punjabi). General health symptoms were found to be associated with primary language ( $F[2, 390] = 5.71, p = .004$ ), where the Games-Howell test showed that English speakers ( $M = 49.9, SD = 24.1$ ) reported more symptoms than either French/Spanish ( $M = 31.9, SD = 22.2$ ) or Asian/East Indian language speakers ( $M = 38.6, SD = 21.6$ ). Reproductive health symptoms were also significantly associated with primary language,  $F(2, 390) = 10.31, p < .001$ . Post hoc testing found significant differences between Asian/East Indian language speakers ( $M = 28.9, SD = 4.37$ ) and those who spoke either English ( $M = 35.2, SD = 6.90$ ) or French/Spanish ( $M = 35.6, SD = 7.49$ ), where Asian and East Indian language speakers reported less reproductive health symptoms than speakers of these other languages. No significant associations were found for the remaining abuse, attachment or health measures.

**Socioeconomic status.** Current socioeconomic status of participants was measured in terms of annual income; while data was collected regarding participants' level of education, there was very little variability given that undergraduate students comprised the sample. Earning categories were collapsed into two groups (less than \$10,000 annually and more than \$10,000 annually) due to limited responses in upper earning categories. Regardless, annual income was found to be unrelated to all variables of interest.

**Parental socioeconomic status.** Data on parental socioeconomic status, operationalized as annual income when participants were 17 years old, acted as an indicator of the environment in which participants were raised. Earning categories were collapsed into three groups based on response frequency: less than \$50,000 annually, between \$50,000 and \$100,000 annually, and over \$100,000 annually. Parental socioeconomic status was found to be significantly related to several abuse variables, notably psychological neglect ( $F [3, 358] = 6.29, p < .001$ ). Post-hoc analyses revealed that participants whose parents earned less than \$50,000 annually ( $M = 31.9, SD = 31.3$ ) reported more psychological neglect than either those whose parents earned between \$50,000 and \$100,000 ( $M = 26.5, SD = 22.2$ ) or those whose parents earned more than \$100,000 annually ( $M = 15.1, SD = 19.2$ ). Chi square analyses also indicated that the percentage of individuals with a history of CSA differed by levels of parental income, with those from lower-income families reporting proportionally more CSA ( $\chi^2 [3, N = 390] = 9.08, p = .028$ ). No other significant associations were found between parental income and the variables of interest.

The highest level of education attained by participants' parents was also examined as a potential indicator of parental socioeconomic status. Categories were collapsed into 3 groups: some high school or trade diploma, some university, or an advanced university degree (e.g., Master's, M. D.). However, parental education was found to be unrelated to all variables of interest.

**Relationship status.** Based on their responses to two related demographic questions,

participants were grouped into four categories pertaining to their relationship status: single, in a relationship, married/living together, and separated/divorced/widowed. Relationship status was found to be significantly related to a number of attachment variables, notably the Insecure Attachment subscale of the TSI-2 ( $F [3, 389] = 5.56, p = .001$ ), the Other dimension of the RQ ( $F [3, 389] = 5.17, p = .002$ ), and the Avoidance subscale of the ECR ( $F [3, 389] = 22.6, p < .001$ ). For the TSI-2 Insecure Attachment subscale, post-hoc testing showed that individuals who were single ( $M = 20.7, SD = 6.58$ ) reported more attachment insecurity than those who were in romantic relationships ( $M = 18.3, SD = 5.87$ ). Similarly, results for the RQ Other subscale showed that participants who were living with or married to a partner ( $M = -1.54, SD = 3.75$ ) had less negative views of others than either those who were single ( $M = 0.85, SD = 3.98$ ) or in romantic relationships ( $M = 0.13, SD = 3.71$ ). The same was true for the ECR Avoidance measure, where those who were married or living together ( $M = 39.4, SD = 15.1$ ) reported less avoidance than those who were single ( $M = 60.0, SD = 17.6$ ) or in a relationship ( $M = 49.1, SD = 18.2$ ). Overall, attachment insecurity and avoidance appeared to be lower among those who were married or in common-law relationships (recall that the RQ Other dimension is analogous to the ECR avoidance subscale).

Relationship status was also linked to several health variables, notably general health symptoms ( $F [3, 389] = 3.40, p = .018$ ) and reproductive health symptoms ( $F [3, 389] = 2.63, p = .05$ ). The Games-Howell test revealed that participants who were married or living with their partners ( $M = 57.6, SD = 24.6$ ) had more general health symptoms than those who were in romantic relationships but not living together ( $M = 47.2, SD = 24.4$ ). While no significant differences between relationship status groups were obtained for reproductive health symptoms, married or common-law participants did have higher scores on this measure as well. Finally, the percentage of individuals with a history of CSA was greater among those who were married or living with their partners,  $\chi^2 [3, N = 390] = 9.19, p = .027$ .

**Sexual orientation.** Lastly, sexual orientation was found to be significantly related to a number

of abuse, health, and attachment variables. Participants who identified as lesbian, bisexual or other ( $n = 21$ ) had significantly greater scores on measures of child psychological abuse ( $t [369] = -4.08, p < .001$ ) and neglect (Welch's  $t [17] = -2.60, p = .02$ ) than heterosexual participants. Similarly, the percentage of individuals who had experienced CSA differed by their sexual orientation,  $\chi^2 [1, N = 390] = 10.78, p = .001$ , where half of the non-heterosexual participants reported experiencing CSA. In addition, non-heterosexual participants reported more illness behaviours on the IBI ( $t [391] = -1.96, p = .05$ ) and greater functional impairment on the FIS (Welch's  $t [21] = -6.01, p = .001$ ) than women who identified as heterosexual. Lastly, non-heterosexual participants had significantly elevated scores on measures of attachment insecurity, notably the Insecure Attachment subscale of the TSI-2 ( $t [391] = -4.57, p < .001$ ) and the Avoidance dimension of the ECR ( $t [391] = -2.18, p = .03$ ).

### **Associations among Measures**

Relationships among measures were examined using Pearson correlations with the exception of the CSA variable, where independent-samples t-tests were used to account for the dichotomous nature of this measure. Correlations among variables are presented in Table 4; only significant associations are discussed below.

**Childhood victimization measures.** Pearson correlations were significant between the measures of neglect, psychological maltreatment, and physical abuse, ranging from  $r = .35$  to  $r = .63$ . Individuals who scored higher on the Neglect and/or Psychological Abuse subscales of the PMR were more likely to score higher on the CPA measure of the FVSQ, indicating that increased severity and/or frequency for one form of child abuse is associated with similar increases in other forms of abuse. Sexual abuse was also found to be significantly associated with physical abuse (Welch's  $t [45] = -2.04, p = .05$ ), psychological maltreatment (Welch's  $t [46] = -2.28, p = .03$ ), and neglect ( $t [357] = -2.16, p < .03$ ). Overall, each form of childhood victimization was significantly related to the incidence of all other forms of abuse measured, indicating the presence of multi-type abuse.

Table 4. *Correlations between Child Psychological Abuse, Neglect, Physical Abuse, Health, and Attachment Variables*

Variable	1	2	3	4	5	6	7	8	9	10	11
1. CPA	–										
2. Psychological Abuse	.50**	–									
3. Psychological Neglect	.35**	.63**	–								
4. General Health	-.04	.13*	.08	–							
5. Reproductive Health	.04	.25**	.16**	.45**	–						
6. Illness Behaviour	.04	.09	.03	.21**	.21**	–					
7. Functional Impairment	.20**	.29**	.17**	.38**	.37**	.38**	–				
8. TSI-2 Insecure Attachment	.18**	.36**	.38**	.15**	.32**	.18**	.31**	–			
9. ECR Anxious	.05	.16**	.16**	.07	.19**	.29**	.17**	.56**	–		
10. ECR Avoidant	.08	.19**	.21**	.01	.07	.00	.13**	.45**	.22**	–	
11. RQ Self	.09	.21**	.16**	.05	.19**	.18**	.20**	.52**	.60**	.38**	–
12. RQ Other	-.04	.07	.12*	-.03	.06	-.03	.14**	.29**	-.03	.55**	.21**

Note. CPA = child physical abuse

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

**Physical health measures.** As discussed previously, physical health was measured in this study using inventories of general health symptoms, reproductive health symptoms, functional impairment, and illness behaviour. Elevated scores on these measures indicate an increase in physical health concerns. Positive, significant correlations (ranging from  $r = .21$  to  $r = .45$ ) were obtained between all measures, indicating that increases in physical health symptoms are associated with similar increases in functional impairment and/or illness behaviour.

**Attachment measures.** Attachment anxiety and avoidance were measured using the appropriate dimensions of the ECR, the RQ, and the TSI-2 Insecure Attachment subscale, where elevated scores indicate an increase in attachment insecurity. The TSI-2 Insecure Attachment subscale was significantly correlated with all other measures of attachment anxiety and avoidance, ranging from  $r = .29$  to  $r = .56$ . Furthermore, the anxiety and avoidance dimensions of the ECR and the RQ were significantly, positively correlated with each other, with the exception of the ECR Anxiety and RQ Other subscales, which were uncorrelated.

**Childhood victimization and physical health measures.** Significant positive correlations were found between the psychological maltreatment variable and the measures of general health symptoms, reproductive health symptoms, and functional impairment. CPA was also positively associated with functional impairment. In addition, neglect was significantly correlated with reproductive health symptoms and functional impairment. Lastly, CSA was associated with general health symptoms, ( $t [388] = -3.53, p < .001$ ), reproductive health symptoms (Welch's  $t [50] = -2.83, p = .01$ ), and functional impairment (Welch's  $t [48] = -3.49, p = .001$ ).

**Childhood victimization and attachment measures.** Scores on measures of CPA, CPM, and neglect were significantly positively correlated with the TSI-2 Insecure Attachment subscale, ranging from  $r = .18$  to  $r = .38$ . In particular, neglect was associated with all other measures of adult attachment insecurity. Psychological abuse was found to be significantly associated with ECR Anxiety,

Avoidance, and the RQ Self subscale, while CSA was unrelated to any of the attachment variables.

**Physical health and attachment measures.** All measures of physical health were found to be positively correlated with the TSI-2 Insecure Attachment subscale, ranging from  $r = .15$  to  $r = .32$ . In addition, both reproductive symptoms and illness behaviour were associated with the ECR Anxiety and RQ Self subscales. Lastly, functional impairment was significantly related to both dimensions of the ECR and the RQ.

### **Structural Equation Model Testing**

Finally, structural equation model testing was conducted to examine the validity of the proposed mediational model, where adult attachment insecurity was theorized to mediate the relationship between childhood victimization and adult physical health (see Figure 1). Structural equation modeling (SEM) tests how well such models fit the data and a number of indices are available to quantify the goodness-of-fit. First, the chi-square test of model fit tests the discrepancy between the covariances present in the data and the factor covariances specified by the model under study (Byrne, 2012). A non-significant chi-square is desirable, as probability increases represent a better fit between hypothesized model and existing data. However, the chi-square test presumes multivariate normality; the Satorra-Bentler scaled chi square incorporates the model, the estimation method, and the sample kurtosis values into its calculation to account for any violation of the normality assumption (S-B  $\chi^2$ ; Satorra & Bentler, 2001). Research has found that the S-B  $\chi^2$  is the most reliable statistic for evaluating structural models under a range of distributions and sample sizes (e.g., Curran, West, & Finch, 1996). Despite this correction, the statistic remains sensitive to sample size and large samples frequently tend to produce significant chi-square values (Jöreskog & Sörbom, 1993). As a result, other comparative fit indices are often included.

The comparative fit index (CFI) measures change in model fit by comparing the hypothesized model with a nested baseline model that assumes total independence between variables (Byrne, 2012).



Values for the CFI are normed, ranging from 0 to 1.00, with good model fit indicated by values of .95 or greater (Hu & Bentler, 1999). The Tucker-Lewis fit index (TLI) similarly measures the proportional improvement in model fit but also incorporates a penalty function for over-identified models (i.e., models including parameters that contribute little to improvement in model fit; Byrne, 2012). Obtained values for the TFI are interpreted similarly to the CFI, with values close to 1.0 indicating good model fit. By contrast, the root mean square error of approximation (RMSEA) can be considered a measure of *badness of fit*, as this statistic estimates the lack of fit of the theoretical model as compared to an optimally-fitted model with unknown parameter values (Byrne, 2012). Lower values are desirable, with values below .07 indicating a well-fitting model; 90% confidence intervals (CI) surrounding the RMSEA value are also reported in order to determine the precision of the estimate (MacCallum, Browne, & Sugawara, 1996; Steiger, 2007). Lastly, the standardized root mean square residual (SRMR) represents the average difference between the sample variance-covariance matrix and the estimated population variance-covariance matrix, averaged across all standardized residuals; obtained values range from 0 to 1.00. Well-fitting models obtain SRMR values of .05 or less, while values up to .08 are deemed acceptable (Byrne, 2012; Hu & Bentler, 1999).

Chi-square difference tests, calculated using the S-B  $\chi^2$  in a procedure outlined by Satorra and Bentler (2001), were used to compare the fit of alternate models. Nonsignificant difference tests indicate that there are similar levels of fit across models. A robust form of maximum likelihood estimation (MLM) was used in order to account for any violation of the normality assumption, thus producing the S-B  $\chi^2$  (Byrne, 2012).

**Measurement model testing.** The proposed measurement model consisted of three latent variables. The latent variable for childhood victimization included psychological maltreatment, neglect, physical abuse, and sexual abuse; the adult attachment insecurity factor was comprised of the ECR Anxiety and Avoidance subscales, the TSI-2 Insecure Attachment subscale, and the RQ Self and

Other subscales. Lastly, the adult physical health concerns factor consisted of general health symptoms (HSC), reproductive health symptoms (RHQ), functional impairment (FIS), and illness behaviour (IBI; see Figure 2 for an illustration of the final measurement model). For the purposes of the measurement model, one regression coefficient per latent factor was fixed to a value of one in order to provide a metric for the latent variables. Initial model fit indices suggested that the model was not a good fit for the data, S-B  $\chi^2 = 281.76$  (62),  $p < .01$ , CFI = .77, TFI = .71, RMSEA = .1, CI = .09 – 0.11, SRMR = .08. In addition, the scaling correction factor produced by MLM estimation was 1.200, suggesting that the sample data did indeed violate the normality assumption (Byrne, 2012).

Model modification indices suggested substantial fit improvement with the addition of several residual covariance parameters for attachment and health variables. A total of 5 additional covariance parameters were specified, added individually to the model and examined for significant changes in fit via S-B  $\chi^2$  difference testing at each step (Byrne, 2012). Theoretical justification for these residual covariances was present for all parameter additions (Jöreskog, 1993). For the attachment variables, residual variances were allowed to covary between RQ Self and ECR Anxiety, as well as RQ Other and ECR Avoidance, since similar theoretical constructs underlie both pairings and error would likely be caused by the same source. A covariance parameter was also specified between ECR Anxiety and TSI2 Insecure Attachment, again due to the nature of the attachment construct. Residual variances were permitted to covary between the general health and reproductive health variables due to conceptual overlap, as the general health inventory includes items specific to genital and reproductive symptoms. Lastly, a covariance parameter was identified between the ECR Anxiety and illness behaviour variable, which could potentially indicate a pattern of anxious responding (e.g., individuals wanting to demonstrate how much their illness affects their behaviours as well as how anxious they are in relationships).

Thus, the final measurement model consisted of three latent factors and five residual covariance

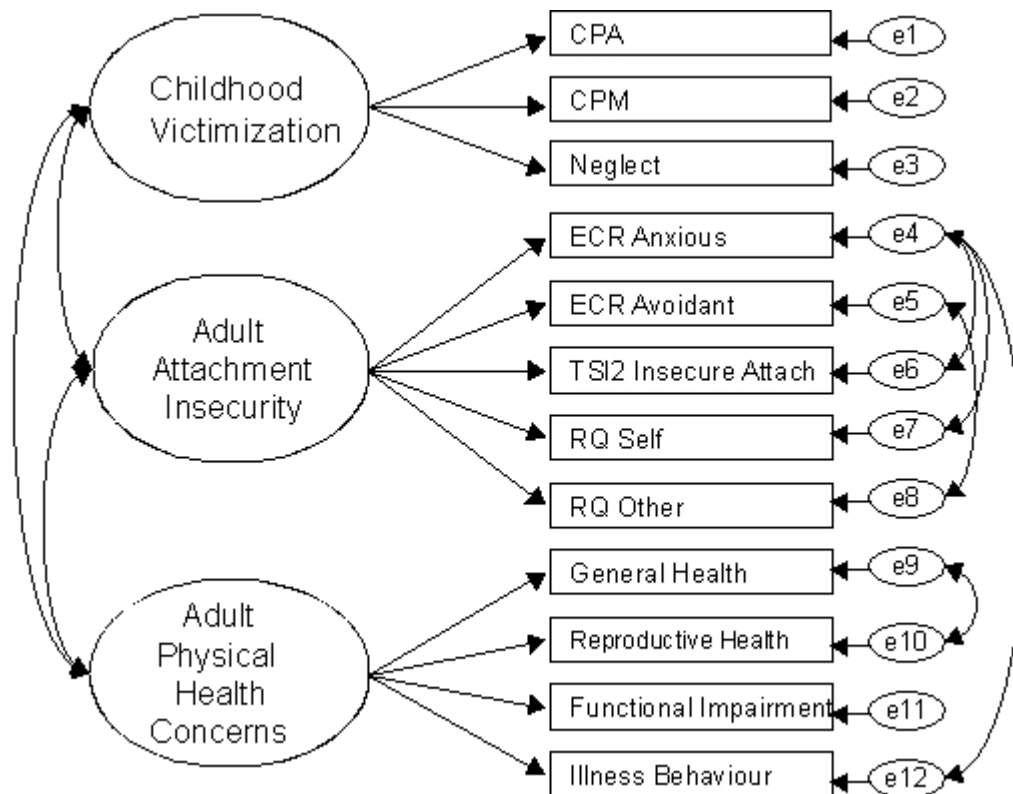


Figure 2. Final measurement model. Note added residual covariances (indicated by bidirectional arrows) between several attachment and health variables

parameters. All indicators loaded significantly onto their respective factors with the exception of child sexual abuse ( $\beta = .13$ ), which was subsequently dropped from the measurement model to improve parsimony (Byrne, 2012). Model fit indices showed that the model fit the data well, S-B  $\chi^2 = 96.35$  (46),  $p < .01$ , CFI = .95, TLI = .92, RMSEA = .06, CI = .04 - .07, SRMR = .05. Figure 2 illustrates the final model according to SEM convention, where latent variables are indicated by circles and measured variables are denoted by rectangles. The e symbol denotes residual or error variance per observed variable.

**Model 1: Direct effects pathway between childhood victimization and insecure attachment.** The first model being tested investigated the direct effects of a history of childhood victimization on insecure attachment in adulthood. It was hypothesized that women with a history of child maltreatment (CPM, neglect, and CPA) would endorse more avoidant and anxious attachment

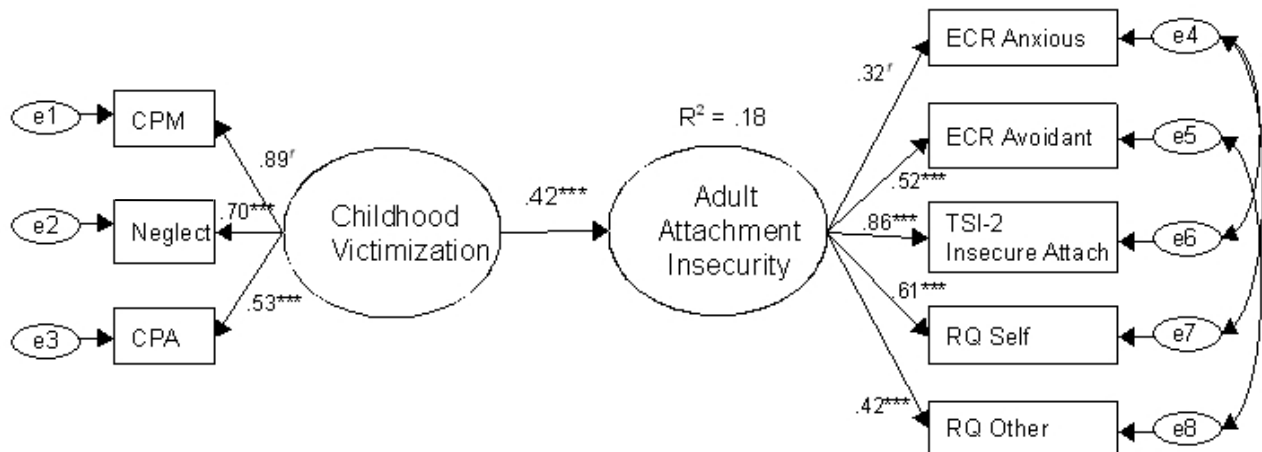


Figure 3. Model 1: Assessment of the direct impact of childhood victimization on insecure attachment in adulthood.

<sup>f</sup>fixed path loadings; \*\*\*  $p < .001$

behaviours in adulthood. As shown in Figure 3, this model fit the data reasonably well, S-B  $\chi^2 = 43.94$  (16),  $p = .0001$ , CFI = .96, TFI = .93, RMSEA = .07, CI = .05 – .1, SRMR = .05. Note that all pathways are labelled with standardized coefficients and significant pathways are denoted by asterisks (\*). Child maltreatment was found to be significantly related to observed insecure attachment in adulthood,  $\beta = .42$ ,  $p = .001$ , and accounted for 18% of the variance in adult attachment insecurity. Similar to the measurement model, all indicators for both the childhood maltreatment factor and the attachment insecurity factor were significant.

### Model 2: Direct effects pathway between childhood victimization and adult physical

**health.** Second, it was hypothesized that women with a history of childhood victimization would also experience an increased number of physical health concerns, in terms of general health symptoms, reproductive health symptoms, functional impairment and illness behaviour. Fit indices suggested that the model fit the data quite well, S-B  $\chi^2 = 18.78$  (12),  $p = .09$ , CFI = .98, TFI = .96, RMSEA = .04, CI = .00 – .07, SRMR = .04, as indicated in Figure 4. Childhood victimization was found to be significantly related to adult physical health concerns,  $\beta = .33$ ,  $p < .001$ . The experience of childhood victimization was shown to account for 11% of the variance in adult physical health.

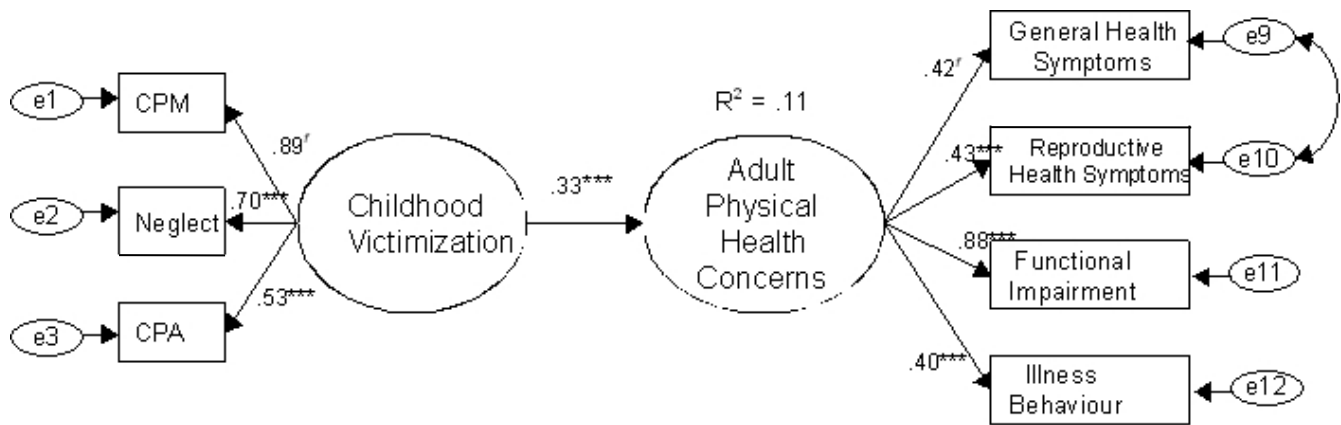


Figure 4. Model 2: Assessment of the direct impact of childhood victimization on physical health concerns in adulthood.

<sup>f</sup>fixed path loadings; \*\*\*  $p < .001$

### Model 3: Direct effects pathway between insecure attachment and adult physical health.

Third, it was expected that insecure attachment in adulthood would be related to an increase in physical health concerns in women. Once again, good model fit was indicated for this direct effects pathway,  $S-B \chi^2 = 61.94 (21), p < .001, CFI = .95, TFI = .92, RMSEA = .07, CI = .05 - .09, SRMR = .05$ , as illustrated in Figure 5. The pathway between adult insecure attachment and physical health concerns was significant,  $\beta = .44, p < .001$ , and insecure attachment accounted for 19% of the variance in adult physical health. Furthermore, all indicators for adult physical health concerns were significant.

**Model 4: Mediation model.** Lastly, it was hypothesized that insecure attachment in adulthood would mediate the relationship between childhood victimization and physical health concerns in adulthood. Since the previous three direct effects models were significant (i.e., significant pathways had been found between predictor-mediator, mediator-outcome and predictor-outcome), it was deemed acceptable to proceed with testing of the mediational model (Frazier, Tix, & Barron, 2004). Fit indices for this model were good,  $S-B \chi^2 = 96.34 (46), p < .001, CFI = .95, TFI = .92, RMSEA = .06, CI = .04 - .07, SRMR = .05$ . Path coefficients indicated that childhood victimization was significantly related to insecure attachment in adulthood, which was in turn linked to physical

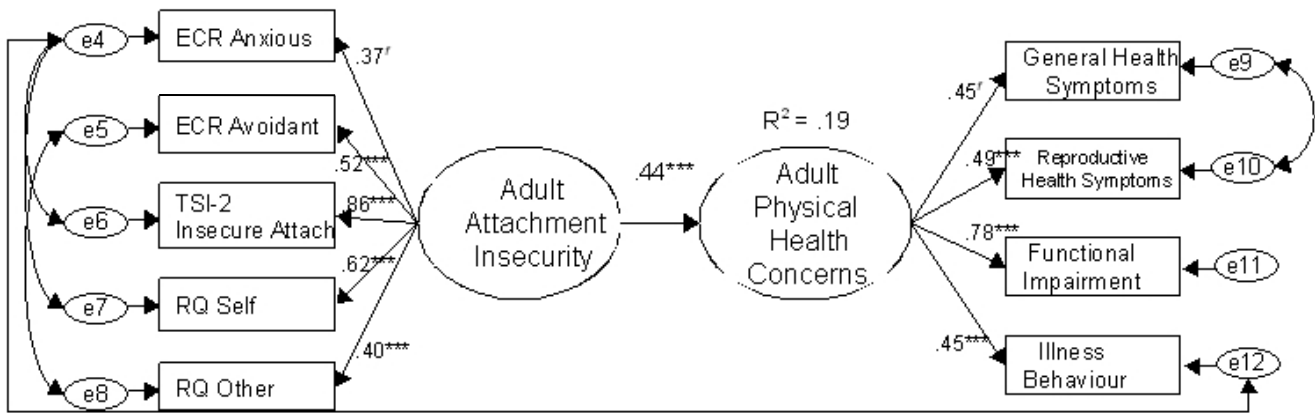


Figure 5. Model 3: Assessment of the direct effects pathway between insecure attachment and physical health.

<sup>f</sup>fixed path loadings; \*\*\*  $p < .001$

health concerns in adulthood (see Figure 6); overall, the model accounted for 23% of the variance in adult physical health concerns. The Sobel test, a measure of whether the hypothesized mediator significantly carries the influence of the independent variable to the outcome variable, indicated a reliable indirect path between maltreatment and physical health through insecure attachment ( $p < .05$ ; MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002).

Full mediation is demonstrated when the direct pathway between predictor and outcome (i.e., childhood victimization and physical health) adds no improvement to model fit when the mediator is included in the model (Fritz & MacKinnon, 2007). In order to test for full mediation, the fit of Model 4b (where the pathway between victimization and health was constrained to 0) was compared to the fit of Model 4. The S-B chi-square difference test was significant, S-B  $\chi^2$ DIF(1) = 4.02,  $p < .05$ , indicating that the constrained model provided a poorer fit to the data than the partially-mediated model, S-B  $\chi^2$ (47) = 101.18,  $p < .001$ , CFI = .94, TLI = .92, RMSEA = .06, C.I. = .04 - .07, SRMR = .05. As a result, insecure attachment can be considered to act as a partial mediator in the relationship between childhood victimization and adult physical health concerns.

Given the significant associations between certain demographic variables and observed

variables associated with the predictor and outcome variables, the final model was re-run with age, parental income, and ethnicity specified as covariates for both predictor and outcome. However, none of these demographic variables were significantly associated with either the childhood maltreatment factor or the adult physical health factor. Furthermore, all other pathways remained significant and model fit stayed relatively consistent despite the inclusion of these parameters. Thus, adult attachment insecurity continues to act as a partial mediator after controlling for the influence of demographic variables.

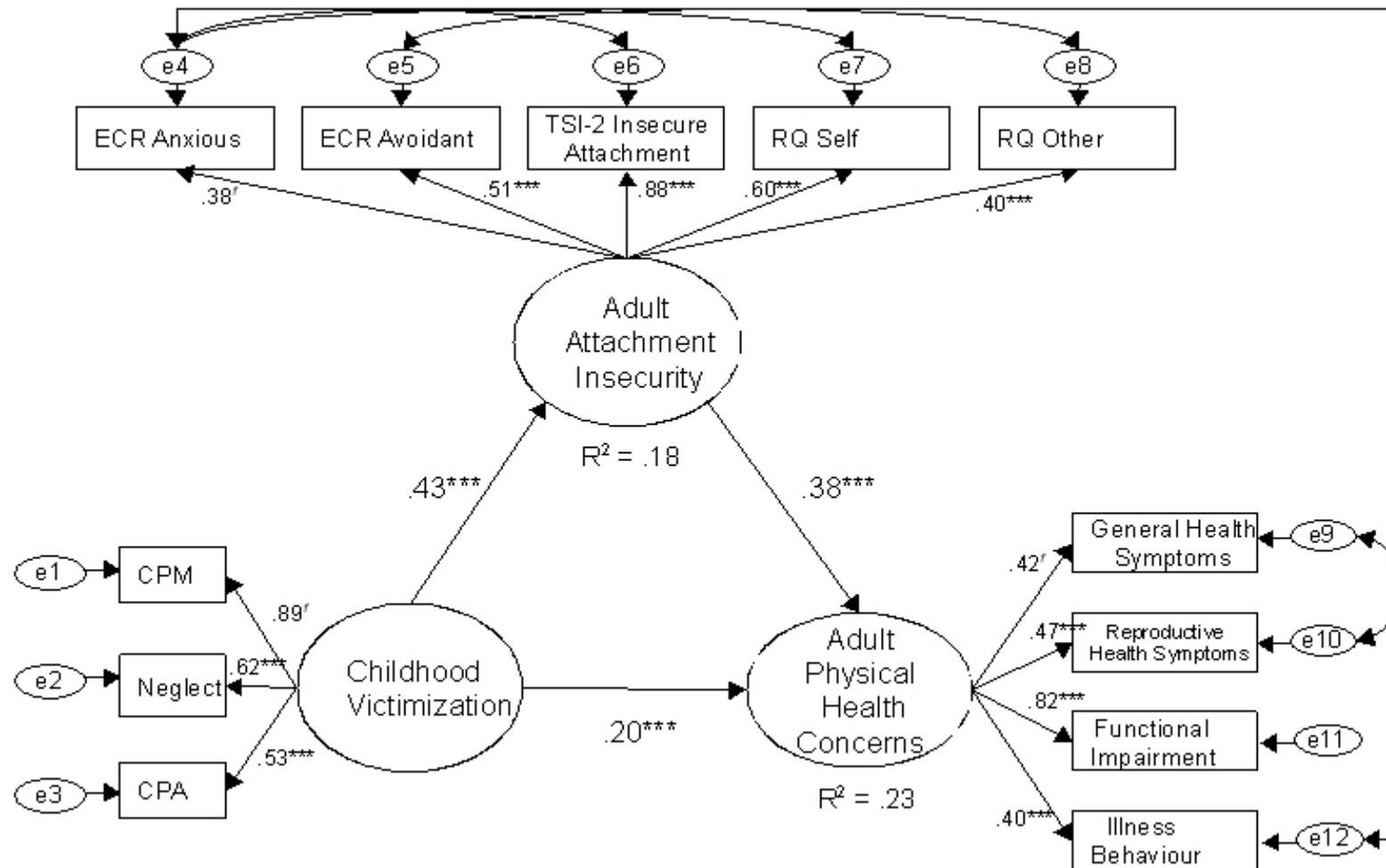


Figure 6. Model 4: Assessment of the mediational role of insecure attachment on the relationship between childhood victimization and adult physical health.

<sup>f</sup>fixed path loadings;\*\*\*  $p < .001$



## Discussion

The goal of this investigation was to examine the potential mediating role of adult attachment insecurity in the relationship between childhood maltreatment and adult physical health concerns in women. As expected, a history of childhood maltreatment was predictive of later health status among women. Childhood victimization was also associated with more insecure attachment patterns in adulthood, which were in turn linked to increases in health concerns. Overall, adult attachment insecurity was found to account for part of the relationship between childhood maltreatment and physical health.

### Prevalence Rates

In order to contextualize the current findings, it is important to compare established prevalence rates of childhood victimization with those obtained from this particular sample. Prevalence rates of maltreatment in the sample were largely similar to those reported by studies with similar population characteristics. While the measure of psychological abuse and neglect (PMR; Briere, 2006; Briere, Godbout, & Runtz, 2012) does not include a cut-off score indicating the presence or absence of these forms of maltreatment, obtained mean scores on this measure were similar to those presented in the validation study. In terms of psychological abuse, the current sample obtained mean scores of 13.4 (SD = 13.0) for maternal maltreatment and a mean of 12.2 (SD = 11.8) for paternal maltreatment; in the validation study for the PMR, the reported scores were 14.6 (SD = 12.6) and 13.2 (SD = 12.1), respectively. Mean scores on the neglect subscale were much lower in both the current sample and the validation study. The current sample obtained mean scores of 8.8 (SD = 12.3) for maternal neglect and a mean of 10.1 (SD = 12.7) for paternal neglect, whereas the parallel scores reported in the validation study were 8.0 (SD = 10.8) and 9.8 (SD = 12.6). While the development of a cut-off score for the PMR would be helpful in comparing scores with established prevalence rates, these findings depict comparable levels of psychological abuse and neglect within the current sample.

The operationalized definitions for both physical and sexual abuse employed in this study correspond to current laws (Department of Justice Canada, 2001/2010). Child physical abuse was defined in terms of physical harm and threat to one's life, which is prosecuted in Canada under the heading of assault; in the current study, physical abuse was reported by 23.2% of participants. By comparison, population-based prevalence studies have found rates of physical abuse among women to be at 19.5% in an American sample and 21.1% in a Canadian sample (Briere & Elliott, 2003; MacMillan et al., 1997). Thus, the incidence of physical abuse in the current study was relatively consistent with published findings.

Child sexual abuse was defined in terms of non-consensual sexual contact prior to the age of 14; while current laws dictate that the age of consent is 16, the close in age exemptions indicate that consent remains an essential part of the legal sexual abuse definition. As a result, 11.2% of participants in the current study reported that they had been sexually abused in childhood. By contrast, several recent meta-analyses of child sexual abuse prevalence across community and student samples worldwide found prevalence rates of 18.0% and 19.2% among women (Pereda, Guilera, Forns, & Gomez-Benito, 2009; Stoltenborgh, van IJzendoorn, Euser, and Bakermans-Kranenburg, 2011). However, both meta-analyses allowed for an age cut-off of 18 across studies and increased age cut-offs have been associated with elevated reported prevalence rates (Goldman & Padayachi, 2000). Furthermore, the incorporation of community samples into the meta-analysis would also likely increase reported prevalence, as the broader range of demographic characteristics represented in community samples incorporates more risk factors for sexual abuse (Black, Heyman & Slep, 2001). Indeed, an older meta-analysis of childhood sexual abuse among college students found lower prevalence rates when contact victimization was specified (i.e., 11% [Klein-Trull, 1990, as reported in Rind, Tromovitch, & Bauserman, 1998]). Thus, the prevalence of child sexual abuse is as expected in the current sample of undergraduate students.

## **Childhood Maltreatment and Insecure Adult Attachment**

As hypothesized, a significant relationship was found between childhood victimization and adult attachment insecurity. Women with histories of physical abuse, psychological abuse and/or neglect are more likely to have more avoidant and anxious attachment behaviours in their later romantic relationships. This finding is consistent with other research results which suggest that insecure attachment styles are formulated in childhood as a result of abuse experiences (e.g., Baer & Daly-Martinez, 2006). Styron and Janoff-Bulman (1997) illustrated this trajectory in their work, noting that individuals with a history of abuse reported more attachment insecurity in both childhood and adulthood compared to non-abused controls. While research has demonstrated that insecurely-attached infants are more likely to become securely attached over time, even in high-risk environments, the experience of maltreatment appears to uniquely maintain insecure attachment patterns into adulthood (Weinfield, Sroufe, & Egeland, 2000). In order to ensure survival, attachment styles are adaptive by necessity (Bowlby, 1982); it only seems plausible that a child would employ avoidant or anxious behaviours should their parental figures not function as a source of comfort or security. For example, a child who is being physically abused may employ an avoidant attachment strategy (i.e., withdrawing or limiting emotional displays) in order to develop coping mechanisms that do not rely on the abusive parent.

Attachment insecurity in adulthood can be expressed in a number of relational contexts; research findings indicate that adult survivors of childhood maltreatment are more likely to experience difficulties in their social and romantic relationships (e.g., Brennan & Shaver, 1995). A prospective study by Colman and Widom (2004) found that adults with a history of childhood maltreatment were more likely to have a history of separation or divorce in their intimate relationships; furthermore, female survivors of childhood abuse were more likely to have negative perceptions of their intimate partners. Similarly, Mullen and colleagues (1996) found that women with histories of childhood

maltreatment reported significantly more problems in their intimate relationships. Specifically, physical abuse was linked to later marital breakdown and emotional maltreatment was associated with more negative attributions of later romantic partners. Attachment insecurity likely contributes to the incidence of these difficulties in the lives of abuse survivors, as fears of rejection (i.e., attachment anxiety) or of closeness (i.e., attachment avoidance) would affect both perceptions and behaviour within an intimate relationship.

It is notable that CSA did not load significantly onto the measurement model and was subsequently dropped from the model testing procedures. While CSA was significantly associated with other forms of abuse in this sample, a number of attributes distinguish this form of victimization. First, CSA was perpetrated largely by known older acquaintances (e.g., babysitters) and by strangers in this sample, whereas physical abuse, psychological abuse and neglect occurred at the hands of parental figures. Similarly, while a negative relational environment is produced between parent and child in other abusive contexts, parents were rarely the perpetrators of CSA within this sample and the development of a negative parent-child relationship seems a less-likely outcome (Tarabulsy et al., 2008). Lastly, it is extremely difficult to quantify the severity of CSA in a continuous measure, hence the wide variety of definitions and measures available. Defining the relative severity of a single incident involving penetrative, violent intercourse versus repeated instances of unwanted genital contact is undoubtedly problematic. As a result, CSA was assessed by its presence or absence in the current study, which contrasts with continuous measurement methods for other forms of abuse.

### **Childhood Maltreatment and Adult Physical Health**

Consistent with the research literature, childhood maltreatment was linked to increases in physical health concerns in adulthood. Women with histories of psychological maltreatment, neglect, and/or physical abuse were more likely to have greater general physical health symptoms, reproductive health symptoms, functional impairment and illness behaviour. To be precise, women's perceptions of

their physical health, as expressed by their reported symptoms, the degree to which their health affects their daily functioning, and their behaviours expressing their health status, were significantly linked to a history of childhood maltreatment. These results contribute to the expanding set of findings that link childhood victimization to discrete physical health outcomes (e.g., Romans, Belaise, Martin, Morris, & Raffi, 2002; Springer, Sheridan, Kuo, & Carnes, 2007). For example, a recent meta-analysis by Wegman and Stetler (2009) found a significant association between childhood victimization and physical health across 25 studies; in particular, the researchers found the largest effect sizes for neurological symptoms, followed by respiratory problems, cardiovascular disease, and gastrointestinal symptoms.

However, many of these findings examine the influence of a unique type of childhood maltreatment, often sexual abuse, which can be problematic as multi-type abuse is present in a significant proportion of cases (e.g., Trocmé et al., 2010). The methodology of the current study allows for the examination of multiple types of abuse in developing a directional model for this relationship, while correlational findings can provide some insight into the unique role of each abuse type. Psychological maltreatment was significantly correlated with general health symptoms, reproductive health symptoms, and functional impairment; physical abuse was also correlated with functional impairment. However, the elevated correlations between abuse variables signify that there is little variance to be accounted for in the remaining correlations with health variables. Furthermore, it has been theorized that psychological maltreatment is a core component of child abuse in general, as psychological harm is a likely outcome for any form of abuse (Hart, Brassard, Binggeli, & Davidson, 2002). Hence, multivariate approaches offer the best and most ecologically valid approach to conducting outcome research on childhood maltreatment.

The majority of existing findings regarding physical health and childhood maltreatment also tend to focus on specific self-report symptom type and frequency, rather than investigating how ill

health is expressed behaviourally and functionally. Studies of functional impairment in adult survivors of childhood victimization have been performed in research related to psychopathology; findings from the National Comorbidity Survey Replication (NCS-R) indicate that childhood adversities, particularly maladaptive family environments, are directly associated with functional impairment as a result of mental illness (McLaughlin et al., 2010). The current study provides support for the inclusion of functional impairment and illness behaviour into the general construct of physical health in women; in other words, women's health is comprised not only by objective symptoms but by the subjective, personal understanding of how these symptoms affect one's daily life (e.g., Sullivan, 2002).

### **Adult Attachment Insecurity and Physical Health Outcomes**

Adult women who showed increased attachment anxiety and avoidance were more likely to have increased general health symptoms, reproductive health symptoms, functional impairment, and illness behaviour. While there is support for this relationship in the short term (e.g., children displaying insecure attachment behaviours are more likely to have increased health concerns; Feeney, 2000), there is little research into this relationship in terms of adult attachment. The current findings provide support for the few studies that do demonstrate associations between adult attachment and physical health in community samples (e.g., McWilliams & Bailey, 2010). There is much more support for this relationship among studies using clinical samples; for example, patients in primary health care settings have been found to report more symptoms and show greater service utilization based on their degree of attachment insecurity (Ciechanowski, Walker, Katon, & Russo, 2002). Current results suggest that the relationship between adult attachment insecurity and physical health also holds true in a sample of female undergraduate students.

Proposed mechanisms of action for this relationship are linked to the dysfunction of the HPA axis, where the elevated stress-response patterns exhibited by insecurely attached individuals may predispose them to physical health concerns (Maunder & Hunter, 2001). This association has been

quantified through the study of a number of biomedical markers of stress-response, including salivary cortisol, differential blood pressure response, vagus nerve tone, and heart rate (see Maunder & Hunter [2008] for an overview). It has been suggested that women with avoidant patterns of attachment behaviour are particularly at risk due to excessive physiological strain; studies have shown that avoidant individuals exert significant effort at outwardly denying attachment needs and anxieties despite their physiological responses to the contrary, which results in ongoing levels of elevated autonomic arousal (e.g., Dozier & Kobak, 1992).

Insecure attachment patterns are also thought to inform coping mechanisms based on their relative efficacy at reducing stress; for example, insecure attachment styles have been linked to external rather than internal methods of affective regulation (Shaver & Mikulincer, 2008). However, the use of external coping methods such as substance use and disordered eating is also linked to health risk. Lastly, attachment behaviours have been shown to affect help-seeking behaviour and health service utilization, where it is theorized that anxious individuals display increased health-care usage and avoidant individuals seek health care less frequently (Hunter & Maunder, 2001). Correlational findings from the current study lend support to the existing literature; while all health variables were associated with the combined measure of attachment insecurity (i.e., the TSI-2 Insecure Attachment subscale), self-reported symptoms of reproductive health as well as illness behaviour were significantly associated with attachment anxiety only. In other words, it appears as though anxiously attached individuals report and behaviourally express more health concerns. However, functional impairment was associated with both anxiety and avoidance dimensions, indicating that avoidant individuals still experience significant difficulties in the activities of their daily lives as a result of their health status.

### **The Mediating Role of Adult Attachment Insecurity**

Insecure attachment in adulthood was found to be a partial mediator of the relationship between childhood victimization and adult physical health in women. In other words, attachment anxiety and

avoidance accounted for some – but not all – of the direct association between child maltreatment and physical health concerns in adulthood. Very little research has investigated potential mediating factors in terms of physical health; however, these findings are consistent with other studies of childhood maltreatment that have found attachment insecurity to act as a partial mediator of outcomes such as psychopathology, substance use, and psychological adjustment (e.g., Bifulco et al., 2006; Hankin, 2005; Limke, Showers, & Ziegler-Hill, 2010; Roche, Runtz, & Hunter, 1999). Physical health as an outcome has been neglected somewhat in the existing child maltreatment literature, which is surprising given similar biological findings associated with both childhood victimization and insecure attachment. Specifically, the over-activation of the HPA axis and an increased physiological reactivity to stress have been independently linked to both attachment and maltreatment, while increased perceived stress is known to be a significant predictor of poorer health outcomes (e.g., Heim et al., 2009a; Friedman & McEwan, 2004).

Insecure attachment behaviours could have significant long-term effects in the lives of female abuse survivors. The development of such patterns seems likely in environments where parents are not sources of comfort or security; as a result, alternative coping strategies would be adapted by necessity to suit the current context and increase the likelihood of survival (Bowlby, 1988). For instance, children suffering from neglect could employ avoidant strategies to cope with their lack of care, while those experiencing psychological maltreatment could use anxious strategies such as increased crying or attention-seeking, thus repeatedly attempting to elicit positive responses and physical proximity to their caregiver(s). While potentially adaptive in childhood, these relational styles may have a significant impact on the health of abuse survivors once they become adults.

Aside from the systemic biological changes identified in previous research, attachment insecurity is also associated with social isolation and/or anxiety, both of which have been shown to significantly affect physical health (Cacioppo et al., 2000; Cacioppo & Hawkley, 2003; Hazan &



Shaver, 1987; Vertue, 2003). In particular, social isolation is thought to result in less normative pressure to seek health care, as well as limiting informal sources of health information (Cohen, 2002). Limited social support or conflict in personal relationships has also been linked to depressed immune functioning across a number of studies (e.g., Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002). Thus, the anxious or avoidant relational styles of female abuse survivors are likely to have significant effects on their physical health via a number of biological and social mechanisms.

However, it is important to note that only partial mediation of the relationship between childhood maltreatment and adult physical health was demonstrated in this sample. A number of additional factors have been found to affect this temporal sequence in women; in particular, the presence of psychopathology has been strongly associated with both childhood maltreatment and later health concerns (e.g., Glaser, 2000; MacMillan et al., 2001; Prince et al., 2007). This interaction is considered in the current study as the TSI-2 measure of Insecure Attachment is derived from a global symptom inventory; one could possibly attribute its strong path loading in the structural model to its significant associations with psychological symptoms (Briere, 2011). Regardless, it is clear that women who develop insecure attachment patterns as a result of childhood victimization maintain maladaptive schemas for personal relationships that significantly affect their perceived physical health.

### **Limitations and Future Directions**

However, a number of limitations are also present in the current study. First, sample characteristics may hamper the generalizability of the findings across abuse survivors in general. Participants for the study were comprised entirely of undergraduate students, who are unlikely to exhibit long-term outcomes associated with childhood victimization due to their limited age range; in particular, chronic physical health conditions may not develop until later in life (Draper et al., 2008). However, physical health also declines as a simple function of age; thus, cross-sectional research with a more representative sample may still be insufficient at capturing the trajectory of physical health as a

function of childhood maltreatment. Undergraduate samples are also non-representative of the general population due to variations across a number of demographic characteristics, particularly in terms of elevated socioeconomic status during childhood and higher level of education. While the influence of these variables was tested during the evaluation of the structural model, the limited range of available data may also be affecting the non-significance of the demographics. In other words, employing a demographically-homogeneous sample restricts the range of demographic information available for analytic purposes, potentially masking true associations.

In addition, the sample was comprised exclusively of women; thus, findings may not hold true for male survivors of childhood maltreatment. While there is some evidence to indicate that there are few differences in long-term outcomes of childhood maltreatment for men and women, other findings suggest that differences in abuse type, rate of reporting, and sociocultural gender roles may influence the developmental trajectory for male survivors of abuse (Banyard, Williams, & Siegel, 2004; Romano & V. De Luca, 2001). The mechanisms of action linking childhood victimization and later health concerns may differ between men and women despite similarities in outcome. Similarly, while there are no gender differences in the distribution of attachment styles across the general population, the expression of attachment via relational behaviour appears to be influenced by gender and sociocultural expectations (Kirkpatrick & Davis, 1994). For instance, sociocultural norms dictate more distance and less emotional involvement in intimate relationships for men. Further studies could be undertaken to determine whether adult attachment plays a similar role in mediating the association between childhood maltreatment and physical health in men.

Several methodological limitations also exist in the current study. Primarily, the cross-sectional design signifies that causality cannot be inferred since the temporal sequence of events remains unknown (Briere, 1992b). Without controlling for the presence of genetic or developmental conditions, we cannot be sure whether physical health problems were preceded by childhood maltreatment. The

retrospective nature of the measures is also subject to recall bias, as current difficulties may affect participants' responses regarding their past maltreatment experiences and history of health concerns. However, it is important to note that the outcome of interest for this study was *perceived* physical health, or how the subjective understanding of women's physical health was lived and expressed. Thus, self-report measures provide insight into participants' interpretations of their lived experiences.

Finally, the SEM portion of the analysis resulted in post hoc measurement model fitting, where additional residual covariance parameters were specified. It is recommended that the subsequent results not be interpreted from a confirmatory factor analytic perspective (Byrne, 2012). However, the vast majority of model testing procedures across research contexts are likely to require model re-specification; the resulting final model can still remain useful and substantially meaningful in the context of theoretical and statistical significance (Anderson & Gerbing, 1988; Tanaka, 1993). Given the theoretical justification for the specification of the additional parameters in the current study, as well as the improvement in model fit from the inclusion of specified error covariances alone, the final measurement model does not represent a significant departure from the hypothesized structure. Regardless, cross-validation of the final structural model across additional samples drawn from the same population would be desirable in future studies.

Despite these limitations, the current study has a number of methodological strengths. In particular, the use of SEM allows for the incorporation of multiple types of abuse into a latent abuse history variable, thus avoiding the problems associated with statistically controlling or partialling abuse types in a regression analysis (Briere, 1992b). Similarly, the use of a latent variable for adult physical health status permits a more holistic conceptualization of women's health, where functional and behavioural outcomes are also included. In addition, while causality remains unknown, SEM allows for the specification of model directionality; in other words, the fit of the model to the data is also dependent on the degree of fit for the specified paths between latent variables. The strong fit for the

final structural model suggests that the data are consistent with the hypothesized trajectory.

Future research directions include the cross-validation of the final structural model across a variety of samples, particularly among men and older adults from the general population. Longitudinal research designs would address the problem of causality; however, ethical issues arise in studying ongoing instances of childhood maltreatment (Socolar, Runyan, & Amaya-Jackson, 1995). In addition, incorporating more objective measures of both childhood victimization (e.g., confirmed cases) and adult health (e.g., physician diagnoses) would aid in unravelling the associations between perceived and objective experience. Lastly, further investigation into the mechanisms by which attachment affects long-term outcomes in the lives of abuse survivors would provide increased insight as to how this trajectory can be affected.

### **Clinical Implications**

Findings from this study suggest that female survivors of childhood victimization are more likely to experience a variety of deleterious physical health concerns; however, attachment style and relational behaviour may provide some opportunity to affect the course of this relationship. Childhood maltreatment was found to contribute to perceived physical health in terms of symptom reporting, functional impairment, and illness behaviour for women, which has significant implications for the provision of primary health care services. Research has shown that the disclosure of abuse histories to physicians is linked to positive change in health care behaviours, particularly in terms of future help-seeking and compliance with treatment (Havig, 2008). Thus, facilitating a safe, open, and trusting environment to enable such disclosure is key. Similarly, enquiring as to a history of childhood maltreatment is essential to compiling a complete history of a patient, given the influence that maltreatment exerts on physical health. Furthermore, this study emphasized the importance of functional and behavioural elements in a holistic view of women's health. As a result, physicians should take the relative distress and day-to-day challenges experienced by their patients into account

during the diagnostic process.

Accordingly, mental health professionals who work with survivors of childhood victimization should also be cognizant of the role physical health concerns can play in the lives of their clients. Based on the specifics of each particular case, it may be helpful for mental health practitioners to employ an interdisciplinary approach by incorporating physical health into their treatment planning. In terms of initial assessment, this may require obtaining a comprehensive physical health history from a female client during the intake phase or referring a client for a general check-up prior to beginning treatment. Specific clients may also benefit from a referral to a medical specialist (e.g., a pelvic floor specialist in cases of sexual abuse and/or sex therapy); furthermore, the mental health practitioner could discuss the needs of the client with the health practitioner in order to make potentially-invasive diagnostic procedures as comfortable for the client as possible. The most effective treatment may involve the collaborative efforts of medical and mental health workers, whereby physical concerns and mental health issues are addressed simultaneously by the respective practitioners. Ruling out or treating existing physical health conditions in tandem with mental health treatment would provide the most comprehensive approach to addressing the collective impact of a history of childhood maltreatment.

In addition, findings supporting the mediating role of adult attachment imply some potential for effective intervention. Change in attachment style has been studied as an outcome in several intervention studies. Travis and colleagues (2001) found that nearly one quarter of their participants shifted from insecure to secure attachment styles over a course of time-limited dynamic psychotherapy. Some change in attachment style has also been reported in a study of transference-focused psychotherapy for clients with borderline personality disorder (Diamond, Stovall-McClough, Clarkin, & Levy, 2003). Thus, while further research into therapeutic interventions addressing attachment style is warranted, preliminary evidence suggests that attachment security can be strengthened during psychotherapy.

Therapy with adult survivors of childhood victimization could be effective by focusing on relational attributions and strategies in the context of perceived stress (e.g., how can you draw on your relationships for support?). Specific attachment-oriented psychotherapy does exist for adults; Bowlby's original theory was rooted in a therapeutic perspective, where a secure attachment base could be created and modelled for the client by the therapist (Bowlby, 1988). Adult attachment also forms the theoretical basis for Emotion-Focused Therapy for Couples (EFT; Johnson & Greenman, 2006), a couples therapy approach designed to encourage the formation of a secure attachment bond between partners. EFT for couples may also have particular value for trauma survivors, as trauma-related issues reportedly often underlie couple conflict and demands for emotional connection in these cases (Johnson, 2002). Improving relational support and felt security may produce health benefits for female survivors of childhood victimization.

Early preventative interventions targeted at children removed from abusive contexts could also emphasize strengthening the attachment relationship between caregiver and child. For example, a recent study found that a toddler-parent psychotherapy intervention successfully increased attachment security in a sample of children with depressed mothers, as compared to a control group and a sample comparison group with nondepressed mothers (Toth, Rogosch, Manly, & Cicchetti, 2006). The Circle of Security program is a similar intervention that provides psychoeducation and attachment-oriented therapy in a group setting to parents of at-risk children (Hoffman, Marvin, Cooper & Powell, 2006). Meta-analytic findings indicate that the most effective interventions employ a moderate number of sessions and are largely behaviourally-oriented, where increases in parental sensitivity are associated with increases in child attachment (Bakermans-Kranenburg, van IJzendoorn, & Juffer, 2003). Since it appears as though attachment security can be increased in children, the application of such interventions to children coping with abusive experiences may prove effective at mitigating negative long-term effects.

## Summary

This study investigated the relationships between childhood maltreatment, adult physical health, and insecure attachment among women. Findings supported theorized links between the experience of victimization in childhood and discrete physical health outcomes in adulthood, in terms of felt symptoms, functional impairment, and illness behaviour. Relationships among abuse variables also suggested that psychological maltreatment accounts for a significant proportion of the child maltreatment construct, while sexual abuse may constitute a qualitatively different form of victimization. Employing a two-dimensional model of attachment avoidance and anxiety also resulted in a strong insecure attachment construct across a number of measures. Most importantly, insecure attachment in adulthood was found to act as a partial mediator of the relationship between childhood abuse and adult health. Patterns of relational behaviour that were adaptive in abusive childhood contexts are no longer helpful in adulthood, and indeed appear to affect physical health. Given the partial mediation finding, other variables are likely to influence the association between victimization and physical health; such variables could include psychopathology, revictimization, or other trauma experiences.

In conclusion, this study contributes to the existing literature surrounding the experience of childhood adversities and physical health consequences later in life. Moreover, adult attachment style, as expressed through relational attributions and behaviours, acts as an important contributor to this relationship. This investigation provides insight into the health status of female abuse survivors, with preliminary implications for care, treatment and future research.

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## **Appendix A: Online Consent Form**

### Life Experiences, Health and Relationships Study

**Introduction:** You are invited to participate in a study entitled Life Experiences, Health and Relationships, which is being conducted by Dr. Marsha Runtz (Associate Professor in the Department of Psychology) and Erin Eadie (Ph.D. student in Psychology). You may contact Ms. Eadie at 250-472-4177 or eadie@uvic.ca if you have any questions about this research. You may also contact Dr. Marsha Runtz, the principal investigator, at 250-721-7546 or runtz@uvic.ca.

**Purpose & Importance of the Study:** The purpose of this research is to explore within the general population, different aspects of well-being and to examine the links between various life experiences, relationships across the life span, and health outcomes. This study is important because there is a lack of research in this area and because the findings will provide important information about factors which might influence the development of psychological and physical well-being. Understanding how life experiences might affect one's relationships and health will also provide important information to guide the development of counselling and therapy services for people with similar experiences.

**Voluntary Participation:** Your participation in this research must be completely voluntary. You may withdraw from the study at any time and you may refuse to answer any question(s) without having to explain your reasons for doing so and without consequences. You will still receive your Psychology course bonus points for this study whether you complete the questionnaire or if you submit a blank or incomplete questionnaire. Whether or not you participate in this study will have no effect on your grades or academic standing (aside from attaining bonus points) and your instructor will not have access to any of the information collected in this study. If you change your mind about having your responses used in this research, please indicate this by not submitting the online questionnaire and by closing the website. **HOWEVER, AFTER SUBMITTING YOUR DATA ONLINE IT WILL BE LOGISTICALLY IMPOSSIBLE TO WITHDRAW (OR TO REMOVE YOUR DATA).**

**Anonymity:** All of the responses that you give in this study are completely anonymous and confidential; your name will not be linked to your responses in any way. Your answers will be kept in an anonymous data bank without the possibility of identifying you. All of the information collected will be used for group-based analyses; that is, questionnaires will not be analyzed individually but will be pooled together with a large number of responses from other participants. Please do not write in or submit your name in any place on the questionnaire and please do not provide the names of any other individuals that may have been involved in any of the events you disclose in this questionnaire. We are limiting participation in this study to individuals who are 19 years of age or older. If, however, we receive identifying information that leads us to believe that you or any individual who is under 19 years of age is at risk of harm, we would be obliged to inform the proper authorities. If, you would like to report an incident of child maltreatment yourself or if you have concerns about a child at risk of maltreatment, please see the list of numbers at the bottom of this form.

**Confidentiality:** The confidentiality of your data will be further protected by keeping your responses and all data files and other research records secure (e.g., in password protected files and computers in locked offices). Only the researcher and research assistants will have access to the data. **YOUR NAME AND STUDENT NUMBER ARE NOT ASSOCIATED WITH THE ELECTRONIC DATA.** This information will be retained only within the Psychology Department for the purpose of assigning bonus

points and will be discarded once the bonus points have been assigned. Computerized anonymous data will be kept for at least 10 years beyond the date of the last publication of the findings from this study.

**Sensitive Topics:** If you decide to participate in this study, you will be asked to complete an online questionnaire that inquires about a range of psychological and social issues including some personal or sensitive topics such as difficult life experiences (which may include experiences of childhood maltreatment and other forms of victimization across the lifespan), social relationships, psychological well-being, general demographic information, as well as physical and sexual health.

**Eligibility:** You are eligible to participate in this study if you are a UVic undergraduate student and if you are 19 years of age or older.

**Inconvenience & Risks:** Participation in this study may cause some inconveniences to you, including the time it will take to complete the questionnaire (approximately 1 hour). A potential risk of participating in this research is that some people may feel some emotional discomfort as a result of answering questions of a sensitive nature (e.g., about sexual health or difficult life experiences). To deal with these risks, we want you to know that you do not have to answer any questions that make you feel uncomfortable, that you can withdraw your participation at any time, and that you can talk to the researcher (Dr. Runtz), the co-investigator (Ms. Eadie), or any of the research assistants involved about any concerns that might have arisen as a result of participating in this research. In addition, phone numbers for university and community resources will be provided at the end of this letter, should these services be of need to you.

**Benefits:** In addition to the bonus points that you receive in your psychology course, the potential benefits of your participation include 1) experiencing psychological research methods first hand, 2) helping us, the researchers, to assess the psychometric qualities of a questionnaire evaluating psychological health and relationships, and 3) helping us to understand how life experiences might affect people's health and adjustment as adults.

**Compensation:** To compensate you for your participation, you will receive bonus points towards your course grade in a psychology course at the University of Victoria. It is important for you to know that it is unethical to provide undue compensation to research participants, and if you agree to participate in this study, this form of compensation should not be coercive. If you would not participate if the compensation were not offered, then you should decline participation at this time.

**Results from the Study:** After you complete the study, you will receive a debriefing form that outlines the basic purpose of the research in more detail. If you would like a summary of the findings after the study is completed, you can contact Dr. Runtz directly or check her website (at <http://web.uvic.ca/~runtzweb/>) for summaries of papers prepared from this project. It is anticipated that the results of this study will be shared with others in the following ways: in presentations to other graduate students and faculty, in conference presentations, on the website, and in published peer-reviewed articles.

**Ethical Approval:** In addition to being able to contact the researchers, you may verify the ethical approval of this study, or raise any concerns you might have by contacting the Associate Vice President, Research at the University of Victoria at (250) 472-4545 or [ethics@uvic.ca](mailto:ethics@uvic.ca).



THANK YOU FOR YOUR INTEREST AND PARTICIPATION IN THIS STUDY.

If any of the questions in this study made you uncomfortable in any way, or if participating in this study brought up any issues that are distressing for you, some resources that might be of assistance are provided below:

University of Victoria Counselling Services (on campus), 250-721-8341, <http://www.coun.uvic.ca/>

NEED Crisis and Information Line (community agency), 250-386-6323, 1-888-494-3888,

<http://www.needcrisis.bc.ca/>

Help Line for Children, 250-310-1234, [www.gov.bc.ca/mcf/](http://www.gov.bc.ca/mcf/) (information on reporting child maltreatment)

British Columbia Psychological Association (BCPA) Referral Service, 1-800-730-0522,

<http://www.psychologists.bc.ca/referral.html>

Women's Sexual Assault Centre: 250-383-3232, <http://www.vwsac.com/>

Island Sexual Health Society: 250-592-3479, <http://islandsexualhealth.org/>

University of Victoria Health Services: 250-721-8492, <http://health.uvic.ca/>

To print a copy of this form, please use CTRL + P or follow the usual methods for printing from your web browser.

## Appendix B: Online Debriefing Form

Thank you! You are almost finished.

As one final step, please scroll to the bottom of this page and click SUBMIT before closing your web browser.

Thank you for your interest and your participation in this study. Your responses are greatly appreciated especially because we realize that many of these questions were personal and perhaps not easy to answer. Please be assured that your responses will remain anonymous and confidential.

### Purpose of the Study

As mentioned in the informed consent letter that you accepted, one of the main purposes of this research project is to assess the psychometric qualities of a questionnaire measuring relationships and psychological health. Specifically, this questionnaire assesses attachment patterns and associated beliefs and experiences. The study you have just participated in will allow us to have a better idea about the utility of this questionnaire to assess relationship problems in other individuals within the general population. Also, this study examines the consequences of life experiences in childhood, adolescence, and early adulthood. In particular, we are interested in how individuals cope with specific challenging experiences (that may include, but are not limited to, childhood maltreatment experiences) and what effects these coping patterns might have on their physical and psychological health. There is some evidence to suggest that individuals who have difficult life experiences (such as physical or sexual maltreatment) may cope with these experiences, in part, by engaging in behaviours that could negatively impact their physical and/or psychological well-being. Results from studies such as this one will be of benefit to psychologists and others in health care professions who assist those with difficult life experiences to cope in more adaptive and healthier ways, thereby potentially preventing long-term consequences of unhealthy coping.

We appreciate your participation in this study, and hope that it has been a valuable and informative experience for you.

If you have any questions about this study, please contact Ms. Erin Eadie (250-472-4177 or [eeadie@uvic.ca](mailto:eeadie@uvic.ca)) or Dr. Marsha Runtz (250-721-7546 or [runtz@uvic.ca](mailto:runtz@uvic.ca)). We will be happy to respond to any questions that you may have about this research. You may also contact the Associate Vice-President Research at the University of Victoria (250-472-4545 or [ethics@uvic.ca](mailto:ethics@uvic.ca)) if you have any questions or concerns about this study.

**PLEASE CLICK SUBMIT TO FINALIZE YOUR PARTICIPATION IN THIS STUDY**

Do not close this browser without clicking submit unless you have changed your mind and no longer want to submit your responses.

**THANK YOU!**

### Appendix C: Demographic Information

1. Where did you see the announcement for this study?

On the UVic Psychology 100 Research Participation System (online sign-up)

On the UVic Psychology Department Research bulletin board

On the Social Psychology Network website

On the American Psychological Society website

On Facebook

On another website posting

Via email distribution

On a public poster

Other

2. What is your gender?

Female Male Other No answer

3. How old were you on your last birthday?

\_\_\_\_\_

4. Which of the below best describes your ethnic background? (Check all that apply and provide specifics where indicated).

Asian, Southeast Asian, South Asian

Black/African American/African Canadian

Caucasian/White/European Canadian/European American

First Nations/Aboriginal/Native Canadian/Native American

Hispanic/Latino

Mixed (Specify):

Other (Specify):

5. What is your country of origin?

\_\_\_\_\_

6. What is your primary language (i.e. the language that you use the most or with which you feel the most comfortable)?

English

French

Spanish

Other

7. What is the highest level of education you have completed?

Some primary school (kindergarten to grade 7, but no secondary school)

Some secondary school (high school, grades 8 to 12)

Completed secondary school (or high school equivalent)

Technical school or trade diploma

College/university: some undergraduate courses completed

College/university: completed undergraduate degree (e.g., B.A.)

College/university: completed a master degree (M.A., M.Sc.)

College/university: completed a doctoral degree (Ph.D.)  
 College/university: other professional degree (e.g., M.D., LLB)

8. What is the highest level of education obtained by your parents or a parental figure? If applicable, choose the parent with the highest level of education.

Some primary school (kindergarten to grade 7, but no secondary school)

Some secondary school (high school, grades 8 to 12)

Completed secondary school (or high school equivalent)

Technical school or trade diploma

College/university: some undergraduate courses completed

College/university: completed undergraduate degree (e.g., B.A.)

College/university: completed a master degree (M.A., M.Sc.)

College/university: completed a doctoral degree (Ph.D.)

College/university: other professional degree (e.g., M.D., LLB)

9a. What is your personal income before you pay taxes?

Less than \$10,000

\$10 000-\$19 999

\$20 000-\$29 999

\$30 000-\$39 999

\$40 000-\$49 999

\$50 000-\$59 999

\$60 000-\$69 999

\$70 000-\$79 999

\$80 000-\$89 999

\$90 000-\$99 999

\$100 000 or more

No answer

9b. Do other people rely on your income (e.g., your partner or children)?

Yes No No answer

9c. Please indicate who relies on your income.

Partner

Child(ren)

Parent(s)

Other:

9d. What is your combined income including your partner and any depends who bring income into the household, before any of you pay taxes?

Less than \$10,000

\$10 000-\$19 999

\$20 000-\$29 999

\$30 000-\$39 999

\$40 000-\$49 999

\$50 000-\$59 999

\$60 000-\$69 999

\$70 000-\$79 999  
 \$80 000-\$89 999  
 \$90 000-\$99 999  
 \$100 000 or more  
 No answer

10. If you were living with your family when you were 17, how much did your family members (combined) make at that time, before taxes?

Less than \$10,000  
 \$10 000-\$19 999  
 \$20 000-\$29 999  
 \$30 000-\$39 999  
 \$40 000-\$49 999  
 \$50 000-\$59 999  
 \$60 000-\$69 999  
 \$70 000-\$79 999  
 \$80 000-\$89 999  
 \$90 000-\$99 999  
 \$100 000 or more  
 Not applicable

11. Are you currently in a romantic relationship?

Yes No No answer

12. What is your current relationship status?

Single, never married  
 Living with partner (common-law)  
 Married  
 Separated  
 Divorced  
 Widowed  
 Other

13. What is your sexual orientation?

Heterosexual  
 Bisexual  
 Lesbian or Gay  
 Other

14a. What is your current country of residence?

Canada  
 United States of America  
 Other

14b. In what Province or State are you currently living?

---

15a. Are you currently a college or university student?

Yes No No answer

15b. What academic year are you in?

First year undergraduate (Freshman)

Second year undergraduate (Sophomore)

Third year undergraduate (Junior)

Forth year undergraduate (Senior)

Fifth + year undergraduate

Graduate student

Other

15c. What is your academic major?

Psychology

Undeclared

Not applicable

Other

### Appendix D: Psychological Maltreatment Review (PMR)

Children and adolescents can experience a wide range of events in their families and with others while growing up. Some of these may have been upsetting and some of them may have been less upsetting. In this part of the questionnaire is listed a number of things that you may have experienced when you were growing up. There are no right or wrong answers for any of these items as everyone's childhood experiences are unique.

When you were 17 or younger, how often did the following things happen to you in the average year? Answer separately for your mother (or other woman who lived with you when you were a child), and father (or other man who lived with you when you were a child).

If you had different men and/or women living with you when you were a child, pick the person who was around the longest in your life. If there wasn't a mother (or other woman who lived with you) or father (or other man who lived with you) in your life, choose the "No answer" option for that section.

1. Yelled at you.\*

	Never	Once a year	Twice a year	3-5 times a year	6-10 times a year	11-20 times a year	Over 20 times a year	No answer
Your mother:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your father:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Left you alone for long periods of time, when they shouldn't have.

3. Were on your side when things were bad.

4. Insulted you.

5. Acted like they didn't seem to care about you.

6. Praised you when you did something good.

7. Criticized you.

8. Ignored you.

9. Said they loved you.

10. Said mean things about you.

11. Didn't do things for you that they should have.

12. Did things that let you know they loved you.

13. Called you names.

14. Acted like you weren't there, even though you were.

\* The response grid would normally be displayed after every item; here, it is shown only after the first item for the sake of brevity. The same format will be followed for the other measures listed in the appendices, as appropriate.

15. Hugged you.
16. Said you were stupid.
17. Weren't around when you needed them.
18. Took your places or did things with you.
19. Made fun of you.
20. Didn't do things they said they would do for you.
21. Encouraged you to have friends.
22. Tried to make you feel guilty.
23. Let you down.
24. Tried to make you feel better when you were upset or hurt.
25. Ridiculed or humiliated you.
26. Didn't seem to love you.
27. Talked to you.
28. Embarrassed you in front of others.
29. Didn't take care of you when they should have.
30. Helped you with homework or other things you had to do.





### Appendix F: Childhood Sexual Experiences (CSE)

We know that many people have unwanted “sexual” experiences during childhood. Some of these are with playmates or friends and some are with relatives or acquaintances. These experiences may be so upsetting that they may not be discussed with anyone. Sometimes they are forgotten for long periods of time, and sometimes they are frequently brought to mind.

We would like you to help us understand these types of experiences. Please try to remember whether any of the following occurred to you prior to the age of 14:

1. Has anyone ever exposed the sex organs of their body to you when you did not want this?  
Yes No No answer
2. Has anyone ever threatened to have sex with you when you did not want this?
3. Has anyone ever touched the sex organs of your body when you did not want this?
4. Has anyone ever made you touch the sex organs of their body when you did not want this?
5. Has anyone ever forced you to have oral sex when you did not want this?
6. Has anyone ever forced you to have intercourse (anal or vaginal) when you did not want this?
7. Have you had any other unwanted sexual experiences not mentioned above?
- 7b. Please specify:  

---

8a. If you answered yes to more than one of the above, did these experiences happen with the same person or more than one other person?

- All with the same person  
 With more than one person  
 Only had one experience

8b. How many other individuals were involved in these experiences?  

---

If more than one person was involved, please answer the following set of questions separately for each person. Begin with the experience that was most significant for you and answer these questions for the person (Person 1) involved in that experience.\*

9. What was the other person's gender?

- Female  
 Male

---

\* Items 9 through 16 were answered repeatedly for each individual that the participant identified.

10. What was the other person's age at the time of the incident?

\_\_\_\_\_

11. What was your relationship to the other person?

- parent, stepparent, or guardian
- sibling
- grandparent
- cousin
- uncle or aunt
- other adult relative
- boyfriend or girlfriend
- known person older than me but not an adult (e.g., babysitter, older acquaintance)
- adult authority figure (e.g., teacher, minister, coach)
- other known adult (not family)
- stranger

12. Was physical force ever used?

Yes No No answer

- 

13. Approximately how many times did this type of incident happen with this person?

\_\_\_\_\_

14. How old were you the first time it happened?

\_\_\_\_\_

15. How old were you the last time it happened?

\_\_\_\_\_

16. What was the nature of the unwanted experience(s) that occurred with this person?

- exposed *their* sex organs
- threatened to have sex with you
- touched *your* sex organs
- made you touch *their* sex organs
- forced you to have oral sex
- forced you to have intercourse (anal or vaginal)
- other
- no answer

### Appendix G: Health Symptom Checklist (HSC)

Below is a list of physical complaints that people sometimes have. Please indicate how frequently you have experienced each symptom in the past six months.

Also indicate if you sought health care (e.g., saw a physician) for each symptom you have experienced.

1. Abdominal pain.

Never 0	Occasionally in past 6 months 1	About once/month 2	About once/week 3	Several times a week 4	Daily 5	No answer
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Did you seek health care for this symptom?\*

Yes No No answer

2. Allergy.

3. Genital pain.

4. Eczema.

5. Pain in inner thighs.

6. Gastric ulcer.

7. Painful urination.

8. Convulsions.

9. Chest pain/tightness.

10. Blurred vision.

11. Abdominal swelling.

12. Heart palpitations.

13. Temporary paralysis.

14. Vaginal/penile discharge.

15. Numbing of body parts.

16. Asthma (i.e., wheezing/shortness of breath).

17. Cold hands.

18. High blood pressure.

19. Painful bowel movements.

20. Fainting.

---

\* In the study, the question regarding health care seeking was presented after each item on the HSC; it is eliminated here for the sake of brevity.

21. Diarrhea.
22. Stomach flu.
23. Pelvic pain.
24. Muscle weakness.
25. Stomach aches.
26. Muscle stiffness.
27. Constipation.
28. Tunnel vision.
29. Vaginal/penile pain.
30. Loss of voice.
31. Backaches.
32. Spastic colitis.
33. Skin rashes.
34. Vaginal dryness/penile irritation.
35. Headaches.
36. Abdominal cramps.
37. Pain in hips.
38. Fatigue.
39. Pain behind navel.
40. Bloating.
41. Temporary blindness.
42. Bleeding between menstrual periods (enter “no answer” if you are male).
43. Pain in the small of your back.
44. Face pain.
45. Eye pain associated with reading.
46. Difficulty swallowing.
47. Burning sensation in sexual organs or rectum.
48. Sore throat.
49. Weakness.
50. Double vision.
51. Pain in arms or legs.
52. Nausea.
53. Joint pain.

54. Getting sick from different kinds of foods.

55. Other health problem:

Describe:

---

## Appendix H: Reproductive Health Questionnaire (RHQ)

Below is a list of symptoms and complaints that women sometimes report regarding their reproductive health. If you are female, please select the word that best describes how often you have experienced these symptoms in the past 6 months.

Also indicate if you sought health care (i.e., saw a doctor or other health professional) for each symptom you have experienced. Please only respond "*No answer*" to the items below if you have not had a menstrual period over the past 6 months, and/or if you have not been sexually active in the past 6 months, as appropriate.

1. Painful menstruation.

Never	Rarely	Sometimes	Often	No answer
1	2	3	4	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Did you seek health care for this symptom?\*

Yes	No	No answer
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. Irregular menstrual periods.

3. Spotting or bleeding between menstrual periods.

4. Abdominal cramps prior to or during menstruation.

5. Abdominal cramps not associated with menstrual cycle.

6. Excessive menstrual bleeding.

7. Menstrual bleeding accompanied by a fever.

8. Fatigue associated with menstrual cycle.

9. Nausea associated with menstrual cycle.

10. Headaches associated with menstrual cycle.

11. Pelvic pain.

12. Abdominal pain (not cramping).

13. Abdominal pain accompanied by a fever.

14. Abdominal bloating.

15. Swelling or puffiness in arms or legs that is associated with menstrual cycle.

16. Pain or tenderness in breasts.

17. Swelling of the breasts.

18. Hot flashes.

---

\* Similar to the HSC, the question regarding health care was presented after each item during the study.

19. Missed at least two periods without being pregnant.
20. Abnormal vaginal discharge.
21. Vaginal dryness.
22. Genital pain.
23. Genital irritation.
24. Genital itching.
25. Pain during intercourse.
26. Bleeding associated with intercourse.
27. Painful urination.
28. Burning sensation during urination.
29. Frequent or urgent need to urinate.
30. Urinary incontinence (i.e. leaking).
31. Yeast infection.
32. Urinary tract infection (UTI) or bladder infection.
33. Sexually transmitted infections (e.g., HPV, Herpes, Chlamydia, etc.)
34. Lack of interest in sex.
35. Lack of sexual pleasure.
36. Afraid of having sex.
37. Unable to become sexually aroused.
38. Unable to stay sexually aroused.
39. Unable to have an orgasm.
40. Feeling dissatisfied following sex.
41. Are you currently using a hormonal contraceptive (e.g., the pill, a birth control patch, Depo-Provera, a vaginal ring)?  
 Yes  No  No answer
42. a) Did you have a menstrual period each month over the past 6 months?  
 Yes  No  No answer
42. b) If not, how many menstrual periods did you have in the past 6 months?  
 \_\_\_\_\_
43. a) Are you currently pregnant?  
 Yes  No  No answer
43. b) If so, how many weeks are you into your pregnancy?



---

43. c) If you are not currently pregnant, were you pregnant at any time during the past 6 months?

Yes No No answer

44. Have you reached menopause (i.e., cessation of menstrual periods for at least 12 months)?

Yes No No answer

### Appendix I: Functional Impairment Scale (FIS)

Please indicate the extent to which your health problems have interfered (if at all) with various aspects of your life during the past 6 months.

1. My work and/or school performance has suffered because of my health problems.

Not at all   A little bit   Moderately   Quite a bit   Extremely   N/A  
1            2            3            4            5

2. My health problems have prevented me from sleeping well.

3. My health problems have interfered with my sex life.

4. My health problems have interfered with my social life.

5. I find I am bothered by my symptoms.

6. My symptoms affect the way I get along with my family or friends.

7. My symptoms interfere with my life.

### Appendix J: Illness Behaviour Inventory (IBI)

Please indicate the extent to which you agree or disagree with the following statements.

1. I see doctors often

Strongly disagree	Disagree	Somewhat disagree	Somewhat agree	Agree	Strongly agree	No answer
1	2	3	4	5	6	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. When ill, I have to stop work completely.

3. I stay in bed when I feel ill.

4. I work fewer hours when I'm ill.

5. I do fewer chores around the house when I'm ill.

6. I seek help from others when I'm ill.

7. When ill, I work slower.

8. I leave work early when I'm ill.

9. I complain about being ill when I feel ill.

10. I avoid certain aspects of my job when I'm ill.

11. I take rest periods when I'm ill.

12. Most people who know me are aware that I take medication.

13. Even if I don't feel ill at certain times, I find that I talk about my illness anyway.

14. Others often behave towards me as if I'm ill.

15. Although I very seldom bring up the topic of my illness, I frequently find myself in conversation about my illness with others.

16. Others seem to act as if I am more ill than I really am.

17. My illness or aspects of it are a frequent topic of conversation.

18. When I'm ill people can tell by the way I act.

19. Often I act more ill than I really am.

20. I have large medical bills.

### Appendix K: Experiences in Close Relationships (ECR)

The following statements concern how you feel in romantic relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship.

Respond to each statement by indicating how much you agree or disagree with it.

1. I prefer not to show a partner how I feel deep down.

Strongly disagree    2   3   Neutral   5   6   Strongly agree   No answer  
                          1                           4                           7

2. I worry about being abandoned.

3. I am very comfortable being close to romantic partners.

4. I worry a lot about my relationships.

5. Just when my partner starts to get close to me I find myself pulling away.

6. I worry that romantic partners won't care about me as much as I care about them.

7. I get uncomfortable when a romantic partner wants to be very close.

8. I worry a fair amount about losing my partner.

9. I don't feel comfortable opening up to romantic partners.

10. I often wish that my partner's feelings for me were as strong as my feelings for him/her.

11. I want to get close to my partner, but I keep pulling back.

12. I often want to merge completely with romantic partners, and this sometimes scares them away.

13. I am nervous when partners get too close to me.

14. I worry about being alone.

15. I feel comfortable sharing my private thoughts and feelings with my partner.

16. My desire to be very close sometimes scares people away.

17. I try to avoid getting too close to my partner.

18. I need a lot of reassurance that I am loved by my partner.

19. I find it relatively easy to get close to my partner.

20. Sometimes I feel that I force my partners to show more feeling, more commitment.

21. I find it difficult to allow myself to depend on romantic partners.

22. I do not often worry about being abandoned.

23. I prefer not to be too close to romantic partners.

24. If I can't get my partner to show interest in me, I get upset or angry.

25. I tell my partner just about everything.
26. I find that my partner(s) don't want to get as close as I would like.
27. I usually discuss my problems and concerns with my partner.
28. When I'm not involved in a relationship, I feel somewhat anxious and insecure.
29. I feel comfortable depending on romantic partners.
30. I get frustrated when my partner is not around as much as I would like.
31. I don't mind asking romantic partners for comfort, advice, or help.
32. I get frustrated if romantic partners are not available when I need them.
33. It helps to turn to my romantic partner in times of need.
34. When romantic partners disapprove of me, I feel really bad about myself.
35. I turn to my partner for many things, including comfort and reassurance.
36. I resent it when my partner spends time away from me.

**Appendix L: Rejection Sensitivity and Relational Avoidance subscales of the Trauma Symptom Inventory-2 (TSI-2)**

Please read all of these instructions carefully before beginning. This questionnaire describes experiences that may or may not have happened to you. Please mark the one answer that best indicates how often each of the following experiences have happened to you in the last 6 months.

Mark 1 if your answer is NEVER; it has not happened at all in the last 6 months.

Mark 2 if it has happened in the last 6 months, but only RARELY.

Mark 3 if it happened SOMETIMES in the last 6 months.

Mark 4 if your answer is OFTEN; it has happened often in the last 6 months.

**Rejection Sensitivity (IA – RS)**

25. Feeling abandoned or rejected.

Never	Rarely	Sometimes	Often	No answer
1	2	3	4	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

53. Worrying that someone didn't like you anymore.

81. Worrying that people didn't really care about you.

109. Feeling like someone didn't pay enough attention to you.

134. Not asking for something you wanted, because you might be rejected or turned down.

**Relational Avoidance (IA - RA)**

11. Not letting people get to know you very well.

Never	Rarely	Sometimes	Often	No answer
1	2	3	4	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

39. Feeling uncomfortable when someone got too close.

67. Keeping people at a distance.

95. Avoiding relationships with people.

122. Not needing people.

### Appendix M: Relationship Questionnaire (RQ)

1. Following are descriptions of four general relationship styles that people often report.

Please read each description and select the style that *best* describes you or is *closest* to the way you generally are in your close relationships. Only select ONE of the options

- A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.
- B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.
- C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.
- D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

2. Please rate each of the following relationship styles according to the *extent* to which you think each description corresponds to your general relationship style.

A. It is easy for me to become emotionally close to others. I am comfortable depending on them and having them depend on me. I don't worry about being alone or having others not accept me.

	Not at all like me 1	2 3	Somewhat like me 4	5 6	Very much like me 7	No answer
Style A	<input type="radio"/>	<input type="radio"/> <input type="radio"/>	<input type="radio"/>	<input type="radio"/> <input type="radio"/>	<input type="radio"/>	<input type="radio"/>

B. I am uncomfortable getting close to others. I want emotionally close relationships, but I find it difficult to trust others completely, or to depend on them. I worry that I will be hurt if I allow myself to become too close to others.

	Not at all like me 1	2 3	Somewhat like me 4	5 6	Very much like me 7	No answer
Style B	<input type="radio"/>	<input type="radio"/> <input type="radio"/>	<input type="radio"/>	<input type="radio"/> <input type="radio"/>	<input type="radio"/>	<input type="radio"/>

C. I want to be completely emotionally intimate with others, but I often find that others are reluctant to get as close as I would like. I am uncomfortable being without close relationships, but I sometimes worry that others don't value me as much as I value them.

	Not at all like me 1	2 3	Somewhat like me 4	5 6	Very much like me 7	No answer
Style C	.	.	.	.	.	.

D. I am comfortable without close emotional relationships. It is very important to me to feel independent and self-sufficient, and I prefer not to depend on others or have others depend on me.

	Not at all like me 1	2 3	Somewhat like me 4	5 6	Very much like me 7	No answer
Style D	.	.	.	.	.	.