INVESTIGATING CHILDHOOD EMOTIONAL MALTREATMENT, ADULT ATTACHMENT, AND MINDFULNESS AS PREDICTORS OF INTERNALIZING SYMPTOMS AND EMOTIONAL PROCESSING

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Childhood emotional maltreatment is associated with damaging consequences, although relatively little is known about the mechanisms underlying its effects. This dissertation investigated the concurrent influences of adult attachment and mindfulness on internalizing symptoms and emotional processing in young adults with and without a history of emotional maltreatment. Study 1 revealed that a sequential mediation model, with adult attachment orientations as first-step mediators and mindfulness as a second-step mediator, fit the data better than a simultaneous mediation model. In addition, moderation analyses revealed that high self-reported levels of mindfulness protected against the development of internalizing symptoms, even in at-risk individuals. Study 2 replicated these findings in a new sample, while also extending the results beyond a self-report outcome, using behavioural measures of emotional processing. Emotional maltreatment, adult attachment, and mindfulness predicted the amount of perceptual information required to correctly identify fearful faces and the amount of interference demonstrated in response to positive and negative emotional words. Cumulatively, these findings suggest that childhood emotional maltreatment can disrupt attachment relationships and encumber the development of mindfulness, contributing to internalizing symptoms and the biased processing of emotional information. However, alternative outcomes are possible, given the presence of high levels of mindfulness and secure attachment representations. This has implications for clarifying developmental theories and evaluating clinical interventions that may mitigate the negative effects of childhood emotional maltreatment.
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Investigating Childhood Emotional Maltreatment, Adult Attachment, and Mindfulness as Predictors of Internalizing Symptoms and Emotional Processing

Introduction

Childhood emotional maltreatment is characterized by psychologically damaging acts that can adversely impact an individual’s development and ongoing emotional functioning. Repeated or single incidents of emotional maltreatment “convey to children that they are worthless, flawed, unloved, unwanted, endangered, or only of value in meeting another’s needs” (American Professional Society on the Abuse of Children, 1995, p. 2). Most conceptualizations of childhood emotional maltreatment identify caregiving acts of commission (emotional abuse), omission (emotional neglect), or a combination of both (Hart, Brassard, Binggeli, & Davidson, 2002). According to the Childhood Incidence Study of Reported Child Abuse and Neglect (Minister of Public Works and Government Services Canada, 2005), an estimated 103, 297 substantiated maltreatment investigations were conducted across Canada in 2003. Emotional maltreatment accounted for 15% of these cases, a rate of 3.23 per 1000 children. This represents a significant increase in substantiated cases since 1998 and highlights a prevalent challenge facing Canadian families. Retrospective reports of emotional abuse and neglect are similarly concerning, particularly given that definitional constraints may result in underestimations and the majority of emotional maltreatment is unreported. In one review of 69 empirical studies using the Childhood Trauma Questionnaire, 15.4% of community respondents reported a history of severe emotional abuse (e.g., being called names) and 13.1% reported severe emotional neglect (e.g., being ignored; Baker & Maiorino, 2010).

Both retrospective and prospective studies highlight an array of negative developmental consequences associated with early emotional maltreatment including anxiety, depression, low self-esteem, poor health, and stress (e.g., Briere & Runtz, 1988; Erickson, Egeland, & Pianta, 1989). Given that emotional maltreatment is arguably the most pervasive and damaging form of maltreatment, constituting a core element of diverse forms of abuse and neglect (Brassard & Donovan, 2006; Barnett, Miller-Perrin, & Perrin, 2005; Binggeli, Hart, & Brassard, 2001; Navarre, 1987), it is important to understand the correlates and possible mechanisms underlying its damaging outcomes. Some investigators have identified specific maladaptive schemas that predispose emotionally maltreated individuals to develop certain internalizing symptoms, namely
depression (e.g., Gibb, Butler, & Beck, 2003; Lumley & Harkness, 2007). There is a dearth of literature examining broader etiological pathways, although emerging evidence highlights attachment style as a likely mechanistic determinant of compromised emotional functioning following emotional maltreatment (e.g., Hankin, 2005). Similarly, low levels of mindfulness could act as a proximal risk factor for emotional outcomes (e.g., Brown & Ryan, 2003; Orsillo & Roemer, 2005; Vujanovic, Zvolensky, Bernstein, Feldner, & McLeish, 2007; Zvolensky et al., 2006). Both theoretical speculations and empirical evidence suggest that insecure attachment and low levels of mindfulness share similar correlates and outcomes (e.g., Gillath, Bunge, Shaver, Wenderlken, & Mikulincer, 2005; Siegel, 2007), ones that overlap with childhood emotional maltreatment.

Although emotional maltreatment contributes to developmental maladaptation for many, a delicate balance between risk and protective factors could alter developmental trajectories and protect some individuals from internalizing distress. Therefore, mediational processes may be “insufficient in accounting for the complex processes that result in outcomes ranging from severe psychopathology and impairment to competence…” (Egeland, 2009, p. 24). It is possible that individual differences in adult attachment and mindfulness could engender less severe internalizing outcomes for some young adults in the aftermath of emotional maltreatment. In this capacity, adult attachment and mindfulness could moderate the association between childhood emotional maltreatment and internalizing outcomes. Individual variation in attachment relationships following maltreatment has been demonstrated. For example, evidence indicates that adults with a maltreatment history, who also report supportive and warm relationships with caregivers, are at decreased risk for internalizing distress (e.g., Wind & Silvern, 1994). Similarly, high levels of mindfulness (whether dispositional or induced through training) buffers against reports of a variety of emotional disturbances (Brown & Ryan, 2003; Carlson & Brown, 2005), and some research suggests its utility for the amelioration of mental health in traumatized individuals (Bernstein, Tanay, & Vujanovic, 2011). Theorists have posited that attachment and mindfulness contribute to positive outcomes in concomitant ways (e.g., Walsh, Balint, Smolira, Fredericksen, & Madsen, 2009). Despite these intriguing relations, empirical studies have rarely examined the association between these variables simultaneously, particularly in the context of childhood emotional maltreatment.
Given the preliminary stage of this area of research, this dissertation examined attachment and mindfulness as both mediating and moderating processes. Using a cross-sectional design with a young adult sample, Study 1 compared alternative etiological models (see Figures 1 and 2) that placed adult attachment and mindfulness as simultaneous or sequential mediators of the relation between childhood emotional maltreatment and internalizing outcomes. As well, moderation effects for attachment and mindfulness were evaluated. Study 2 sought to replicate these findings in a new young adult sample, and to investigate whether emotional maltreatment, adult attachment and mindfulness exerted similar influences on outcomes that were not self-reported. Specifically, Study 2 examined the effects of these constructs on behavioural outcome measures of emotional information processing. Overall, studying these processes may help to clarify theories regarding developmental processes following early adversity. Moreover, this knowledge could help to inform practical interventions designed to alleviate the negative effects of emotional maltreatment.

*Figure 1. Model depicting mindfulness and adult attachment as simultaneous mediators of the relation between childhood emotional maltreatment and internalizing symptoms*
Figure 2. Alternative model depicting adult attachment orientations as first step mediators and mindfulness as a second step mediator of the relation between childhood emotional maltreatment and internalizing symptoms.

**Emotional Maltreatment and Developmental Outcomes**

Emotional maltreatment is associated with a variety of developmental difficulties. Researchers are only beginning to understand the underpinnings of development following this type of early adversity. Emotional maltreatment is relatively understudied for a few reasons. First, operationalization challenges exist, possibly because emotional maltreatment falls along a continuum of common parenting slips (e.g., yelling) (McGee & Wolfe, 1991; Rosen & Martin, 1996). As well, parenting practices differ across cultures, and child and adult perceptions of damaging behaviours vary considerably (Riggs & Kaminski, 2010). To clarify some operational discrepancies, the American Professional Society on the Abuse of Children (Hart et al., 2002) highlighted six separate constituents of childhood emotional maltreatment, including a) spurning (e.g., degrading, shaming, ridiculing, criticizing, humiliating); b) exploitation and corruption (e.g., modeling or permitting antisocial behaviour, interfering with developmental milestones); c) terrorizing behaviours (e.g., placing a child in unpredictable or dangerous situations, threatening violence against the child and/or their loved ones); d) emotional un-responsiveness (e.g., ignoring a child’s need for love, care, and affection); e) isolation (e.g., confining a child’s freedom within their environment, restricting a child’s interpersonal interaction with peers and/or
adults); and f) inattention to health-related and educational needs (e.g., failing to provide treatment for a child’s mental health, behavioural, medical, or educational needs). Few studies have examined the unique effects of emotional maltreatment separate from other forms of maltreatment, although evidence indicates that emotional maltreatment may have independent damaging effects (Briere & Runtz, 1990). The study of emotional maltreatment is particularly important, given that it is commonly deemed the “core component” of all forms of maltreatment due to its negative impact on a child’s global sense of self-worth (Navarre, 1987; Solomon & Serres, 1999).

Longitudinal studies indicate that emotional maltreatment is associated with poor academic functioning, cognitive impairments, social problems, non-compliance, and emotion dysregulation in youth (Egeland, Kalkoske, Gottesman, & Erickson, 1990; Kurtz, Gaudin, Wodarski, & Howing, 1993; Oates, 1996; Shields, Cicchetti, & Ryan, 1994). Corroborating evidence in retrospective studies suggests that childhood emotional maltreatment is further related to low self-esteem, health disturbances, anxiety, depression, interpersonal difficulties, alexythymia, and personality disorders in adulthood (Cleaver, Unell, & Aldgate, 1999; Briere & Runtz, 1988; Higgins & McCabe, 2000; Iwaniec, 2004; Johnson, Stiffman, Hadly-Ives, & Elze, 2001; Mazzeo & Espelage, 2002; Mullen, Martin, Anderson, & Romans, 1996; Spertus, Yehuda, Wong, Halligan, & Seremetis, 2003; Zlotnick, Mattia, & Zimmerman, 2001). Compared to other forms of maltreatment, emotional maltreatment predicts enhanced emotional distress and internalizing symptoms in the adult years (Gibb, Chelminski, & Zimmerman, 2007; Sachs-Ericsson, Verona, Joiner, & Preacher, 2006; Stuewig & McCloskey, 2005). As a result, many adults with a history of emotional maltreatment experience difficulties in romantic relationships (Carbone, 2010; Riggs & Kaminski, 2010). Given the longevity of maladaptive emotional functioning in maltreated children and adults with a history of maltreatment, it is important to understand the underpinnings of these developmental outcomes.

Considered broadly, there are a number of possible contributors to negative developmental sequelae following childhood emotional maltreatment. A model outlined by Riggs (2010) contends that emotional maltreatment places a child at risk for developing insecure attachment relationships, which then initiates a sequence of negative effects. Emotion dysregulation and negative internal working models of the self (e.g., as unworthy, inept) and others (e.g., as rejecting, betraying) can elicit poor coping strategies (e.g., compulsive clinging,
avoidance). As a result, emotionally maltreated children and youth may fail to adapt socially, experiencing profound disruptions in later developing peer and romantic relationships. Combined, these factors act together to often produce mental health disorders and continued dysfunction in adult relationships. A number of studies are beginning to support associations denoted in this model (Carbone, 2010; Riggs & Kaminski, 2010; Taussig & Culhane, 2010). Without the interjection of more positive influences (e.g., other positive attachment relationships, therapy, intrapersonal resilient characteristics), these influences likely compound to produce negative developmental trajectories.

Other possible mechanisms underlying poor developmental outcomes involve neurobiological changes. These changes likely underscore many of the psychological processes examined in the present studies. From a neurodevelopmental perspective, dysregulation of stress response systems may contribute to internalizing symptoms and emotional processing biases in maltreated children. The limbic hypothalamic pituitary adrenal axis (L-HPA) and the norepinephrine sympathetic adrenal medullary (NE-SAM) systems are both integral to stress reactivity. The L-HPA axis regulates slower acting stress responses by stimulating the release of cortisol, which creates a cascade of adaptive responses (e.g., immune function suppression, reduced digestion) (Nelson & Carver, 1998). In contrast, the NE-SAM system responds to acutely stressful events by releasing catecholamines (i.e., norepinephrine and epinephrine) into the blood stream, which readies the body for fight or flight reactions by increasing heart rate and blood pressure (López, Akil, & Watson, 1999).

Typically, the activation of stress response systems promotes adaptive responding, however chronic activation could contribute to damaging effects caused by enhanced neuronal death, dendritic branching, and synaptic pruning (Sapolsky, 1996). Over time, this may mediate the effects of early emotional maltreatment on later developing internalizing distress (Cicchetti & Walker, 2003; Heim, Owns, Plotsky, & Nemeroff, 1997; Heim, Ehlert, & Hellhammer, 2000; Heim & Nemeroff, 2001; Nemeroff, 2004). L-HPA and NE-SAM abnormalities have been found in emotionally maltreated children and children with less responsive caregiving, although it is unclear why varying patterns of activation occur in different studies (Bugental, Martorell & Barazza, 2003; Cicchetti & Rogosch, 2001; Hertsgaard, Gunnar, Erickson, & Nachmias, 1995; Gunnar, Brodersen, Krueger, & Rigatuso, 1996). In contrast, secure attachment is related to reduced cortisol elevations following stressful events (Gunnar et al., 1996; Nachmias, Gunnar,
Mangelsdorf, & Parritz, 1996). In these studies, however, attachment representations and maltreatment experiences were conflated; therefore, it is difficult to disentangle the unique contributions of each. In addition to hormonal dysregulations, various areas of the brain are affected in maltreated children, including the corpus callosum, the hippocampus, and frontotemporal regions (Bremner et al., 1995; Bremner, Licinio, Darnell, & Krystal, 1997; Teicher et al., 2004). Together, these neurobiological alterations may inform hypotheses regarding the mechanisms underlying impaired emotional abilities in emotionally maltreated children, particularly given overlap between areas of the brain compromised by maltreatment and mechanisms (e.g., attachment, mindfulness) that purportedly underlie its deleterious effects (e.g., Cozolino, 2002; Schore, 2003; Soloman & Siegel, 2003; Siegel, 2007).

**Mechanisms Underlying the Effects of Emotional Maltreatment**

**Attachment.**

As an interpersonal process, attachment is a good candidate for enabling either healthy or unhealthy development. Attachment theory states that children are biologically predisposed to develop close relationships with their caregivers, which increases their chance of survival (Bowlby, 1969). Primary caregivers serve as a secure base, which allows children to comfortably explore their environment. Through repeated interactions with parents, children develop internal working models (or schemas) of attachment that guide their expectations regarding others’ behaviour. The co-regulation of emotion, whereby the parent and child are both involved in response contingencies to each other’s emotional displays, contributes to the child’s internal working model of interpersonal relationships. This model is a mental representation of the self, of the caregiver, and of close relationships, which subsequently guides children’s future interactions with others. Working models serve as a basis of the attachment system, which monitors safety and the proximity of attachment figures, and is activated under stressful conditions. Following its activation, children engage in compensatory behaviours designed to ensure a response from their attachment figure (Bowlby, 1988). If parents respond to attachment-related needs in a sensitive way that promotes an effective resolution, children develop a secure attachment style that promotes social adjustment and psychological well-being (Thompson, 2000). In contrast, insecure attachment relationships and negative internal working models may develop in response to inconsistent, insensitive, and/or unresponsive caregiving (Bowlby, 1988).
Research has established different categories of behaviours and attachment patterns in infants and young children using the Strange Situation procedure (Ainsworth, Blehar, Waters, & Wall, 1978). In the laboratory, secure infants actively explore their environments, demonstrate typical distress upon separation, and are subsequently comforted after reunion with their caregiver. With regard to insecure attachment organizations, three patterns of behaviour are evident: avoidant, ambivalent, and disorganized. Insecure avoidant infants demonstrate autonomy and avoid close contact with attachment figures in distressing circumstances. Their behaviours are characterized by deactivating strategies designed to promote coping through disengagement. Insecure ambivalent infants exhibit considerable distress upon separation from a primary caregiver and subsequently engage in hyperactivating strategies (e.g., demanding attention, clinging) upon reunion. Finally, disorganized infants reveal confusing, conflicting and incoherent behaviours (e.g., avoidance and proximity-seeking, freezing, fear of parent). Evidence indicates that secure attachment is related to sensitive and responsive parenting, as well as positive developmental outcomes such as peer competence, school adjustment, and overall well-being (e.g., Sroufe, Egeland, & Carlson, 1999; Suess, Grossmann, & Sroufe, 1992). In contrast, insecure attachment is associated with insensitive parenting, maltreatment, and negative developmental outcomes such as internalizing and externalizing problems (e.g., Erickson, Sroufe, & Egeland, 1985; Lyons-Ruth & Jacobvitz, 2008; Shaw, Keenan, Vondra, DelliQuadri, & Giovanelli, 1997).

One longitudinal investigation found that maltreated infants (12, 18, and 24-months-old) were significantly less likely to demonstrate secure attachment relationships with their caregivers than nonmaltreated infants (Barnett et al., 1999). This stated, it is important to note that for maltreated infants, insecure strategies can be adaptive in relation to caregiver behaviours. For example, a dismissing caregiver may reject attention-seeking attempts, resulting in an infant’s use of behaviours (e.g., indifference, excessive self-reliance) designed to prevent this rejection. Contrarily, a preoccupied caregiver may be unpredictable or overly intrusive, resulting in infant behaviours (e.g., clinginginess, angry outbursts) that capture their caregiver’s attention. The presence of contradictory attention-seeking and avoidant disorganized behaviours, indicating greater attachment-related dysfunction, are associated with severe child maltreatment and parental psychopathology (Lyons-Ruth & Jacobvitz, 1999). These insecure relationships are likely to persist throughout childhood, particularly in families characterized by persistent...
interpersonal conflict and maladaptive caregiving (Cicchetti & Barnett 1991, Crittenden 1988), and contribute to later developing internalizing symptomatology and academic struggles (Shonk & Cicchetti, 2001; Toth & Cicchetti, 1996).

Although insecure attachment relationships are common among maltreated children, some variability is still apparent and contributes to outcomes (Haskett, Nears, Ward, & McPherson, 2006). Farber and Egeland (1987), in a longitudinal study involving 44 maltreating mothers and their children, found that maltreating mothers of securely attached infants showed increased sensitivity, lower hostility, and enhanced emotional attunement compared to maltreating mothers of anxiously attached children. Although many maltreating mothers demonstrated hostility and insensitivity towards their infants, the degree of these behaviours varied between mothers, accounting for differences in the attachment relationship between mother and child. Maternal age, stress level, and the severity of abuse did not predict quality of attachment. Other studies extend these findings, demonstrating that secure attachment is associated with more positive adjustment, even among maltreated children (Herrenkohl, Herrenkohl, & Egold, 1994; Herrenkohl, Herrenkohl, Rupert, & Egolf, 1995; Kim & Cicchetti, 2004). If parents engage in reparative actions following emotional maltreatment (e.g., apologies, physical affection), it is possible that such behaviours would facilitate secure attachment and reduce the psychological damage that might have occurred otherwise (Solomon & George, 1999).

Recently, researchers have conceptualized adult attachment in ways that mirror Ainsworth and colleagues’ categories of infant attachment (Hazan & Shaver, 1987; Main, Kaplan, & Cassidy, 1985; Main & Solomon, 1990). That is, adult romantic relationships can be conceptualized along anxious and avoidant continuums (Bartholomew & Shaver, 1998; Brennan, Clark, & Shaver, 1998; Hazan & Shaver, 1987). Low levels of both anxiety and avoidance indicate the presence of a secure attachment style. Attachment anxiety refers to the degree of excessive worry demonstrated with regard to relationships. Individuals with high levels of attachment anxiety show heightened sensitivity to indicators of rejection and seek constant proximity to an attachment figure (Mikulincer & Florian, 1998; Mikulincer & Shaver 2003). In threatening situations, these individuals employ hyperactivating strategies, or attempts to increase proximity and interpersonal connectedness (Mikulincer & Shaver, 2003). Conversely, attachment avoidance refers to the degree to which individuals prefer emotional disengagement,
or prefer to avoid emotional intimacy in close relationships. High levels of attachment avoidance are associated with distrust, avoidance of proximity, and emotional distancing. Threat therefore elicits deactivating strategies, or attempts to inhibit proximity seeking and disengage from interpersonal connectedness (Mikulincer & Shaver, 2003).

Variability in internalizing distress and individuals’ facility with emotional information may be intrinsically linked with attachment anxiety and avoidance (Cooper, Shaver, & Collins, 1998). Securely attached individuals seek intimacy when distressed, respond effectively to displays of emotions, and cope well with their own emotions (e.g., Kobak, Cole, Ferenz-Gillies, Fleming, & Gamble, 1993; Mikulincer & Florian, 1998). However, these abilities may be compromised if emotions are consistently suppressed or avoided. The tendency to deactivate attachment-related information, including emotion-laden material, may be particularly apparent in individuals with avoidant inclinations (Edelstein & Shaver, 2004; Fraley, Davis, & Shaver, 1998; Newman & McKinney, 2002). Exposure to emotional stimuli may elicit distress in avoidant individuals, which they have learned to modulate by reducing attention to negative or threatening information (Bowlby, 1987). Consistent with these speculations, researchers have found that avoidant adults demonstrate poor memory for attachment-related emotional information (Edelstein et al., 2005; Mikulincer & Orbach, 1995), likely underscored by difficulty with encoding and attention (Edelstein et al., 2005).¹

In contrast, individuals with high levels of attachment anxiety are hypervigilant to negative emotional cues from attachment figures and cope ineffectively with their own emotional responses (Bowlby, 1980; Shaver & Hazan, 1994). Compromised emotional regulation and emotional processing characterize many individuals with anxious and avoidant attachment orientations. Therefore, it is unsurprising that attachment anxiety and avoidance, like maltreatment, are related to a host of emotional vulnerabilities such anxiety and depression (e.g., Cole-Detke & Kobak, 1996; Eng, Heimberg, Hart, Schneier, & Liebowitz, 2001; Williams &

¹It is important to distinguish between self-report and observational measures of attachment. These two assessment methods often fail to correlate significantly, which has raised questions regarding the validity of these different approaches (Crowell, Treboux, & Waters, 1999). Self-report measures may be particularly prone to measurement error, with some arguing that some subtle aspects of attachment may be unconscious and therefore inaccessible via self-report techniques (Crowell & Treboux, 1995). In contrast, some studies have found significant correlations between adult self-report attachment measures and behavioural observations of marital interactions and social support seeking (Kirkpatrick & Davis, 1994; Mikulincer & Nachshon, 1991; Shaver & Brennan, 1992). Moreover, emotion processing deficits are apparent in insecurely attached individuals, regardless of assessment method (e.g., Edelstein & Gillath, 2008; Fonagy, Redfern, & Charman, 1997).
Riskind, 2004). Therefore, one might expect that attachment could mediate the relationship between emotional maltreatment and emotional functioning. Taking into consideration the variability that exists in terms of attachment organization following maltreatment (e.g., Farber & Egeland, 1987; Herrenkohl et al., 1994; Herrenkohl et al., 1995; Kim & Cicchetti, 2004; Solomon & George, 1999), it is also possible that attachment could moderate this relationship.

**Mindfulness.**

Mindfulness is another potential mechanism contributing to functioning in maltreated individuals, likely in conjunction with other factors such as attachment. According to one widely-cited definition, “mindfulness means paying attention in a particular way: on purpose, in the present moment, and non-judgmentally” (Kabat-Zinn, 1994, p.4). Mindfulness is operationalized differently in various studies, which leads to discrepancies in the interpretations of empirical findings. Accordingly, Baer, Smith, Hopkins, Krietemeyer, and Toney (2006) conducted a factor analysis using several mindfulness questionnaires in an attempt to delineate common components. This study revealed four independent facets of mindfulness: (a) non-reactivity, which relates to individuals’ ability to perceive emotions without reacting; (b) acting with awareness, which highlights the importance of paying attention to one’s experiences; (c) describing, which emphasizes the value of labelling thoughts; and (d) non-judging, which relates to the maintenance of a non-critical perspective. A fifth factor, observing, was found to overlap with these other independent constructs. These factors were related to a number of other variables, including self-compassion, emotional intelligence, alexithymia, emotional regulation, internalizing symptoms, and experiential avoidance. Given these relations, the present studies evaluated mindfulness based on the measure developed by Baer et al. (2006), from a trait perspective. Other studies have focused on mindfulness as an acquired skill that improves with practice. There is certainly an overlap between these conceptualizations in terms of outcomes and correlates, however some studies suggest that state and trait measures cannot be equated and may represent somewhat different constructs (e.g., Frewen, Lundberg, MacKinley, & Wrath, 2011; Thompson & Waltz, 2007). Considering that repeated practice may facilitate the transition between state and trait, both skill-based and trait perspectives are important to consider.

Researchers have posited that mindfulness elicits cognitive, autonomic, and neurobiological changes, which likely underscore the adaptive benefits noted in mindfulness.
practitioners and individuals with high levels of trait mindfulness. In terms of attention, Valentine and Sweet (1999) found that mindfulness practitioners could better detect unexpected stimuli (i.e., different frequency tones) compared to control participants with no meditation experience by approximately 5%. These results implicate a role for underlying attentional changes following mindfulness meditation. Autonomic changes have also been found in people who practice mindfulness meditation. Various studies indicate that mindfulness practitioners have increased heart rate variability during meditation compared to rest (Lehrer, Sasaski, & Saito, 1999; Peng et al., 1999). Heart rate variability, or the interval between successive heart rates, is associated with positive health outcomes. For example, those with low heart rate variability are at risk for sudden death from cardiac complications (Ho et al., 1997; Ivanov et al., 1996). Moreover, mindfulness meditation is associated with skin conductance response (SCR). Goleman and Schwartz (1976) found that meditators experienced increased SCR in response to viewing woodshop accidents, however they returned more quickly to baseline than non-meditators. This suggests that mindfulness reduces prolonged reactivity to difficult events, potentially because mindfulness can prevent negative ruminative tendencies.

Research has also found that mindfulness alters brain structure, facilitates neural plasticity, and alters the interconnections of neurons in various areas of the brain. For example, Lazar et al. (2005) found associations between mindfulness and increased thickness in the middle prefrontal area and the right insula areas of the brain, which are devoted to processes like emotion regulation and empathy (Cozolino, 2002; Schore, 2003; Soloman & Siegel, 2003; Siegel, 2007). Interestingly, these areas overlap with those areas compromised in maltreated children (Bremner et al., 1995; Bremner et al., 1997; Teicher et al., 2004). A review of many other studies corroborated these findings regarding increased thickness in the middle prefrontal cortical areas following mindfulness meditation (Cahn & Polich, 2006). In addition, areas of the brain associated with attention (e.g., the anterior cingulate cortex) are also implicated (Cahn & Polich, 2006), which lends support to research findings suggesting that the allocation of attentional resources is responsible for some observed mindfulness-related outcomes.

Whether induced (i.e., though intervention or positive interpersonal relationships) and/or dispositional in nature, mindfulness may protect individuals from the negative outcomes associated with maltreatment. However, very few studies have examined whether mindfulness (or lack thereof) mediates or moderates the relationship between emotional maltreatment and
internalizing outcomes. As well, it is unclear at a conceptual level whether mindfulness is a developmental outcome of attachment relationships, or whether it develops in parallel. Although the present studies are cross-sectional in nature and therefore cannot determine the longitudinal development of these factors, they nevertheless shed some light on these theoretical perspectives.

The relation between attachment and mindfulness.

Some recent investigations reveal intriguing associations involving mindfulness, attachment, and overall functioning. Walsh et al. (2009) examined the correlations between mindfulness, attachment anxiety, and attachment avoidance. Trait and attachment anxiety, but not avoidant attachment, were inversely predictive of self-reported mindfulness, such that anxious individuals tended to actively seek threatening environmental cues and ruminate about distressing information. These tendencies were at odds with mindful inclinations, which involve acceptance and non-judgment of thoughts and events. Interestingly, these findings are consistent with a trend noted in highly anxious individuals, regarding their sometimes maladaptive tendency to rapidly orient toward threatening stimuli and away from positive rewarding stimuli (e.g., Frewen, Dozois, Joanisse, & Neufeld, 2008). In another study, Shaver, Mikulincer, Lavy, and Cassidy (2009) examined correlations between dimensions of attachment (insecurity, attachment, and avoidance) and mindfulness (non-reactivity, observing, describing, acting with awareness, non-judging). Significant negative correlations were found between avoidant attachment and all facets of mindfulness. Attachment anxiety was negatively related to all mindfulness components except observing and describing. Moreover, attachment anxiety and avoidance predicted between 10% and 38% of the variance in mindfulness scores, each contributing to both unique and shared variability.

Similar correlates and outcomes have been found that further link these two constructs. Both are related to physical and mental health outcomes, stress reactivity, emotion regulation, academic proficiencies, and social competence (Kabat-Zinn, 2003; Mikulincer & Shaver, 2007; Sroufe, Egeland, Carlson, & Collins, 2005). Considering that mindfulness may be conceptualized as a relationship with the self, it is interesting to note that mindfulness affects areas traditionally associated with the social circuitry of the brain. Siegel (2007) proposed that “the interpersonal attunement of secure attachment between parent and child is paralleled by an intrapersonal form of attunement in mindful awareness. Both forms of attunement promote the capacity for intimate
relationships, resilience, and well-being” (p. 26). Both attachment and mindfulness may instigate growth of the fibers of the prefrontal cortex, which is responsible for emotion regulation, interpersonal responsiveness, response flexibility, and empathy (Cozolino, 2002; Schore, 2003; Soloman & Siegel, 2003; Siegel, 2007). Consequently, it may be expected that secure attachment, coupled with increased mindfulness, may promote adaptive functioning in individuals with a history of maltreatment.

The exact nature of the relation between attachment styles and mindfulness is unspecified. Ryan, Brown, and Creswell (2007) posited that secure attachment, characterized by a caregiver’s respect for their child’s autonomy and sensitive responding to their child’s cues, may facilitate a child’s mindful attunement to other individuals. As well, mindfulness could function simultaneously with attachment to cultivate an open and receptive approach to interpersonal interactions. Despite the interesting overlap between these constructs and the theoretical speculations about the nature of their association, no studies have empirically addressed how attachment and mindfulness work together to predict outcomes. Accordingly, the present studies evaluated the influence of attachment and mindfulness on a variety of outcomes, namely internalizing distress (Study 1 and Study 2) and indices of emotional processing (Study 2).

**Study 1**

**Introduction and Goals**

Although studies have found overlaps between emotional maltreatment, adult attachment, mindfulness, and internalizing symptoms, researchers still know very little about the nature and direction of these associations. Accordingly, Study 1 was designed to a) test competing pathway models that placed adult attachment and mindfulness as either simultaneous or sequential mediators of the relationship between early experiences of emotional maltreatment and later developing internalizing symptoms and b) examine whether adult attachment and mindfulness also acted as moderators of the relationship between childhood emotional maltreatment and internalizing symptoms. Researchers have argued that, with solid theoretical grounding, variables can act as both moderators and mediators concurrently (Baron & Kenny, 1986; Frazier, Tix, & Baron, 2004). Although cross-sectional and correlational in nature, this study nevertheless shed light on the theoretical relationships between these variables.
Corroborating evidence across numerous studies has consistently demonstrated the relation between emotional maltreatment and internalizing distress (Briere & Runtz, 1988; Gibb et al., 2007; Sachs-Ericsson et al., 2006; Stuewig & McHoskey, 2005). The parenting behaviours that characterize emotional maltreatment (e.g., denigration, insensitivity, rejection, role-reversal) are key predictors of insecure attachment (Ainsworth et al., 1978; van Ijzendoorn, 1995). In fact, emotional maltreatment has been shown to predict unique variance in adult attachment style, above and beyond the influence of other forms of maltreatment (Riggs & Kaminski, 2010). In turn, insecure attachment is related to a host of psychopathological outcomes (Cole-Detke & Kobak, 1996; Eng et al., 2001; Williams & Riskind, 2004). Mothers who emotionally maltreat their children may hinder emotional development by demonstrating less positive emotion and more negative emotion (Bousha & Twentyman, 1984; Bugental, Blue, & Lewis, 1990; Burgess & Conger, 1978; Herrenkohl, Herrenkohl, Egolf, & Wu, 1991; Kavanagh, Youngblade, Reid & Fagot, 1988), demonstrating fewer emotional vocalizations (Cicchetti & Beeghly, 1987) and providing inconsistent emotional responses that often lack valence congruency with contextual cues (Camras, Sachs-Alter, & Ribordy, 1996). This could compromise the emotional regulation and socialization skills of maltreated children, resulting in a cascade of negative experiences and outcomes (Riggs, 2010). In these ways, attachment is a likely candidate for mediating the relation between childhood emotional maltreatment and internalizing symptoms.

Although certainly vulnerable to the development of internalizing distress following emotional maltreatment, not all insecurely attached individuals demonstrate mental health symptoms (Riggs & Jacobvitz, 2002). This could be due to a balance of more positive interactions with maltreating caregivers, less potentiating stressors, or the presence of a separate secure attachment relationship (Solomon & George, 1999). Longitudinal studies have demonstrated some stability in the attachment relationship from infancy through adulthood (Grossman, Grossman, & Waters, 2005), however “the attachment organization developed in childhood does not predetermine an individual’s attachment style in later life, nor does it necessarily forecast a particular prognosis for lifetime adjustment and mental health” (Riggs, 2010, p. 16). Bowlby (1973) emphasized the benefits of maintaining continuity and stability in attachment representations in the face of fluctuations in one's environment. That being said, attachment representations need to remain flexible to environmental, social, and developmental
changes (Mikulincer & Shaver, 2009). The transactional model proposed by Collins and Sroufe (1999) supports the notion of simultaneous continuity and discontinuity in development, stipulating that early experiences are influential in terms of children’s later functioning. However, development is further affected by variations in children’s experiences and acquirement of certain skills (e.g., empathy, conflict resolution). As well, Fraley (2002) constructed mathematical models suggesting that infant attachment style is somewhat stable over time, with room for the influence of discrepant events or relationships (‘prototype model’). The ‘revisionist model’, which hypothesized continuous change over time without the exerted influence of a prototype, did not fit the data as well as the prototype model. It therefore seems likely that meditation and moderation influences could co-occur with regard to attachment representations and the development of internalizing distress following maltreatment.

Similar to the effects noted for attachment, the development of mindful qualities could be disrupted following early maltreatment, leaving an individual vulnerable to internalizing symptoms. However, very little is known about the relation of mindfulness to early childhood maltreatment, attachment, and mental health. Some correlational research has revealed negative associations between mindfulness and maltreatment (Michal et al., 2007) as well as mindfulness and internalizing symptoms (Davidson et al., 2003). That is, lower levels of mindfulness are related to both maltreatment and increased internalizing distress. It seems likely that “the capacity for receptive awareness that mindfulness entails can be disrupted by various developmental insults, especially those that engender chronic feelings of threat and/or fear-based vigilance” (Brown, Ryan, & Creswell, 2007). Emotional maltreatment and/or insecure attachment representations could therefore limit the development of mindful tendencies or disrupt already existing mindfulness traits. No studies have tested whether mindfulness acts as a mediator between emotional maltreatment and internalizing symptoms, or between adult attachment and internalizing symptoms, despite demonstrated associations between these constructs. This knowledge could help inform theories regarding the underlying processes contributing to internalizing symptoms. Therefore, Study 1 sought to compare two competing mediation models that placed mindfulness as either a simultaneous (see Figure 1) or sequential (see Figure 2) mediator of the relation between emotional maltreatment and internalizing symptoms.
As well, empirical evidence and theory suggests that mindfulness could act as a moderator of this relationship. If individuals have positive experiences, reparative interpersonal relationships, and/or resilient pre-dispositions, they could presumably develop higher levels of mindfulness even in the aftermath of challenging early relationships. The attention and awareness inherent in mindfulness dispositions is critical for effective self-regulation (e.g., Carver & Scheier, 1998), which in turn prevents the internalization of negative affect. Neurologically, the activation of the anterior cingulate cortex, which is associated with dispositional mindfulness, facilitates this emotion regulation (Miller & Cohen, 2001; Ochsner & Gross, 2008). Preliminary evidence suggests that high levels of trait mindfulness can buffer against negative outcomes in at-risk individuals. For example, Bernstein and colleagues (2011) found that high levels of mindful attention and awareness were associated with the absence of psychopathology in traumatized individuals. As well, Saavedra, Chapman, & Rogge (2010) found that mindfulness protected individuals with high levels of attachment anxiety from the risk of relationship dissolution. As such, it is like that mindfulness has the capacity to moderate the negative consequences associated with both maltreatment and insecure attachment (e.g., Brown & Ryan, 2003; Carlson & Brown, 2005).

Hypotheses

1) It was anticipated that emotional maltreatment would be positively related to attachment anxiety and attachment avoidance, and negatively related to mindfulness. As well, it was expected that attachment styles and mindfulness would be inversely related.

2) It was hypothesized that attachment anxiety, attachment avoidance, and mindfulness would mediate the relationship between emotional maltreatment and internalizing symptoms. The comparative fit of models that place mindfulness as a simultaneous, or second step, mediator has not been examined in prior research and was therefore exploratory in nature. Path analyses were used to examine the mediator effects, followed by structural equation modeling to test overall fit and compare the two models.

3) It was further hypothesized that attachment and mindfulness would moderate the effects of emotional maltreatment on internalizing symptoms. Specifically, emotionally maltreated individuals who reported secure attachment relationships (i.e., low levels of attachment anxiety or attachment avoidance) or high levels of trait mindfulness, were
expected to report reduced internalizing symptoms. As well, mindfulness was expected to moderate the relation between attachment style and internalizing symptoms in a comparable way.

Methods

Participants. A total of 233 participants participated in this study, aged 17-36 years ($M = 18.31$ years). Participants were female students registered in first year psychology courses and participating in the University of Guelph mass testing program. In terms of ethnic or cultural heritage, 82% of participants identified themselves as White/Caucasian (e.g., British, German, Italian), 5% as Asian (e.g., Chinese, Japanese, Taiwanese), 6% as South Asian (e.g., East Indian, Pakistani, Sri Lankan), 2% as Arab/West Asian (e.g., Armenian, Egyptian, Iranian), 1% as Black (e.g., African-American, Caribbean, Haitian), 2% as Native/Aboriginal (e.g., First Nations, Inuit), 1% as Latin-American (e.g., Cuban, Puerto Rican, Mexican), and 1% as “other”. With regard to sexual orientation, 4% identified themselves as homosexual, 91% as heterosexual, and 5% as bisexual. Demographic variables did not correlate significantly with the key questionnaire variables. Participants were screened based on their responses to 12 questions, 6 of which evaluated emotional abuse and 6 of which evaluated emotional neglect. A subset of 300 individuals scoring in the upper 40th and lower 20th percentile of the screening test were randomly selected and invited via email to sign up for the study, resulting in a 78% response rate, with an approximately equal distribution of high and low risk participants.

Procedures. Participants who met eligibility criteria based on the prescreening questionnaire were able to view an internet link on the participant pool (SONA) website. This webpage contained a consent form that stated the purpose and procedures of the study, the contact information for the researchers, and an outline of the risks and benefits of the study. As well, it explained that participation in the study was confidential and that participants could withdraw at any point without penalty. After reading the consent form and agreeing to participate, participants entered their email address. A unique password and internet link to the online survey was then sent to them. This ensured that participants’ identifying information and data could be kept in separate files. The consent form and battery of questionnaires were
transferred into an online survey by Julia West using Remark Web Survey. The server was located in Cambridge, Ontario in a monitored, secure access, and air conditioned environment.

To provide further information for any students who wanted a more comprehensive consultation or therapy to address internalizing or other trauma-related symptoms, an information sheet on mental health resources was provided to all participants at the end of the study. In terms of disclosing ongoing abuse to a participant, sibling, or other child, participants were invited to volunteer this information if they desired as part of the debriefing form. No participants checked this option. Contact information for Family and Children’s Services was also provided, for participants who wished to report the maltreatment themselves. The potential experience of stress incurred by completing the online survey was addressed by presenting participants with a 3-minute nature video at the end of the questionnaire set. Previous research has demonstrated the effectiveness of this approach for restoring self-regulatory capabilities and reducing stress (Kaplan & Berman, 2010).

Measures.

*The Life Experiences Questionnaire (LEQ; Gibb et al., 2001)*. This 82-item self-report questionnaire assesses histories of childhood maltreatment in the following domains: physical neglect, emotional neglect, emotional abuse, physical abuse, and sexual abuse. For the purposes of the present study, only the total number of items endorsed within the emotional neglect (e.g., “When you had a problem or were worried about something, did you usually decide not to go to your caretakers for help because you believed they would not try to help you?”) and emotional abuse (e.g., “Did any of your caretakers ever say they wished they were not parents or that you had never been born?”) domains were used for analyses. Scores ranged from 0-7 for the 10 items on the emotional neglect scale, and from 0-27 for the 27 items on the emotional abuse scale. Some questions asked participants to differentiate between different perpetrators. For these questions, only the answer relating to parental perpetrators was retained. Previous research has demonstrated the LEQ’s internal consistency, retest reliability, and convergent validity with the corresponding scales of the Childhood Trauma Questionnaire (Gibb et al., 2001; Gibb, Alloy, Abramson, & Marx, 2003; Mendelson, Robins, & Johnson, 2002). For the present study, internal

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2 The sexual abuse subscale was not administered online to participants, due to concerns about ethical considerations and because questions regarding sexual abuse were not central to the study’s purpose.
INVESTIGATING CHILDHOOD EMOTIONAL MALTREATMENT

consistency was as adequate for both the emotional abuse subscale ($\alpha = .87$) and the emotional neglect subscale ($\alpha = .74$).

**Childhood Attachment and Relational Trauma Scale (CARTS; Frewen et al., 2010).** This retrospective survey assesses participants’ histories of maltreatment, as well as the overall quality of intrafamilial relationships during childhood. For each statement, participants indicated whether certain family members were applicable. The present study only used summation scores for items addressing emotional maltreatment committed by parents. That is, the total number of emotional maltreatment items endorsed for both mothers and fathers were included in analyses. Research has found that the CARTS demonstrates convergent validity with the Childhood Trauma Questionnaire, and adequate reliability in relation to both mothers and fathers, for the following subscales: Negative Attention From (e.g., “This person got upset with me and yelled at me a lot”; $\alpha = .81-.85$), Negative Feelings From (e.g., “This person made me feel sad or upset”; $\alpha = .83$), Emotionally Abusive to Self (e.g., “This person called me bad names and said mean things to me”; $\alpha = .59-.67$), Emotionally Abusive to Others (e.g., “This person called people in my family bad names and said mean things to them”; $\alpha = .73-.82$), and Negative Beliefs From (e.g., “I thought that this person didn’t like me very much”; $\alpha = .72-.80$) (Frewen et al., 2010). In the present study, the internal consistency of the mean composite score based on the 17 items from these five scales was adequate, $\alpha = .63$. Scores ranged from 0 – 15.

**Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006):** This 39-item questionnaire evaluates mindfulness traits along five dimensions, including: observing (e.g., “When I’m walking, I deliberately notice the sensations of my body moving”), describing (e.g., “I’m good at finding words to describe my feelings”), acting with awareness (e.g., “When I do things, my mind wanders off and I’m easily distracted”), non-judging (e.g., “I criticize myself for having irrational or inappropriate emotions”), and non-reactivity (e.g., “I perceive my feelings and emotions without having to react to them”). Each scale is represented by eight items, with the exception of non-reactivity, which is comprised of seven items. On a Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true), participants rated the degree of concordance of statements with their own experiences in daily life. Good internal consistency and validity has been demonstrated for the FFMQ (Baer et al., 2006). For the present study, the internal consistencies of the FFMQ subscales were as follows: describing ($\alpha = .91$), acting with awareness ($\alpha = .88$), non-judging ($\alpha = .91$), non-reactivity ($\alpha = .74$), and observing ($\alpha = .75$). The
mean scores for each scale ranged from 1-5 for describing, 1-5 for acting with awareness, 1-5 for non-judging, 1-4.86 for non-reactivity, and 1-5 for observing.

**Experiences in Close Relationships** (ECR; Brennan et al., 1998): The 36-item self-report questionnaire measures two dimensions of adult attachment: attachment anxiety and attachment avoidance. The anxiety dimension consists of 18 items that reflect fears of abandonment and fixation on interpersonal relationships (e.g., “I need a lot of reassurance that I am loved by my partner”). The avoidance dimension consists of 18-items that reflect discomfort and avoidance in interpersonal relationships (e.g., “I want to get close to my partner, but I keep pulling back”). Participants responded to items on a 7 point scale, ranging from 1 (not at all) to 7 (very much). The ECR demonstrates strong psychometric properties, including construct validity and reliability (e.g., Brennan et al., 1998; Fraley, Waller, & Brennan, 2000). In the present study, an additional instruction was provided that allowed individuals to check a box if they had not experienced a romantic relationship. In these situations, participants were instructed to base their reports on a close friendship. For the present study, internal consistency was strong for attachment anxiety ($\alpha = .93$) and attachment avoidance ($\alpha = .96$). The mean score for each subscale ranged from 1-6.77 for attachment anxiety and from 1-6.94 for attachment avoidance.

For the purposes of structural equation modeling, three indicator parcels were created for the two latent variables (attachment anxiety and attachment avoidance) based on the recommendations of Russell, Kahn, Spoth, & Altmaier (1998). That is, exploratory factor analysis using maximum likelihood extraction was conducted for attachment anxiety and attachment avoidance separately. Factor loadings for all items were rank ordered from highest to lowest. The highest and lowest factor loadings were combined and assigned to each of the three parcels sequentially. This approximately equalized the average loadings across parcels.

**Depression Anxiety Stress Scales** (DASS; Lovibond & Lovibond, 1995): This 42-item self-report scale measures the degree to which participants have experienced negative emotional symptoms over the past week, using a 4-point Likert scale ranging from 0 (“Did not apply to me at all”) to 3 (“Applied to me very much, or most of the time”). Three scales (i.e., depression, anxiety, stress) are derived from creating total scores for the relevant 14 items. The depression scale measures symptoms of dysphoric mood (e.g., “I couldn’t seem to experience any positive feeling at all”), the anxiety scale measures symptoms of anxiety (e.g., I was worried about situations in which I might panic and make a fool of myself”), and the stress scale measures
symptoms of stress (e.g., “I found it difficult to relax”). In the present study, internal consistencies for the sample were high for the depression scale (α = .95), the anxiety scale (α = .91) the stress scale (α = .92), and the overall scale (α = .97). The total score for each subscale ranged from 0-38 for stress, 0-38 for anxiety, and 0-39 for depression. Given that the hypotheses of the present study revolved around general internalizing distress, a composite DASS score was used for pathway and moderation analysis. This is consistent with previous work demonstrating that the subscales of the DASS are highly correlated and load onto a common factor (Lovibond & Lovibond, 1995).

Results

Descriptive statistics.

Means, standard deviations, and zero-order correlations for the study variables are presented in Table 1. Skewness and kurtosis values for the observed variables were all below 1, with the exception of anxiety, depression, emotional abuse, and emotional neglect. The values for these variables fell between 1 and 2, which is generally considered acceptable. An examination of the variable correlations revealed patterns consistent with those expected. That is, significant positive correlations were found between emotional maltreatment and attachment variables, as well as attachment and internalizing symptom variables. Negative correlations were found between emotional maltreatment and mindfulness variables, as well as mindfulness and attachment variables.

A more specific examination of the various facets of mindfulness revealed that the “observing” subscale was differentially related to outcomes when compared to the remaining facets (describing, acting aware, non-judging, and non-reacting). That is, the observing mindfulness facet was positively related to emotional maltreatment and internalizing symptoms, which contrasted the negative relation found for the other facets of mindfulness. As well, the correlations for the observing facet were smaller than most other observed correlations. This corroborates studies that have found positive or non-significant associations between observing and mental health symptoms, particularly in student samples of non-meditators (e.g., Bowlin & Baer, 2012). Accordingly, analyses will refer to mindfulness, which is a mean composite of all

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3 In order to compare results, square root transformations were completed for the variables with skewness and/or kurtosis values between 1 and 2. The results for these SEM models were entirely consistent with those reported.
factors except observing ($\alpha = .90$). This is consistent with the approach taken by Bowlin and Baer.

**Examining mediation effects.**

**Path models.**

In order to examine the influence of attachment and mindfulness on the relationship between emotional maltreatment and internalizing symptoms, mediation analyses were conducted. First, three models were analysed using path analysis. Second, both simultaneous and sequential models were tested and compared using structural equation modeling. All model figures present unstandardized coefficients, which are considered the preferred metric for causal modeling (Hayes & Preacher, 2010). For the path analyses, the first model evaluated the simultaneous mediation of attachment anxiety, attachment avoidance, and mindfulness using the SPSS *Indirect* macro developed by Preacher and Hayes (2008). The second model was a two-step mediational analysis, with emotional maltreatment as the independent variable, attachment anxiety as the first mediator, mindfulness as the second mediator, and internalizing symptoms as the dependent variable. The third model was similar to the second model, but instead included attachment avoidance as a first mediator. Both two-step mediation models were analysed using the SPSS *MEDTHREE* macro (Hayes, Preacher, & Myers, 2010). Bootstrapping, which is presently considered a best practice approach (Preacher & Hayes, 2008) was used to evaluate indirect effects. Bias corrected and accelerated confidence intervals (BCa CI) above zero indicated the presence of a significant mediator. Confidence intervals were set at 0.95 with 5000 resamples. The mean of standardized scores for emotional abuse (LEQ), emotional neglect (LEQ) and emotional maltreatment (CARTS) was used as the independent variable for all mediation models.

The first model, which evaluated the concurrent mediational effects of attachment anxiety, attachment avoidance, and mindfulness, was significant, $F(4, 228) = 42.12, p < .001$ and accounted for 41.5% of the variance in internalizing symptoms. Table 2 outlines the BCa CI for the indirect effects, demonstrating that all three mediators significantly mediated the

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4 This macro provides path estimates and bootstrapping intervals for multiple mediator models (i.e., $X \rightarrow M1/M2/M3 \rightarrow Y$).

5 This macro provides path estimates and bootstrapping intervals for multiple step models (i.e., $X \rightarrow M1 \rightarrow M2 \rightarrow Y$).
relationship between emotional maltreatment and internalizing symptoms. Path estimates for each pathway (see Figure 1) suggested that increased childhood emotional maltreatment led to decreased total mindfulness, increased attachment anxiety, and increased attachment avoidance, which in turn led to increased internalizing symptoms.

The second model evaluated a sequential mediation with emotional maltreatment as the independent variable, attachment anxiety as the first mediator, mindfulness as the second mediator, and internalizing symptoms as the dependent variable. Overall, this model accounted for 41% of the variance in internalizing symptoms. The path coefficients for the second model were all significant and bootstrap intervals suggested that the direct mediational effects between emotional maltreatment and internalizing symptoms through attachment and mindfulness were significant (see Table 3 and Figure 2). This suggested that emotional maltreatment led to elevated attachment anxiety, which in turn led to low levels of mindfulness, and finally higher internalizing symptoms. In addition to this two-step mediation, the one-step mediation effects for attachment anxiety and mindfulness were also significant.

The third model, which evaluated a similar two-step mediation model with attachment avoidance included as the first mediator, revealed significant path coefficients for all paths (see Table 4 and Figure 3). Mediation effects were noted through both the one step paths and the two step path. Overall, this model accounted for 32.6% of the variance in internalizing symptoms.
Table 1

*Means, Standard Deviations, and Correlations of Study Variables*

<table>
<thead>
<tr>
<th>Measure</th>
<th>M (SD)</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
<th>11.</th>
<th>12.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Emotional Abuse (LEQ)</td>
<td>5.51(5.12)</td>
<td>—</td>
<td>.73**</td>
<td>.62**</td>
<td>-.17**</td>
<td>-.41**</td>
<td>-.24**</td>
<td>-.15*</td>
<td>.27**</td>
<td>.21**</td>
<td>.31**</td>
<td>.34**</td>
<td>.39**</td>
</tr>
<tr>
<td>2. Emotional Neglect (LEQ)</td>
<td>1.50(2.12)</td>
<td>—</td>
<td>.66**</td>
<td>-.13*</td>
<td>-.38**</td>
<td>-.10</td>
<td>-.05</td>
<td>.14*</td>
<td>.17*</td>
<td>.20**</td>
<td>.21**</td>
<td>.23**</td>
<td></td>
</tr>
<tr>
<td>3. Emotional Maltreatment (CARTS)</td>
<td>4.70(5.82)</td>
<td>—</td>
<td>-.22*</td>
<td>-.32**</td>
<td>-.18**</td>
<td>-.18*</td>
<td>.20*</td>
<td>.24**</td>
<td>.28**</td>
<td>.38**</td>
<td>.30**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Mindfulness – Describe</td>
<td>3.22(.82)</td>
<td>—</td>
<td>.37**</td>
<td>.18**</td>
<td>.24**</td>
<td>-.21**</td>
<td>-.21**</td>
<td>-.19**</td>
<td>-.20**</td>
<td>-.16*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Mindfulness – Act Aware</td>
<td>3.00(.71)</td>
<td>—</td>
<td>.31**</td>
<td>.22**</td>
<td>-.39**</td>
<td>-.29**</td>
<td>-.37**</td>
<td>-.39**</td>
<td>-.43**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Mindfulness – Non-Judge</td>
<td>3.04(.91)</td>
<td>—</td>
<td>.13</td>
<td>-.39**</td>
<td>-.28**</td>
<td>-.39**</td>
<td>-.42**</td>
<td>-.45**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Mindfulness – Non-React</td>
<td>2.92(.61)</td>
<td>—</td>
<td>-.26**</td>
<td>.08</td>
<td>-.19**</td>
<td>-.19**</td>
<td>-.29**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Attachment Anxiety</td>
<td>3.83(1.19)</td>
<td>—</td>
<td>.21**</td>
<td>.44**</td>
<td>.49**</td>
<td>.56**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Attachment Avoidance</td>
<td>3.13(1.32)</td>
<td>—</td>
<td>.26**</td>
<td>.38**</td>
<td>.22**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Anxiety (DASS)</td>
<td>7.64(7.60)</td>
<td>—</td>
<td>.70**</td>
<td>.79**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Depression (DASS)</td>
<td>9.03(9.32)</td>
<td>—</td>
<td></td>
<td>.79**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Stress (DASS)</td>
<td>11.50(8.76)</td>
<td>—</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

*Note.* *p < .05; **p < .001
Table 2

*Model 1: Indirect Effects of Emotional Maltreatment on Internalizing Symptoms*

<table>
<thead>
<tr>
<th>Model Summary</th>
<th>Point Estimate</th>
<th>S.E.</th>
<th>BCa 95% CI Lower</th>
<th>BCa 95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1.74</td>
<td>.36</td>
<td>1.06</td>
<td>2.48</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>.77</td>
<td>.23</td>
<td>.37</td>
<td>.62</td>
</tr>
<tr>
<td>Attachment Anxiety</td>
<td>.71</td>
<td>.23</td>
<td>.33</td>
<td>1.26</td>
</tr>
<tr>
<td>Attachment Avoidance</td>
<td>.25</td>
<td>.13</td>
<td>.05</td>
<td>.62</td>
</tr>
</tbody>
</table>

*Note. BCa = bias corrected and accelerated. Estimates based on 5000 bootstrap samples.*
Figure 1. Multiple mediation model of childhood emotional maltreatment predicting (a) path estimates for the direct effect of childhood emotional maltreatment on internalizing symptoms and (b) path estimates for the indirect effects of emotional maltreatment on internalizing symptoms.

*p<.05; **p<.001
Table 3

*Model 2: Indirect Effects of Emotional Maltreatment on Internalizing Symptoms*

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Mediator 1</th>
<th>Mediator 2</th>
<th>Point Estimate</th>
<th>S.E.</th>
<th>BCa 95% CI Lower</th>
<th>Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Maltreatment</td>
<td>Attachment Anxiety</td>
<td>Mindfulness</td>
<td>.24</td>
<td>.09</td>
<td>.09</td>
<td>.44</td>
</tr>
<tr>
<td>Emotional Maltreatment</td>
<td>Attachment Anxiety</td>
<td>—</td>
<td>.73</td>
<td>.24</td>
<td>.32</td>
<td>1.24</td>
</tr>
<tr>
<td>Emotional Maltreatment</td>
<td>Mindfulness</td>
<td>—</td>
<td>.61</td>
<td>.21</td>
<td>.25</td>
<td>1.09</td>
</tr>
</tbody>
</table>

*Note.* BCa = bias corrected and accelerated. Estimates based on 5000 bootstrap samples.
Figure 2. Two step mediation model of childhood emotional maltreatment predicting (a) path estimates for the direct effect of childhood emotional maltreatment on internalizing symptoms and (b) path estimates for the indirect effects of childhood emotional maltreatment on internalizing symptoms.

* $p < .05$; ** $p < .001$
Table 4

*Model 3: Indirect Effects of Emotional Maltreatment on Internalizing Symptoms*

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Mediator 1</th>
<th>Mediator 2</th>
<th>Point Estimate</th>
<th>S.E.</th>
<th>BCa 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Lower</td>
</tr>
<tr>
<td>Emotional Maltreatment</td>
<td>Attachment Avoidance</td>
<td>Mindfulness</td>
<td>.18</td>
<td>.08</td>
<td>.05</td>
</tr>
<tr>
<td>Emotional Maltreatment</td>
<td>Attachment Avoidance</td>
<td>—</td>
<td>.30</td>
<td>.15</td>
<td>.05</td>
</tr>
<tr>
<td>Emotional Maltreatment</td>
<td>Mindfulness</td>
<td>—</td>
<td>1.06</td>
<td>.28</td>
<td>.56</td>
</tr>
</tbody>
</table>

*Note.* BCa = bias corrected and accelerated. Estimates based on 5000 bootstrap samples.
*Figure 3.* Two step mediation model of childhood emotional maltreatment predicting (a) path estimates for the direct effect of childhood emotional maltreatment on internalizing symptoms and (b) path estimates for the indirect effects of childhood emotional maltreatment on internalizing symptoms.

* p < .05; ** p < .001
Measurement model.

Consistent with the recommendations presented by Anderson and Gerbing (1988), a confirmation factor analysis (CFA) measurement model was initially tested to ensure acceptable fit before testing the competing structural models. All models were estimated using the maximum-likelihood method in AMOS 19 (Arbuckle, 2010). The measurement model incorporated only covariances between all latent variables. A total of 16 observed variables and 5 latent variables were included in this CFA. The following goodness-of-fit statistics were used to assess model fit: the comparative fit index (CFI; values greater than .90 represent acceptable fit and values greater than .95 represent good fit; Bentler, 1992; Hu & Bentler, 1995) and the root-mean-square error of approximation (RMSEA; value of .08 or less represent adequate fit; MacCallum, Browne, & Sugawara, 1996). The $\chi^2$ statistic is also reported, for model comparison purposes, but it should be noted that $\chi^2$ is greatly influenced by sample size and the number of variables being estimated. Therefore, it is often difficult to achieve non-significance (i.e., good fit) for sample sizes over 200 (Tanaka, 1993; Maruyama, 1998).

According to these parameters, the measurement model demonstrated good fit to the data, CFI = .96, RMSEA = .073, $\chi^2 (94, N = 233) = 210.3, p < .001$. All factor loadings were significant ($p < .001$), indicating that each latent variable corresponded well with its respective indicator variables. Therefore, this measurement model was used to examine the hypothesized structural models.

Structural models.

The original hypothesized structural model (see Figure 4) approached adequate model fit, $\chi^2 (97, N = 233) = 266.1, p < .001$, CFI = .93, RMSEA = .087. All structural paths were significant ($p < .001$) except for the direct path between attachment avoidance and internalizing symptoms, and the direct path between emotional maltreatment and internalizing symptoms. All indicator variables significantly mapped onto corresponding latent variables, as indicated by significant factor loadings ($ps < .001$).

The alternative structural model (see Figure 5) fit well with the data, $\chi^2 (95, N = 233) = 216.6, p < .001$, CFI = .95, RMSEA = .073. A chi-difference test indicated that this alternative model was a better fit overall compared to the original hypothesized structural model, $\Delta \chi^2 (2, N = 233) = 49.5, p < .001$. An examination of the structural paths revealed that all paths were significant ($p < .01$), except for the direct path between attachment avoidance and internalizing symptoms and the direct path between emotional maltreatment and internalizing symptoms.  

---

6 Constraining these two non-significant paths to ‘0’ did not significantly alter model fit
Figure 4. Original simultaneous structural model, * $p < .05$; ** $p < .001$
Figure 5. Alternative sequential structural model, * $p < .05$; ** $p < .001$
Examining moderation effects.

Moderation regression analyses were conducted to evaluate whether the relation between childhood emotional maltreatment and internalizing symptoms differed based on individual differences in the level of self-reported attachment anxiety, attachment avoidance, and mindfulness. Emotional maltreatment was entered as a composite standardized mean between the subscales on the LEQ (emotional abuse), LEQ (emotional neglect subscale) and CARTS (parental emotional maltreatment). Mindfulness was assessed using the Five Facet Mindfulness Scale, attachment anxiety and avoidance were assessed using the ECR and internalizing symptoms were assessed using the DASS. All predictor variables were centered (Aiken & West, 1991). The hierarchical regression included individual predictor variables in Step 1, and interaction terms in Step 2. See Table 6 for a summary of coefficients from the regression analyses.

The first step of the model regressing onto internalizing symptoms was significant, $F(4, 228) = 42.12, p < .001$ and the predictor variables accounted for 42.5% of the variance in internalizing symptoms. Unique significant effects indicated that higher levels of emotional maltreatment, attachment anxiety, and attachment avoidance predicted enhanced internalizing symptoms, $t(228) = 2.91, p = .004$, $t(228) = 6.26, p < .001$, and $t(228) = 2.44, p = .01$ respectively. As well, mindfulness was negatively associated with internalizing symptoms, such that more mindful individuals reported less severe internalizing symptoms, $t(228) = -4.23, p < .001$.

The inclusion of interaction terms accounted for an additional 4.0% of the variation in internalizing symptoms, beyond that accounted for by each predictor individually, $\Delta F(5, 223) = 3.34, p = .006$. A significant interaction was found between attachment anxiety and mindfulness, $t(223) = -1.94, p = .008$ (see Figure 6). Simple slope analyses revealed that higher levels of attachment anxiety only contributed to increased internalizing symptoms for individuals with lower levels of mindfulness (i.e., 1 SD below the mean), $t(223) = 5.55, p < .001$. For individuals with high levels of mindfulness (i.e., 1 SD above the mean), internalizing symptoms did not vary at different levels of attachment anxiety.
Table 5
Summary of Regression Analyses for Emotional Maltreatment, Attachment, and Mindfulness Predicting Internalizing Symptoms

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SEB</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Maltreatment</td>
<td>1.38</td>
<td>.48</td>
<td>.16*</td>
</tr>
<tr>
<td>Attachment Anxiety</td>
<td>2.38</td>
<td>.38</td>
<td>.36**</td>
</tr>
<tr>
<td>Attachment Avoidance</td>
<td>.77</td>
<td>.32</td>
<td>.13*</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>-3.99</td>
<td>.94</td>
<td>-.26**</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Emotional Maltreatment</td>
<td>1.24</td>
<td>.48</td>
<td>.14*</td>
</tr>
<tr>
<td>Attachment Anxiety</td>
<td>2.79</td>
<td>.39</td>
<td>.42**</td>
</tr>
<tr>
<td>Attachment Avoidance</td>
<td>.93</td>
<td>.33</td>
<td>.16*</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>-4.00</td>
<td>.93</td>
<td>-.26**</td>
</tr>
<tr>
<td>Emotional Maltreatment x Attachment Anxiety</td>
<td>.16</td>
<td>.47</td>
<td>.02</td>
</tr>
<tr>
<td>Emotional Maltreatment x Attachment Avoidance</td>
<td>-.01</td>
<td>.35</td>
<td>-.002</td>
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<td>Emotional Maltreatment x Mindfulness</td>
<td>-.55</td>
<td>1.02</td>
<td>-.03</td>
</tr>
<tr>
<td>Attachment Anxiety x Mindfulness</td>
<td>-1.94</td>
<td>.73</td>
<td>-.16*</td>
</tr>
<tr>
<td>Attachment Avoidance x Mindfulness</td>
<td>-.78</td>
<td>.72</td>
<td>-.07</td>
</tr>
</tbody>
</table>

*Note. * p < .05; ** p < .001

Figure 6. Predicted values of internalizing symptoms according to attachment anxiety and mindfulness. Low Mindfulness = 1 SD below the mindfulness total mean; High Mindfulness = 1 SD above the mindfulness mean. A star denotes a significant simple slope.
Discussion

Study 1 provided evidence supporting a mediational model that situated attachment and mindfulness as mechanisms underlying the relationship between childhood emotional maltreatment and internalizing symptoms. When compared to a model with these constructs as simultaneous mediators, the sequential model that positioned attachment orientations as first step mediators and mindfulness as a second step mediator fit the data better. Although this model fit the data well, moderation effects indicated that some individual differences contributed to different internalizing outcomes. Namely, individuals with high levels of mindfulness were buffered against the increase in reported internalizing symptoms associated with high levels of attachment anxiety.

The mediational models examined in Study 1 are consistent with theoretical speculations regarding the developmental consequences of early maltreatment. It has been well-established that early emotional maltreatment leads to an assortment of damaging internalizing outcomes (e.g., Briere & Runtz, 1988; Gibb et al., 2007; Sachs-Ericsson et al., 2006; Stuewig & McCloskey, 2005). The exploration of mechanisms triggering these effects is just beginning, and many empirical questions still remain. Some emerging research has implicated the mediating role of insecure attachment style (e.g., Hankin., 2005; Riggs & Kaminski, 2010). This relationship is likely, particularly given the robust connections between emotional maltreatment and attachment style, as well as insecure attachment and internalizing symptoms (Carnelley, Pietromonaco, & Jaffe, 1994; Davila, Hammen, Burge, Daley, & Paley, 1996; Roberts, Gotlib, & Kassel, 1996). Therefore, it is likely that distal risk factors for internalizing symptoms (i.e., childhood emotional maltreatment) contribute to the development of symptoms through more proximal risk factors (i.e., adult attachment representations).

In the present study, attachment anxiety and mindfulness were direct mediators between emotional maltreatment and internalizing symptoms. Attachment anxiety is associated with a tendency to perceive and interpret incoming interpersonal information in a biased fashion. Consequently, this information is distorted in line with negative relational schemas that compromise adaptive functioning and instigate social-emotional issues (Bowlby, 1988; Mikulincer, 1998). As well, corresponding deficits in emotion regulation abilities and increased sensitivity to stressful events place these anxious individuals at risk for internalizing outcomes (Davila et al., 1996; Mikulincer, 1998). Similarly, increasing evidence suggests that low levels of
mindfulness are associated with a variety of negative emotional outcomes, including internalizing symptoms (e.g., Brown & Ryan, 2003; Orsillo & Roemer, 2005; Vujanovic et al., 2007; Zvolensky, Solomon et al., 2006).

The lack of direct mediation of attachment avoidance in the structural equation models suggests that this style may elicit more negative outcomes though other processes, like mindfulness. Direct influences of attachment avoidance may not lead to poorer outcomes per se, given that avoidant tendencies could prevent the ongoing re-experiencing of negative emotions in response to threatening interpersonal cues and rumination. Indeed, some studies have failed to find a direct relationship between attachment avoidance and internalizing symptoms (Cole-Detke & Kobak, 1996; Williams & Riskind, 2004). The adaptability of avoidance could also depend on environmental stress. Avoidance may be an effective strategy as long as individuals do not become overwhelmed. However, if avoidance leads to global deficits in mindfulness, this could result in internalizing symptoms.

The significance of mindfulness as a second-step mediator, both in the path analyses and the SEM analyses, indicated that both attachment dimensions may inhibit opportunities to develop an open, non-judgmental and present-focused orientation, which increases internalizing symptoms. Insecure attachment may contribute to this process through a variety of mechanisms. There may be considerable overlap in the neurological and physiological correlates of attachment and mindfulness (e.g., Gillath et al., 2005; Siegel, 2007), therefore it is unsurprising that both constructs contributed to similar internalizing outcomes in the present study. Attachment anxiety, with its concomitant biased processing of interpersonal information and ruminative tendencies, is at odds with the qualities inherent in mindfulness. Similarly, attachment avoidance may reduce mindful traits by decreasing awareness for interpersonal, intrapersonal, and other contextual stimuli. From a developmental perspective, we can speculate that compromised attachment relationships could inhibit the development of mindfulness, especially given the parallel consideration that “people who have experienced attentive, responsive, and sensitive caregiving are likely to be more securely attached and more mindful” (Ryan et al., 2007, p. 180). People who lack these secure relationships may develop working models of the self and others based on negative judgements, leaving less room for open-minded and non-judgemental orientations. In stressful situations, when these internal working models are activated, biased interpretations are made that support and further entrench these internal models.
However, it is possible that positive interpersonal and emotional experiences could disrupt this ongoing process, resulting in variability and more resilient outcomes. Moderation analyses supported this notion, indicating that internalizing outcomes were attenuated based on individual differences in mindfulness. Some research suggests that high levels of mindfulness in adults with a history of trauma are protective against the development of internalizing symptoms (Bernstein et al., 2011). Mindfulness may serve a protective role for individuals with insecure attachment styles by prohibiting the development of internalizing symptoms or by promoting recovery from internalizing symptoms. In those with high levels of attachment anxiety, mindfulness may allow for a more decentered approach to one’s thoughts, which may limit the extent to which anxious individuals ruminate about rejection and personal flaws. Rumination is a key contributor to the development of both depression and anxiety (e.g., Nolen-Hoeksema, 1991; Kocovski & Rector, 2007), and rumination has been found to mediate the inverse relationship between mindfulness and distress (e.g., Jain et al., 2007; Ramel, Goldin, Carmona, & McQuaid, 2004). Mindfulness may also facilitate a process whereby anxiously attached individuals are more open to consider information that disconfirms the expectations they hold based on ingrained relational schemas. These individuals may be better able to update existing schemas in the presence of incongruent information. In threatening situations, anxious attachment styles may be less frequently activated for mindful individuals. Therefore, the tendency to engage in hyperactivating behaviours (e.g., excessive proximity-seeking) may be somewhat tempered, resulting in less severe interpersonal and intrapersonal consequences (Saavedra et al., 2010).

Overall, increased mindfulness could buffer against the negative impact of insecure attachment representations. In conjunction with this buffering effect, mindfulness could also reduce internalizing symptoms through other proximal mechanisms. A mindful individual’s voluntary exposure to both positive and negative stimuli, through open and accepting awareness, could decrease emotional reactivity, increase distress tolerance, and promote adaptive coping (Feldner, Zvolensky, Eifert, & Spira, 2003; Levitt, Brown, Orsillo, & Barlow, 2004; Sloan, 2004). As well, insight and flexibility could result in a de-centered understanding of thoughts and feelings, which would decrease rumination and improve mental health (Teasdale, Moore, Hayhurst, Pope, Williams, & Segal, 2002). Finally, some emerging evidence suggests that mindfulness could have beneficial effects on physical indices of health (e.g., immunity, pain...
tolerance, stress reactivity), which could then reduce negative emotional states (Kabat-Zinn, Lipworth, & Burney, 1985; Davidson et al., 2003)

The combination of mediation and moderation effects in this study supports a prototype model of developmental change, one that supports continuity between early and later attachment representations with room for some discontinuities due to meaningful life experiences (Fraley, 2002; Grossmann et al., 2005). Although emotional maltreatment may lead to internalizing symptoms in the absence of reparative experiences, certain factors (environmental, interpersonal, and intrapersonal) likely alter this trajectory and engender positive outcomes for some individuals.

**Study 2**

**Introduction and Goals**

Given the preliminary nature of Study 1 findings, Study 2 was designed to confirm whether these results were replicated in a new sample. As well, Study 1 utilized a self-reported outcome measure, therefore it was unclear whether these indicator variables would similarly influence behavioural indices of functioning. Study 2 addressed this limitation by exploring the relations between emotional maltreatment, adult attachment, mindfulness, and two measures of emotional information processing. An emotional faces task evaluated individuals’ ability to identify facial expressions with varying degrees of perceptual information, and an emotional Stroop task evaluated individuals’ ability to inhibit attention to positive and negative emotional cues. These tasks both provide insight into processing biases associated with incoming emotional information, which research has related to internalizing distress (e.g., Brotman et al., 2004; Mogg et al., 2000; Segal, Gemar, Truchon, Guirguis, & Horowitz, 1995).

**Processing emotional faces.**

Emotional maltreatment can affect the way in which individuals process emotional cues, like facial expressions. It is important to understand these basic processing biases, given their association with psychopathological outcomes (e.g., Brotman et al., 2004; Easter et al., 2005; Hadwin, Garner, & Perez-Olivas, 2006). An exploration of individual differences using behavioural measures of emotional processing, in addition to a self-report measure of
internalizing symptoms, could help to enhance and generalize theories regarding emotional development following early adversity.

Adults worldwide readily identify emotional facial expressions, which implicates genetic underpinnings for this ability (Ekman, 1994). Nevertheless, research has not clearly distinguished the unique contributions of genetic and environmental factors nor the interplay of these contributors to emotional recognition. Studying intact and impaired processes in individuals with specified deficits may clarify the processes underlying emotional development. Proponents of nativist perspectives refer to studies indicating that infants show a very early proclivity towards emotional discrimination (Caron, Caron, & Myers, 1982; Haviland & Lelwica, 1987), however it is unclear whether this ability reflects understanding (Nelson, 1987). By age one, positive emotional expressions elicit approach behaviours and negative emotional expressions elicit avoidance (Walden & Ogan, 1988). Accurate labelling of emotional faces emerges by age 4 and further develops throughout early childhood (Camras & Allison, 1985; Denham, 1986, Izard, 1971). Clearly, emotional understanding is important for humans and develops early. However, the biological process of emotional development is vulnerable to environmental influences, which can elicit different trajectories of growth. Exploring the nature of these trajectories, including the intrapersonal and interpersonal variables associated with them and their consequent outcomes, helps illuminate our understanding of both positive and negative development following negative life experiences.

The perception and understanding of emotional faces are critical for navigating social relationships (Buck, 1999; Ekman, 1992; Fridlund, 1992; Hampson van Anders & Mullin, 2006) and deficits in this ability are associated with negative mental health outcomes (Edwards, Jackson, & Pattison, 2002; Matthews & MacLeod, 2005). For example, both highly anxious and depressed children and adults demonstrate poor recognition of facial expressions (e.g., Brotman et al., 2004; Easter et al., 2005; Feinberg, Rifkin, Schaffer, & Walker, 1986; Hadwin et al., 2006; Persad & Polivy, 1993), although some studies have found that biases in depressed individuals are restricted to certain emotional expressions or are not discernible at all (e.g., Archer, Hay, & Young, 1992; Rubinow & Post, 1986).

As early as infancy, maltreated children evidence compromised emotional understanding (Cicchetti & Beeghly, 1987; Gaensbauer, 1982). In particular, the speed and accuracy of facial expression recognition is impaired in these children. Camras, Grow, and Ribordy (1983)
evaluated the effects of maltreatment on emotion understanding in 3-7 year old physically abused children, many of whom also experienced emotional abuse and neglect. After exposure to 12 emotion stories, children were asked to match facial expressions with the protagonist. Results, which were replicated controlling for verbal competence (Camras et al., 1998), revealed deficits in understanding across all measured emotions. In addition, physically abused children demonstrate attentional biases for facial displays of anger (Pine et al., 2005; Pollak, 2003; Pollak & Tolley-Schell, 2003) and interpret ambiguous facial expressions as angry (Pollak & Kistler, 2002). Although it is unclear whether these information-processing biases are due to preferential attention (Pollak & Tolley-Schell, 2003) or attentional avoidance (Pine et al., 2005), some evidence suggests that some maltreated children struggle to disengage from angry facial cues (Pollak, 2003). These biases may constitute an adaptive and protective response to consistent anger exposure, such that children who quickly and accurately identify angry expressions are more readily able to avoid abuse (Cicchetti, Toth, & Maughan, 2000; Pollak, 2003). Although initially beneficial, attentional imbalances may become maladaptive over time if applied indiscriminately across contexts (Cicchetti et al., 2000; Crick & Dodge, 1994; Gotlib & MacLeod, 1997; Pollak, 2003; Rose & Abramson, 1992). Anxious children show similar biases with regard to angry faces (Hadwin et al., 2006). However, it is unclear whether these emotional biases are present in individuals with a history of emotional maltreatment.

Some evidence suggests that processing biases in maltreated children extend into adolescence and adulthood. Leist and Dadds (2009) found that maltreated adolescents more accurately recognized specific negative emotions, namely fear and sadness. However, contrary to some childhood studies, they did not determine any significant biases for expressions of anger. Leist and Dadds speculated that these discrepancies may have resulted from the recency of maltreatment experiences. When the environmental risk for maltreatment lowers, individuals may demonstrate reduced preferential awareness for anger. Nevertheless, pervasive personal experience with sadness and fear may increase awareness of these emotions in the long-term. Gibb, Shoefield, and Coles (2009) administered a modified dot-probe task to young adults with a history of maltreatment and found increased attention for angry faces in maltreated individuals, suggesting a preferential allocation of resources to angry expressions. Maltreatment was broadly defined in this study, without differentiating between various subtypes, therefore it is difficult to ascertain the unique contribution of childhood emotional maltreatment. As well, the influence of
other potentially significant variables, like attachment, and the effects of stress or increased cognitive load were not examined.

Using a morph movie paradigm, Fraley, Niedenthal, Marks, Brumbaugh, and Vicary (2006) studied the relation between adult attachment and vigilance to emotional facial cues. Similar to the procedures employed by Pollak and colleagues, this paradigm involves the presentation of movies during which a facial expression progresses from neutral to emotional, or from emotional to neutral. Fraley et al. found that attachment anxiety was related to vigilance, such that highly anxious participants perceived emotions with less perceptual information. This corroborated evidence suggesting that individuals with high levels of attachment anxiety are more sensitive to interpersonally relevant cues compared to those with low levels of attachment anxiety or high levels of attachment avoidance (Mikulincer, Gillath, & Shaver, 2002; Niedenthal, Brauer, Robin, & Innes-Ker, 2002). Given that the attachment system is only purportedly activated during times of distress or threat (e.g., Bowlby, 1969; Sroufe & Waters, 1977), it is likely that viewing emotions while under duress would ensure activation for individuals across a wide spectrum. To examine this hypothesis, Neidenthal and colleagues (2002) studied individuals’ perception of emotional faces (happiness, sadness, and anger) in a distressing situation. Distress was induced by reading an anxiety provoking passage to participants. As well, the testing room was filled with threatening objects (e.g., a large heart rate and blood pressure machine, and old wooden chair with attached wires). Under these conditions, participants continued to see evidence of negative emotion even in more neutral expressions, suggesting a particular vulnerability. As well, avoidant individuals were less efficient at processing emotional facial expressions under stressful conditions, perhaps because they devoted cognitive resources to regulating their own internal emotions rather than focusing on other external stimuli.

To the author’s knowledge, no studies have examined how mindfulness affects the perceptual information required to identify both positive and negative facial expressions. Theoretically, given the increased awareness and attunement inherent in mindfulness, mindful individuals may identify emotional facial expressions more quickly, even when mentally taxed (e.g., Brown & Ryan, 2003; Ortner, Kilner, & Zelazo, 2007). According to some hypotheses, mindfulness may allow for present-oriented attention, which in turn reduces persistent elaborative processing of negativity. Therefore, mindful individuals may disengage from negative stimuli to promote adaptive responses in the present moment. They may recognize
negative expressions quickly in order to cope quickly and effectively recover from their influence. Over time, this reduced processing of negative stimuli could attenuate the damaging long-term impacts of negative emotions (e.g., Nolen-Hoeksema, 1991). It is unclear whether this disengagement would occur for negative stimuli alone, or whether mindful individuals capitalize on positive emotions in a different way, a question that the present study sought to address.

Some evidence suggests that mindful individuals focus on positive emotional information and demonstrate increased activation in areas of the brain associated with positive emotions (e.g., Davidson et al., 2003). Positive emotions can serve various protective functions, particularly with regard to adaptation following stressful events (Folkman & Lazarus, 1985; Levenson, 1988). Some studies have identified adaptation as the ability to achieve successful outcomes following adversity (Ryff, Singer, Love, & Essex, 1988; Staudinger, Marsiske, & Baltes, 1995), while others have focused on the capacity to rapidly recover from negative events (Carver & Scheier, 1999; Davidson, 2000). In particular, positive emotions promote a number of adaptive abilities, including flexible problem-solving, coping resources, and physiological recovery from the effects of negative emotional responses (Folkman & Maskowitz, 2000; Fredrickson, 2000; Fredrickson & Branigan, 2001; Fredrickson & Levenson, 1998). Interestingly, positive emotions can perseverate in conjunction with high levels of negative affect, even in significantly stressful situations (Moskowitz, Folkman, Collette, & Vittinghoff, 1996; Ong, Bergeman, & Bisconti, 2004).

According to the dynamic model of affect (DMA) outlined by Zautra, Smith, Affleck, and Tennen (2001), positive and negative emotions purportedly function independently until an individual encounters stressful stimuli. Then, an inverse relationship is elicited, typically with negative emotions overpowering positive emotions. However, positive emotional experiences during this time may have the power to significantly attenuate negativity and promote stress resistance over time. Conversely, a deficit in positive emotional experiences could contribute to an overall vulnerability to the negative influences of challenging circumstances. A number of studies corroborate the hypotheses delineated by this model, suggesting that positive emotions promote adaptability by interrupting the negative emotional reactions to stress (Ong & Bergeman, 2004; Potter, Zautra, & Reich, 2000). Positive emotions may also facilitate recovery from stress. In Fredickson’s broaden-and-build theory, positive emotions quickly reduce the autonomic arousal elicited by negative affect (Fredrickson & Levenson, 1998; Fredrickson,
Mancuso, Branigan, & Tugade, 2000). Although it is difficult to ascertain the exact nature of resilience, particularly when measured using self-report, studies nevertheless suggest that personal resilience is indeed related to positive emotions, faster physiological and emotional recovery from stress, and life satisfaction (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Ong, Bergeman, Bisconti, & Wallace, 2006). Therefore, it is reasonable to speculate that maltreated individuals who are mindful and/or have secure attachment representations could demonstrate a protective bias for positive emotional cues. The use of an ecologically valid facial emotion task, particularly one that examines individuals’ ability to determine the onset of both positive and negative emotional expressions, allows for an exploration of hypotheses regarding individual differences in emotional processing.

**Inhibiting attention to emotional words.**

The emotional Stroop task is another behavioural measure of emotional information processing that involves the inhibition of, rather than directed attention towards, emotional information. Traditional Stroop tasks involve the identification of the colour of a word, when the word itself is congruent or not congruent with the colour it denotes (Stroop, 1935). Typically, reaction times are longer when the colour word is incongruent (e.g., when the word “green” is written in blue ink) compared to when the colour word is congruent (e.g., when the word “green” is written in green ink). Arguably, this delay represents cognitive interference resulting from a conflict between semantic and perceptual processing (MacLeod, 1991). The emotional Stroop task modifies the traditional approach by printing emotional words in various colours and asking participants to identify the colour of the word. Individuals must simultaneously allocate cognitive resources to the task demands and to the word’s meaning. Longer response latencies to emotional words purportedly reflect this interference as well as difficulty disengaging from the word’s meaning. Faster response latencies to emotional words may represent a “facilitation effect”, in that emotional stimuli induce efforts to move away from potentially threatening information (Mogg & Bradley, 2005). Researchers have used this task to evaluate the interference properties of positive (e.g., rainbow), negative (e.g., war), and interpersonal (e.g., rejection, cuddle) words based on individual difference factors such as internalizing distress and attachment. In general, response times are longer for negative emotional words, and sometimes positive emotional words, compared to neutral words (Koven, Heller, Banich, & Miller, 2003;
McKenna & Sharma, 1995; Pratto & John, 1991; Segerstrom, 2001). In line with hypothesized models of attentional bias in anxiety disorders, trait anxiety and generalized anxiety disorder are associated with longer reaction times for threatening emotional words (e.g., Beck & Emery, 1985; Fox, Russo, Bowles, & Dutton, 2001; Matthews & MacLeod, 1985; Mogg, Mathews, & Weinman, 1989; Mogg et al., 2000). In contrast, depression has not typically been associated with attentional biases for negative words, except in studies using self-relevant stimuli or stimuli presented for longer durations (e.g., 1500 ms per trial) (Gotlib & Cane, 1987; Segal et al., 1995).

Researchers have applied the emotional Stroop task to evaluate cognitive interference across various clinical and community samples. The manipulation of cognitive load, by requiring participants to complete the emotional Stroop task while simultaneously performing another mentally taxing task, has been explored in some studies of attachment. Mikulincer, Dolev and Shaver (2004) conducted two studies evaluating attachment orientation and emotional Stroop performance, under conditions of low cognitive load (i.e., remembering a 1 digit number) or high cognitive load (i.e., remembering a 7 digit number). Attachment anxiety predicted longer response latencies for separation words, but not neutral or negative words, regardless of cognitive load. Attachment avoidance interacted with cognitive load, such that highly avoidant individuals showed shorter reaction times for separation words under low cognitive load and longer reaction times for separation words under high cognitive load. That is, the inclusion of cognitive load seemed to increase access to (or remove barriers to access) separation thoughts for individuals with high, but not low, levels of attachment avoidance. Accordingly, it could be argued that the ability to suppress threatening interpersonal information is compromised when mental resources are taxed.

In a corroborating study, Edelstein and Gillath (2008) evaluated processing deficits on the emotional Stroop task in adults with varying degrees of attachment anxiety and avoidance. In a low cognitive load condition, avoidant individuals inhibited attention to attachment-related emotional words, but not other (i.e., positive and negative) emotional words. In a high cognitive load condition, which required participants to remember a 7-digit number, processing biases were attenuated for avoidant individuals. That is, their reaction times in response to threatening words increased, suggesting that their suppression mechanisms were compromised when cognitively taxed. Interestingly, these attentional discrepancies were only evident for avoidant individuals currently involved in a romantic relationship. Perhaps romantic relationships
heighten sensitivity to attachment-related cues. It is also possible that avoidant individuals in relationships have more experience activating suppression mechanisms that allow for emotional regulation. Although some research suggests that avoidant suppression strategies are relatively automatic and therefore require minimal cognitive effort (e.g., Fraley & Shaver, 1997), other research has demonstrated that cognitive load does in fact disrupt mental suppression (Wenzlaff & Wegner, 2000). Therefore, this is a useful paradigm for answering questions about the disintegration of certain attachment oriented strategies under stressful conditions.

Few studies have examined the influence of mindfulness on potential emotional processing biases. In fact, very little is known about the cognitive underpinnings of mindfulness and its noted effects. Some studies suggest that mindfulness meditation is associated with reduced interference related to emotional stimuli. Ortner et al. (2007) administered an emotional interference task with participants who underwent a seven week mindfulness meditation course. Participants viewed emotional pictures (neutral, pleasant, or unpleasant) while simultaneously judging the pitch of a tone. Mindful participants showed reduced interference from pleasant and unpleasant pictures, suggesting the ability to disengage attention from emotionally salient information. In a follow-up study, it was determined that mindfulness training resulted in reduced skin conductance while viewing negative, emotional pictures. This somewhat contrasts the findings noted by Goleman and Schwartz (1976) regarding increased skin conductance but faster recovery after negative stimulation. It is possible that the pictures used in Ortner et al.’s studies were not as immediately activating compared to the accidents depicted in the study by Goleman and Schwartz. In line with their first study, Ortner et al.’s follow-up study also found reduced emotional interference for individuals who received mindfulness meditation training, but not for individuals who received relaxation training or no training. Interestingly, mindfulness is associated with enhanced functioning in the anterior cingulate cortex of the brain, an area that is also mobilized during the inhibition of emotional stimuli (e.g., Bush, Luu, & Posner, 2000; Cahn & Polich, 2006; Ives-Deliperi, Solms, & Meintjes, 2011).

Wenk-Sormaz (2005) evaluated Stroop performance after brief training in mindfulness meditation. Compared to participants in the control conditions, the participants exposed to mindfulness demonstrated reduced Stroop interference. In contrast, Anderson, Lau, Segal, and Bishop (2007) found no differences in Stroop interference between participants in a wait-list control condition and participants who underwent an 8-week mindfulness-based stress reduction
course. Both studies only examined positive and negative word interference, without considering the effects of more emotionally-salient interpersonal words or the effects of cognitive taxation. The current study sought to address these omissions, in order to gain broader insights into the nature of individuals’ emotional perceptions following early adversity.

**Hypotheses**

**Internalizing symptoms.**

1) As a follow-up to Study 1, the best fitting sequential model was re-tested. It was anticipated that this model would once again fit the data well.

2) It was also hypothesized that the protective role of mindfulness, as highlighted by the moderation results in Study 1, would be replicated in Study 2. That is, individuals with high levels of attachment anxiety, who also reported high levels of mindfulness, would report less severe internalizing symptoms.

**Processing emotional faces.**

1) On the emotional faces task, it was anticipated that participants with higher levels of self-reported emotional maltreatment, attachment anxiety, attachment avoidance, and mindfulness would identify certain emotional expressions (e.g., anger, fear) more quickly. Avoidant biases were expected to decrease under stressful conditions.

2) It was further anticipated that mindfulness or adult attachment may interact with each other or with emotional maltreatment to predict outcomes. Individuals may be particularly attuned to perceptual changes in negative emotions if they reported a history of emotional maltreatment, combined with high levels of attachment anxiety, attachment avoidance, or mindfulness. As well, similar to the moderation effects noted for internalizing symptoms in Study 1, attachment style may interact with mindfulness to predict the processing of emotional facial expressions.

**Processing emotional words.**

1) On the emotional Stroop task, slower reaction times were expected for those with higher self-reported levels of childhood emotional maltreatment and attachment anxiety. Faster reaction times were expected for those with higher self-reported levels of attachment avoidance and mindfulness. It was hypothesized that these effects would be particularly
pronounced for highly salient words (e.g., negative words, words with social content). As well, it was anticipated that avoidant biases would decrease under stressful conditions.

2) It was hypothesized that interactive effects may emerge for the prediction of emotional Stroop performance. That is, the greatest interference may be observed for those with a history of maltreatment and high levels of attachment anxiety. Moreover, the least interference may be observed for those with high levels of attachment avoidance and mindfulness.

Methods

Participants. A total of 127 female participants, ranging in age from 18- 26 years (\(M = 18.98\) years) participated in this study. Participants were students registered in first year psychology courses and participating in the University of Guelph mass testing program. Participants were screened based on their responses to 12 questions, 6 of which evaluated emotional abuse and 6 of which evaluated emotional neglect. A subset of 200 individuals scoring in the upper 40\textsuperscript{th} and lower 20\textsuperscript{th} percentile of the screening test were randomly selected and invited via email to sign up for the study, resulting in a 64\% response rate, with an approximately equal distribution of high and low risk participants.

Procedures. Participants completed the study individually, in a private office, together with one of three experimenters (two undergraduate research assistants and myself). A consent form was given to each participant stating the purpose and procedures of this study, the contact information for the researchers, and an outline of the risks or benefits to the participant. We explained to the participants that their participation was confidential, and they could withdraw from the study at any time for any reason without penalty. Participants were reminded that they were free to skip items or questionnaires that they did not wish to answer. Participants first completed the emotional processing tasks. The emotional Stroop task and the emotional faces task were programmed by Christian Battista using open-source experimental software on a Linux operating system. Next, participants completed a series of questionnaires online, which were created and administered using Qualtrics (online survey software), with the exception of the CTQ, which was administered using pen and paper due to copyright considerations. To provide further information for any students who desired more comprehensive consultation or therapy to
address depressive or trauma symptoms, we provided information sheet on mental health resources to all participants. This way, participants could decide whether they wished to refer themselves for counselling services, regardless of their absolute score on any research measure.

Measures.

Childhood Trauma Questionnaire (CTQ; Bernstein et al., 2003) short form was used to evaluate participants’ history of maltreatment. The CTQ consists of 25 questions, with 5 questions representing each of the following subscales of maltreatment: emotional, physical and sexual abuse, and emotional and physical neglect. Participants rated statements on a Likert scale ranging from Never True to Very Often True. Previous studies indicate excellent psychometric properties for the CTQ, including reliability and validity (e.g., Bernstein et al., 2003). In line with the purposes of the present investigation, only total scores on the emotional neglect (e.g., “I felt loved”) and emotional abuse scale (“People in my family called me things like “stupid”, “lazy”, or “ugly”) were used for analyses. These two subscales demonstrated good internal consistency (α = .92 and α = .89, respectively). Based on the cut-off scores delineated by Walker et al. (1999), 36.4 % of the sample reported clinical levels of childhood emotional abuse and 11.7 % of the sample reported clinical levels of emotional neglect. Mean scores ranged from 5-24 for the emotional abuse scale and from 5-19 for the emotional neglect scale. Given the uniformity of results when using the subscale scores separately, a composite score including the mean of both emotional abuse and neglect scales (α = .93) was calculated and used for moderation analyses. With regard to other types of maltreatment, 9% of participants reported a history of sexual abuse, 18% reported a history of physical abuse, and 19% reported a history of physical neglect.

Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006): See Study 1 for a full description. For the present study, the internal consistency of the FFMQ was good for describing (α = .91), acting with awareness (α = .90), non-judging (α = .93), non-reactivity (α = .71), and observing (α = .76). In order to maintain consistency with Study 1, the observing facet was not included in the analyses. The internal consistency of the overall scale, without the observing facet, was .92. Mean scores ranged from 1.25-5 for describing, 1.13-4.88 for acting with awareness, 1-5 for non-judging, 1.14-4.29 for non-reactivity, 1.63-4.63 for observing, and 1.76-4.26 for the overall scale (without observing).
Experiences in Close Relationships (ECR; Brennan et al., 1998): See Study 1 for a full description. For the present study, strong internal consistency was evident for both attachment anxiety ($\alpha = .93$) and attachment avoidance ($\alpha = .95$). Mean scores ranged from 1.22-6.83 for attachment anxiety and 1-6 for attachment avoidance.

Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995): See Study 1 for a full description. In the present study, internal consistencies for the sample were high for the depression scale ($\alpha = .95$), the anxiety scale ($\alpha = .91$) the stress scale ($\alpha = .92$), and the overall scale ($\alpha = .97$). Once again, in line with hypotheses and Study 1 analyses, only the overall scale score was used in regression analyses. Total scores ranged from 0-40 for the depression scale, 0-38 for the anxiety scale, 0-39 for the stress scale, and 0-114 for the overall scale.

The Reynolds Short Form C of the Marlowe-Crowne Social Desirability Scale (MC-C; Reynolds, 1982) was included to test whether social desirability better explained the relationships observed between self-report constructs. The MC-C consists of 13 true/false items measure the tendency to report information that projects a favourable view of the self. This scale has shown good psychometric properties (Reynolds & Gerbasi, 1982). The internal consistency of the MC-C was relatively low in this sample ($\alpha = .36$).

Emotional faces task. Images for this task were obtained from the Cohn-Kanade Facial Expression Database (Kanade, Cohn, & Tian, 2000), which provides static images based on posed videotaped sequences of emotions (See Appendix D for the sequences). One male and one female actor were used for each emotion, with different actors for each sequence. This study focused on 4 main emotions (i.e., anger, happiness, sadness, fear). Each sequence started with a neutral expression and ended with the target emotion. In order to ensure uniform duration across emotion sequences, each sequence was down-sampled to 10 images representing 5, 11, 16, 20, 36, 59, 69, 75, 83, 89, and 90 % of the elapsed sequence. The final stimuli were identical to those used by Pollak, Messner, Kistler, and Cohn (2009). A total of 80 target images were presented to each participant (4 emotions x 2 sequences x 10 perceptual degrees). The picture sequences were presented to participants in a counterbalanced order (using a Latin Square design), in two conditions (no memory load, high memory load). Four sequences were presented in each condition, representing all four emotions. The specific sequences presented within the conditions were alternated across participants. Participants viewed each image (16 cm x 16 cm) within a 10-picture sequence for 3 seconds. After each picture presentation, participants identified the
displayed emotion based on 5 forced choice responses that were used in the study by Pollak et al. (i.e., nothing yet, happy, sad, angry, afraid). Participants were told that they would view 10 pictures within each sequence. They were instructed to state “nothing yet” until they saw an emotion. Participants did not receive any feedback following their responses, and they were required to respond to all pictures presented, regardless of when they identified an emotional expression. In the no memory condition, participants simply viewed four sequences of emotional expressions and identify the expression expressed in each picture. In the high memory load condition, participants were also required to repeat seven digits after each of the four sequences. The point at which participants reliably (i.e., until the end of the sequence) identified the correct emotion was used for analyses.

**Traditional Stroop task.** This task consisted of 32 trials. A total of 8 colour words (e.g., yellow) were presented in one of 4 colours (red, green, white, and blue). All words were presented in incongruent colours (e.g., the word “white” in red font). Participants were required to identify aloud the ink colour as quickly as possible using a voice activated microphone. The accuracy of the responses were recorded by the experimenter. Mean reaction time was used in subsequent analyses, after removing repeated and incorrect responses.

**Emotional Stroop task.** This task consisted of 150 trials total (2 conditions x 5 counterbalanced blocks x 15 words per block). A total of 75 target words were presented, consisting of 15 each of positive, negative, positive social, negative social, and neutral words (see Appendix F). These words were obtained from the Affective Norms for English Words (ANEW; Bradley & Lang, 1999). The social content of 100 words was anonymously evaluated by 17 graduate students on a continuous scale ranging from 0 (not at all social) to 10 (very social). Words with a mean >6 were considered “social”. A total of 25 (five from each category) were eliminated based on their social ratings and feedback from the graduate students, resulting in a total of 75 words. The mean social ratings for the word categories were as follows: positive (1.56), negative (1.11), positive social (7.69), negative social (6.63), and neutral (.49). Valence ratings for the word categories were as follows: positive (>7), negative (<3), and neutral (4-6). The mean valence ratings for the word categories, according to the ANEW (Bradley & Lang, 1999) were as follows: positive (7.62), negative (2.46), positive social (7.74), negative social (2.39), and neutral (5.18). The words were presented in counterbalanced blocks of 15 words for each emotion category. A Latin-square incomplete counterbalanced design was used for the five
word categories. Words within each block were randomized. The full set of blocks alternated between two conditions for each participant: no memory load and high memory load. In the high memory load condition, participants were required to recall seven digits after each 15-word block. Similar to the traditional Stroop task, words were presented to participants in various colours (red, green, white, and blue). Prior to the presentation of words, a fixation cross appeared for 1.5 seconds. Participants were asked to ignore the word’s meaning and to indicate the ink colour by speaking aloud into a voice activated switch. Practice trials were administered first, using number words, until participants achieved at least 80 % correct responses.

Results

Descriptive Statistics.

Mean values, standard deviations, and correlations of questionnaire data are summarized in Table 1. A preliminary examination of the Pearson correlations between questionnaire scores for emotional maltreatment, attachment, total mindfulness, and internalizing symptoms revealed significant relations in expected directions. Emotional maltreatment was positively related to internalizing symptoms. Emotional maltreatment was also related to hypothesized protective factors (i.e., attachment and mindfulness). Specifically, emotional maltreatment was positively related to attachment (both anxiety and avoidance) and negatively related to mindfulness.
Table 1

Means, Standard Deviations, and Correlations of Study Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>M (SD)</th>
<th>1.</th>
<th>2.</th>
<th>3.</th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
<th>8.</th>
<th>9.</th>
<th>10.</th>
<th>11.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Emotional Abuse</td>
<td>9.08(4.38)</td>
<td>—</td>
<td>.73**</td>
<td>-.21**</td>
<td>-.29**</td>
<td>-.34**</td>
<td>-.004</td>
<td>.29**</td>
<td>.23*</td>
<td>.34**</td>
<td>.39**</td>
<td>.35**</td>
</tr>
<tr>
<td>2. Emotional Neglect</td>
<td>8.76(3.92)</td>
<td>—</td>
<td>-.33**</td>
<td>-.40**</td>
<td>-.37**</td>
<td>-.08</td>
<td>.31**</td>
<td>.34**</td>
<td>.32**</td>
<td>.44**</td>
<td>.43**</td>
<td></td>
</tr>
<tr>
<td>3. Mindfulness – Describe</td>
<td>3.26(.79)</td>
<td>—</td>
<td>.28**</td>
<td>.53**</td>
<td>.19*</td>
<td>-.46**</td>
<td>-.49**</td>
<td>-.38**</td>
<td>-.47**</td>
<td>-.47**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Mindfulness – Act Aware</td>
<td>3.15(.74)</td>
<td>—</td>
<td>.44**</td>
<td>.10</td>
<td>-.32**</td>
<td>-.46**</td>
<td>-.34**</td>
<td>-.39**</td>
<td>-.47**</td>
<td></td>
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<tr>
<td>5. Mindfulness – Non-Judge</td>
<td>3.25(.94)</td>
<td>—</td>
<td>.12</td>
<td>-.62**</td>
<td>-.39**</td>
<td>-.50**</td>
<td>-.55**</td>
<td>-.58**</td>
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<tr>
<td>6. Mindfulness – Non-React</td>
<td>2.88(.55)</td>
<td>—</td>
<td>-.28**</td>
<td>-.13**</td>
<td>-.14</td>
<td>-.20*</td>
<td>-.32**</td>
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<tr>
<td>7. Attachment Anxiety</td>
<td>3.69(1.23)</td>
<td>—</td>
<td>.39**</td>
<td>.49**</td>
<td>.50**</td>
<td>.57**</td>
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<tr>
<td>8. Attachment Avoidance</td>
<td>2.98(1.23)</td>
<td>—</td>
<td>.29**</td>
<td>.50**</td>
<td>.46**</td>
<td></td>
<td></td>
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<tr>
<td>9. Anxiety (DASS)</td>
<td>8.25(8.40)</td>
<td>—</td>
<td>.67**</td>
<td>.73**</td>
<td></td>
<td></td>
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<tr>
<td>10. Depression (DASS)</td>
<td>8.53(9.24)</td>
<td>—</td>
<td>.70**</td>
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<tr>
<td>11. Stress (DASS)</td>
<td>13.23(8.93)</td>
<td>—</td>
<td>—</td>
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*Note. *p < .05; **p < .001
Attachment, mindfulness, and internalizing symptoms

Examining mediation effects.

The best-fitting (i.e., sequential) model from Study 1 was re-tested to determine whether good fit was replicated in a new sample. Once again, both measurement and structural models were estimated using the maximum-likelihood method in AMOS 19 (Arbuckle, 2010). The initial measurement model was initially examined to ensure acceptable fit before proceeding with the structural model. The measurement model incorporated only covariances between all latent variables. A total of 15 observed variables and 5 latent variables were included in this CFA. The same goodness-of-fit statistics were used to assess model fit: the comparative fit index (CFI; values greater than .90 represent acceptable fit and values greater than .95 represent good fit; Bentler, 1992; Hu & Bentler, 1995) and the root-mean-square error of approximation (RMSEA; value of .08 or less represent adequate fit; MacCallum et al., 1996). The $\chi^2$ statistic was also reported, with the recognition that it is largely influenced by sample size and the number of estimated variables, and it is therefore difficult to achieve non-significance.

According to these parameters, the measurement model demonstrated good fit to the data, CFI = .96, RMSEA = .07, $\chi^2 (80, N = 127) = 134.7, p < .001$. All factor loadings were significant ($p < .001$), indicating that each latent variable corresponded well with its respective indicator variables. Therefore, this measurement model was used to examine the hypothesized structural model. This structural model (see Figure 1) fit well with the data, CFI = .95, RMSEA = .08, $\chi^2 (81, N = 127) = 150.4, p < .001$. An examination of the structural paths revealed that all paths were significant ($p < .01$), except for the path between attachment avoidance and internalizing symptoms, and the path between attachment anxiety and internalizing symptoms.\(^7\)

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\(^7\) Constraining these two non-significant paths to ‘0’ did not significantly alter model fit.
Figure 1. Sequential structural model, \(* p < .05; ** p < .001\)
Examinaing moderation effects.

A hierarchical regression analysis was used to determine the unique and interactive effects of emotional maltreatment (as measured by the CTQ), mindfulness (as measured by the Five Facet Mindfulness Scale) and adult attachment (as measured by the ECR scale) in predicting internalizing symptoms (as measured by the DASS). This model included only interactive terms that were relevant to the hypotheses, thereby reducing the probability of a high Type II error rate. See Table 2 for a summary of findings from these regressions. In the first step, emotional maltreatment, mindfulness, attachment anxiety and attachment avoidance variables were entered. In the second step, two-way interaction terms between childhood emotional maltreatment and the three other independent variables, as well as two-way interaction terms between attachment variables and mindfulness were entered. All predictor variables were centered (Aiken & West, 1991).

Overall, the first step was significant $F(4, 112) = 29.27, p < .001$, and accounted for 51.1% of the variance in overall internalizing symptoms. There was a significant unique effect for emotional maltreatment, $t(112) = 2.49, p = .014$, such that those with a self-reported history of emotional maltreatment also reported more internalizing symptoms. As well, there was a significant main effect of attachment anxiety, $t(112) = 2.66, p = .009$, indicating that individuals who reported higher levels of attachment anxiety had increased internalizing symptoms. Finally, there was a significant effect of mindfulness, $t(112) = -3.95, p < .001$, suggesting that low levels of mindfulness predicted higher levels of internalizing symptoms.

The inclusion of interaction terms accounted for an additional 4.3% of the variation in internalizing symptoms, beyond that accounted for by each predictor individually, $\Delta F(5, 107) = 2.04, p = .07$. The interaction between emotional maltreatment and mindfulness was significant, such that the relation between emotional maltreatment and internalizing symptoms varied at different levels of mindfulness, $t(112) = -2.20, p = .03$.

---

8 In order to rule out the alternate explanation that social desirability accounted for the effects observed, two-step hierarchical regression analyses were completed with mean social desirability (as measured by MC-C), and hypothesized constructs in the second step (i.e., emotional maltreatment, mindfulness, attachment). Social desirability was a significant predictor in the first step, but became non-significant in the second step. This suggested that social desirability was not largely contributing to the models described, above and beyond the hypothesized variables. However, these results should be interpreted cautiously, given the low internal consistency of the MC-C in the present sample.
Simple slope analyses were used to analyze the interaction between emotional maltreatment and mindfulness, which revealed that emotional maltreatment led to increased internalizing symptoms only at low levels of mindfulness (i.e., 1 SD below the mean), \( t (112) = 2.87, p = .005 \). For individuals with high levels of mindfulness (i.e., 1 SD above the mean), there was no significant difference in internalizing symptoms, regardless of emotional maltreatment. Overall, this analysis suggests that higher levels of emotional maltreatment only relate to increased internalizing symptoms for individuals with low levels of trait mindfulness. See Figure 2 for a graphical depiction of the simple slope regression lines.

Table 2

Summary of Regression Analyses for Emotional Maltreatment, Attachment, and Mindfulness Predicting Internalizing Symptoms

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>SEB</th>
<th>( \beta )</th>
</tr>
</thead>
<tbody>
<tr>
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<td>Emotional Maltreatment</td>
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<td>4.59</td>
<td>1.73</td>
<td>.23*</td>
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<tr>
<td>Attachment Avoidance</td>
<td>1.55</td>
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<td>.08</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>-17.99</td>
<td>4.55</td>
<td>-.39**</td>
</tr>
<tr>
<td>Step 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>.47</td>
<td>.11</td>
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<td>Attachment Anxiety</td>
<td>4.52</td>
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<td>.23*</td>
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<td>-.39*</td>
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<td>Emotional Maltreatment x Avoidance</td>
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<td>-.06</td>
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<tr>
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<td>1.13</td>
<td>-.26*</td>
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<td>-.10</td>
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<td>-1.55</td>
<td>3.17</td>
<td>-.05</td>
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</tbody>
</table>

Note. * \( p < .05 \); ** \( p < .001 \)
Attachment, mindfulness, and emotional processing.

Processing emotional faces.

Regression analyses were run to determine whether emotional maltreatment, attachment (anxiety and avoidance), and mindfulness influenced the perceptual threshold required to correctly identify certain emotions under low and high memory conditions. Participant data were excluded from analyses if the participants failed to correctly identify the targeted emotion within the 10 picture sequence. This only occurred for 5 participants. These variables were entered in a 2-step hierarchical regression, with main effects tested in the first step and interactions tested in the second step. See Table 3 for means and standard deviations of perceptual thresholds for the four emotions (happy, angry, sad, afraid).

Interestingly, significant predictive effects were only found for the two models regressing onto fear thresholds. Under no cognitive load, the model predicting threshold identification for fear was significant overall for the first step, $F(4, 122) = 3.78$, $p = .006$ and accounted for 11% of the variance in fear identification threshold (see Table 4). Significant unique effects were found for attachment avoidance, $t(122) = -2.66$, $p = .009$, and mindfulness, $t(122) = -15.94$, $p = .001$. Participants with high levels of attachment avoidance and high levels of mindfulness were
able to identify fear more quickly (i.e., with less perceptual information). The inclusion of interaction terms did not account for a significant amount of additional variance in perceptual threshold.

Under high memory load for the fear sequence, the first-step model was again significant, $F(4, 122) = 3.29, p = .01$, accounting for 9.7% of the variance in fear identification threshold (see Table 11). Unique predictive effects were observed for emotional maltreatment, $t(122) = -2.59, p = .01$ and attachment anxiety, $t(122) = -2.15, p = .03$. A marginally significant effect was found for mindfulness, $t(122) = -1.87, p = .06$. Participants with high levels of these variables identified fear with less perceptual information when cognitively taxed.

The inclusion of interaction terms accounted for an additional 4.9% of the variation in internalizing symptoms, beyond that accounted for by each predictor individually, $\Delta F (5, 117) = 1.34, p = .03$. A significant interaction was found for emotional maltreatment and mindfulness, $t(117) = 2.11, p = .04$ (see Figure 3). The simple slope holding mindfulness at 1SD below the mean was significant, $t (117) = -3.03, p = .003$, such that individuals with low levels of mindfulness and low levels of maltreatment required more perceptual information to identify fear under high cognitive load, compared to individuals with low levels of mindfulness and high levels of maltreatment. The simple slope holding mindfulness at 1 SD above the mean was not significant, indicating that individuals with high levels of mindfulness demonstrated the same low threshold for fear identification, regardless of their self-reported history of emotional maltreatment.

A marginally significant interaction emerged for emotional maltreatment and attachment anxiety, $t(117) = 1.84, p = .07$ (see Figure 4). The simple slope at low levels of attachment anxiety was significant, $t (117) = -2.89, p = .005$, indicating that less anxious individuals required less perceptual information to identify fear when they had experienced emotional maltreatment. The simple slope at high levels of attachment anxiety was not significant, such that highly anxious individuals identified fear with the same perceptual information, regardless of their history of maltreatment.
Table 3

*Mean (SD) Threshold Percent for Identifying Various Facial Emotions Under Low and High Memory Load Conditions*

<table>
<thead>
<tr>
<th>Emotion</th>
<th>Low</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happy</td>
<td>54.12 (13.25)</td>
<td>49.33 (15.15)</td>
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<tr>
<td>Angry</td>
<td>45.95 (21.76)</td>
<td>41.77 (18.53)</td>
</tr>
<tr>
<td>Sad</td>
<td>18.53 (15.29)</td>
<td>19.68 (14.67)</td>
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<tr>
<td>Afraid</td>
<td>29.68 (20.08)</td>
<td>35.95 (18.29)</td>
</tr>
</tbody>
</table>
Table 4

Summary of Regression Analyses for Emotional Maltreatment, Attachment, and Mindfulness Predicting Perceptual Threshold for Fear, under No and High Cognitive Load

<table>
<thead>
<tr>
<th>Predictor</th>
<th>No Cognitive Load</th>
<th></th>
<th></th>
<th></th>
<th>High Cognitive Load</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
<td>SE B</td>
<td>β</td>
<td>B</td>
<td>SE B</td>
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<tr>
<td>Emotional Maltreatment</td>
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<td>.49</td>
<td>-.14</td>
<td>-1.16</td>
<td>.45</td>
<td>-.25*</td>
<td>-.99</td>
<td>.47</td>
</tr>
<tr>
<td>Attachment Anxiety</td>
<td>-1.25</td>
<td>1.81</td>
<td>-.08</td>
<td>-3.56</td>
<td>1.66</td>
<td>-.24*</td>
<td>-4.13</td>
<td>1.72</td>
</tr>
<tr>
<td>Attachment Avoidance</td>
<td>-4.49</td>
<td>1.69</td>
<td>-.28*</td>
<td>1.70</td>
<td>1.55</td>
<td>.11</td>
<td>2.60</td>
<td>1.70</td>
</tr>
<tr>
<td>Mindfulness</td>
<td>-15.94</td>
<td>4.70</td>
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<td>-8.06</td>
<td>4.31</td>
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<td>-8.99</td>
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<td>Emotional Maltreatment x Attachment Anxiety</td>
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<td>.55</td>
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<td>.50</td>
<td>.25</td>
<td>.74</td>
<td>.47</td>
</tr>
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<td>Emotional Maltreatment x Attachment Avoidance</td>
<td>-.20</td>
<td>.52</td>
<td>-.05</td>
<td>-.29</td>
<td>.47</td>
<td>-.08</td>
<td>-.52</td>
<td>.47</td>
</tr>
<tr>
<td>Emotional Maltreatment x Mindfulness</td>
<td>.34</td>
<td>1.24</td>
<td>.04</td>
<td>2.36</td>
<td>1.12</td>
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<td>1.09</td>
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<td>Attachment Anxiety x Mindfulness</td>
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<td>3.76</td>
<td>.13</td>
<td>-2.32</td>
<td>2.99</td>
<td>-.09</td>
<td>-2.12</td>
<td>2.76</td>
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<tr>
<td>Attachment Avoidance x Mindfulness</td>
<td>3.71</td>
<td>3.30</td>
<td>.13</td>
<td>-2.32</td>
<td>2.99</td>
<td>-.09</td>
<td>-2.12</td>
<td>2.76</td>
</tr>
</tbody>
</table>

Note. * p < .05; ** p < .001
Figure 3. Predicted values of identification threshold for fear (under high cognitive load) according to childhood emotional maltreatment and mindfulness. Low Mindfulness = 1 SD below the mindfulness total mean; High Mindfulness = 1 SD above the mindfulness mean. A star denotes a significant simple slope.

Figure 4. Predicted values of identification threshold for fear emotion (under high cognitive load) according to childhood emotional maltreatment and attachment anxiety. Low Attachment Anxiety = 1 SD below the attachment anxiety total mean; High Attachment Anxiety = 1 SD above the attachment anxiety mean. A star denotes a significant simple slope.
Processing emotional words.

First, a repeated measures ANOVA was run to determine whether patterns for response latencies were consistent with those predicted by the literature. Second, regression analyses were conducted to evaluate the contributing influences of emotional maltreatment, adult attachment and mindfulness. Reaction times for incorrect trials and trials with repeated words were excluded from analyses. As well, reactions times of less than 100 ms were eliminated, as these times typically reflect overly spontaneous responses, as were reaction times greater than three \( SD \) above the mean for that particular participant (Kampman, Keijsers, Verbraak, Närriing, Hoogduin, 2002).

The 2 (memory load) x 2 (valence) x 2 (social content) repeated measures ANOVA tested the influence of cognitive load and word valence on emotional Stroop reaction times. Reaction time data were log-transformed in order to reduce skewness. The assumption of sphericity was not violated, therefore tests of within-subjects effects with sphericity assumed will be reported (see Table 5 for descriptives). Overall, there was a main effect of memory such that participants took longer to identify the colour of words under high cognitive load (\( M = 292.32, SE = 7.59 \)), versus low cognitive load (\( M = 274.84, SE = 7.32 \)), \( F (1, 126) = 16.79, p < .001, \eta^2_p = .12 \). As well, there was a main effect of valence, indicating that participants took longer to identify the colour of negative words (\( M = 289.19, SE = 7.44 \)) than positive words (\( M = 279.59, SE = 7.36 \)), \( F (1, 126) = 5.04, p = .027, \eta^2_p = .04 \). Finally, there was a main effect of social content, such that participants look longer to colour-label social words (\( M = 290.51, SE = 7.78 \)) compared to nonsocial words (\( M = 278.27, SE = 6.98 \)), \( F (1, 126) = 8.43, p = .004, \eta^2_p = .06 \). No significant interactions emerged between memory load, valence, and social content. These patterns were consistent with those predicted for the emotional Stroop task and therefore suggested that it was a valid measure.

Therefore, two-step regression analyses were conducted to evaluate the specific contributing effects of general attentional control (as measured by the colour-word Stroop), emotional maltreatment, attachment, and mindfulness on reaction times for emotional words. Attentional control (as measured by the traditional Stroop task) was included to control for general executive abilities (e.g., Bailey, Paret, Battista & Xue, 2011). The first step tested main effects, while the second step tested interaction terms between emotional maltreatment and the
other variables, as well as attachment variables and mindfulness. See Tables 6 and 7 for regression coefficients from the significant models.

The first step of the model predicting reaction times for positive words, under no cognitive load, was significant overall, $F(5, 118) = 18.19, p < .001$ and accounted for 43.5% of the variance in reaction times, although the only unique significant effect emerged for attentional control, $t(118) = 9.22, p < .001$. Individuals with poor attentional control, as indicated by reaction time performance on the traditional Stroop task, also demonstrated longer reaction times in this condition. The second step did not add any significant variance, above that accounted for by the unique predictors. Similarly, the first step predicting reaction times for negative words, under no cognitive load, was significant overall, $F(5, 119) = 16.30, p < .001$ and accounted for 40.7% of the variance in reaction time, with only a significant unique effect for attentional control, $t(119) = 8.85, p < .001$. The second step did not add additional significant variance.

For the prediction of reaction times for negative social words, under no cognitive load, the first step was significant overall $F(5, 118) = 17.04, p < .001$ and accounted for 41.9% of the variance in reaction time performance. Attentional control once again emerged as a significant predictor of reaction times to negative social words, $t(118) = 9.15, p < .001$. The interactions in the second step added an additional 6.6% of variance, beyond that accounted for by the individual predictors, $\Delta F(5, 113) = 2.90, p = .02$. There was a significant interaction between maltreatment and attachment avoidance, $t(113) = -2.12, p = .04$ (see Figure 5). Only the slope at 1 SD below the mean for attachment avoidance was significantly different from zero, $t(113) = 2.27, p = .025$. For individuals with low levels of attachment avoidance, those with a history of maltreatment demonstrated longer reaction times for negative social words. Individuals with high levels of attachment avoidance demonstrated similar reaction times regardless of maltreatment history. Moreover, there was a significant interaction between attachment avoidance and mindfulness, $t(113) = -2.05, p = .043$ (see Figure 6). The simple slope holding mindfulness 1 SD above the mean was significant, $t(113) = -11.97, p > .001$. For mindful individuals, those with high attachment avoidance showed faster reaction times than those with low attachment avoidance. The simple slope holding mindfulness 1 SD below the mean was not significant, indicating that individuals with low levels of mindfulness showed similarly long reaction times to negative social words, regardless of self-reported attachment avoidance.
The first step model predicting reaction times for positive social words, under no cognitive load, was significant overall, $F(5, 118) = 15.56, p < .001$ and accounted for 39.7% of the variance in reaction time performance. A significant independent effect was again found for attentional control, $t(118) = 8.39, p < .001$. The interactions in the second step added an additional 5.3% of variance above the individual predictors, $\Delta F(5, 113) = 2.19, p = .06$. There was a significant interaction between emotional maltreatment and attachment anxiety, $t(113) = 2.32, p = .022$. As well, there was a significant interaction between emotional maltreatment and attachment avoidance, $t(113) = -2.34, p = .021$. In terms of the interaction with attachment anxiety (see Figure 7), emotional maltreatment only led to increased reaction times to positive social words for individuals with high levels of attachment anxiety, $t(113) = 2.35, p = .02$. Individuals with low attachment anxiety showed similar reaction times regardless of maltreatment history. In terms of the interaction with attachment avoidance (see Figure 8), emotional maltreatment caused an increase in reaction times for positive social words only for individuals with low levels of attachment avoidance, $t(113) = 2.72, p = .008$. For individuals with high levels of attachment avoidance, similarly long reaction times were demonstrated regardless of maltreatment history.

Under conditions of high cognitive load, the first step was significant for models regressing onto reaction times for positive words ($F(5, 118) = 12.25, p < .001$), negative words ($F(5, 118) = 16.26, p < .001$), negative social words ($F(5, 118) = 15.71, p < .001$), and positive social words ($F(5, 118) = 14.01, p < .001$), accounting for 34.2%, 40.8%, 39.8% and 37.0% of the variance in reaction times respectively. Attentional control emerged as a significant predictor in the first step for positive words ($t(118) = 7.63, p < .001$), negative words ($t(118) = 8.68, p < .001$), negative social words ($t(118) = 8.36, p < .001$), and positive social words ($t(118) = 7.94, p < .001$). That is, those with stronger attentional control on the traditional Stroop task better adhered to task demands and showed less interference for a variety of emotional words when cognitively taxed.

Interestingly, the interaction between emotional maltreatment and mindfulness was also a significant predictor for positive words ($t(113) = 2.12, p = .036$), negative words ($t(113) = 2.65, p = .009$), positive social words ($t(113) = 2.44, p = .016$), and negative social words ($t(113) = 3.27, p = .001$) (see Figures 9-12). These interactions accounted for additional variance in reaction times for positive words ($\Delta R^2 = .07, \Delta F(5, 113) = 2.65, p = .03$), negative words ($\Delta R^2$
= .06, ∆ F (5, 113) = 2.33, p = .04), negative social words (∆ R² = .06, ∆ F (5, 113) = 2.45, p = .04, and positive social words (∆ R² = .06, ∆ F (5, 113) = 2.20, p = .06), above that accounted for by the individual predictors. These interactions followed the same pattern, regardless of word type. That is, individuals with low levels of mindfulness (i.e., 1 SD below the mean) demonstrated uniform reaction times to emotional words regardless of maltreatment history. However, individuals with high levels of mindfulness (i.e., 1 SD above the mean) and a reported history of maltreatment demonstrated significantly longer reaction times compared to individuals with high levels of mindfulness and no history of maltreatment (t (113) = 2.25, p = .026; t (113) = 2.78 , p = .006; t (113) = 2.57 , p = .011; t (113) = 3.47 , p = .001 for positive, negative, positive social, and negative social words respectively).

Another significant interaction was found between emotional maltreatment and attachment anxiety, for negative social words only under high cognitive load (see Figure 13). Similar to the interaction noted for mindfulness, individuals with low levels of attachment anxiety demonstrated equivalent reaction times regardless of their maltreatment history. However, individuals with high attachment anxiety and a history of maltreatment demonstrated significantly longer reaction times for negative social words under high cognitive load, compared to individuals with high attachment anxiety and no history of maltreatment, t (113) = 2.63, p = .01.
Table 5

*Mean (SD) Reaction Times for Identifying Emotional Stroop Words Under Low and High Memory Load Conditions*

<table>
<thead>
<tr>
<th>Word Valence</th>
<th>Memory Load</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>High</td>
<td></td>
</tr>
<tr>
<td>Positive</td>
<td>257.48 (86.85)</td>
<td>287.86 (103.16)</td>
<td></td>
</tr>
<tr>
<td>Negative</td>
<td>272.03 (94.62)</td>
<td>290.99 (94.25)</td>
<td></td>
</tr>
<tr>
<td>Positive Social</td>
<td>278.71 (100.98)</td>
<td>289.86 (104.72)</td>
<td></td>
</tr>
<tr>
<td>Negative Social</td>
<td>285.96 (96.00)</td>
<td>300.97 (114.60)</td>
<td></td>
</tr>
</tbody>
</table>
Table 6

Summary of Regression Analyses for Attentional Control, Emotional Maltreatment, Attachment, and Mindfulness Predicting log Reaction Times for Negative Social and Positive Social Words Under No Cognitive Load

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<thead>
<tr>
<th></th>
<th>Negative Social</th>
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<th></th>
<th>Positive Social</th>
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<td>β</td>
<td>B</td>
<td>SEB</td>
<td>β</td>
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<td>Attentional Control</td>
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<td>.66**</td>
<td>.68</td>
<td>.08</td>
<td>.61**</td>
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<td>.68**</td>
<td>.68</td>
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<td>.61**</td>
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<td>.03</td>
<td>-.08</td>
<td>.04</td>
<td>.03</td>
<td>.16</td>
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<tr>
<td>Maltreatment x Attachment Anxiety</td>
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<td>.003</td>
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<td>.007</td>
<td>.003</td>
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<tr>
<td>Maltreatment x Attachment Avoidance</td>
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<td>.003</td>
<td>-.22*</td>
<td>-.007</td>
<td>.003</td>
<td>-.25*</td>
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<td>.006</td>
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<td>.005</td>
<td>.007</td>
<td>.09</td>
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<td>Attachment Anxiety x Mindfulness</td>
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<td>.10</td>
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<tr>
<td>Attachment Avoidance x Mindfulness</td>
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Note. * p < .05; ** p < .001
### Table 7
*Summary of Regression Analyses for Attentional Control, Emotional Maltreatment, Attachment, and Mindfulness Predicting log Reaction Times for Positive, Negative, Negative Social, and Positive Social Words Under High Cognitive Load*

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*Note. *p < .05; **p < .001*
Figure 5. Predicted values of log reaction times for negative social words under no cognitive load according to emotional maltreatment and attachment avoidance. Low Att Avoidance = 1 SD below the attachment avoidance total mean; High Attachment Avoidance = 1 SD above the attachment avoidance total mean. A star denotes a significant simple slope.

Figure 6. Predicted values of log reaction times for negative social words under no cognitive load according to attachment avoidance and mindfulness. Low Mindfulness = 1 SD below the mindfulness total mean; High Mindfulness = 1 SD above the mindfulness total mean. A star denotes a significant simple slope.
Figure 7. Predicted values of log reaction times for positive social words under no cognitive load according to emotional maltreatment and attachment anxiety. Low Att Anxiety = 1 SD below the attachment anxiety total mean; High Attachment Anxiety = 1 SD above the attachment anxiety total mean. A star denotes a significant simple slope.

Figure 8. Predicted values of log reaction times for positive social words under no cognitive load according to emotional maltreatment and attachment avoidance. Low Att Avoidance = 1 SD below the attachment avoidance total mean; High Attachment Avoidance = 1 SD above the attachment avoidance total mean. A star denotes a significant simple slope.
Figure 9. Predicted values of log reaction times for positive words under high cognitive load according to emotional maltreatment and mindfulness. Low Mindfulness = 1 SD below the mindfulness total mean; High Mindfulness = 1 SD above the mindfulness total mean. A star denotes a significant simple slope.

Figure 10. Predicted values of log reaction times for negative words under high cognitive load according to emotional maltreatment and mindfulness. Low Mindfulness = 1 SD below the mindfulness total mean; High Mindfulness = 1 SD above the mindfulness total mean. A star denotes a significant simple slope.
Figure 11. Predicted values of log reaction times for positive social words under high cognitive load according to emotional maltreatment and mindfulness. Low Mindfulness = 1 SD below the mindfulness total mean; High Mindfulness = 1 SD above the mindfulness total mean. A star denotes a significant simple slope.

Figure 12. Predicted values of log reaction times for negative social words under high cognitive load according to emotional maltreatment and mindfulness. Low Mindfulness = 1 SD below the mindfulness total mean; High Mindfulness = 1 SD above the mindfulness total mean. A star denotes a significant simple slope.
Figure 13. Predicted values of log reaction times for negative social words under high cognitive load according to emotional maltreatment and attachment anxiety. Low Att Anxiety = 1 SD below the attachment anxiety total mean; High Att Anxiety = 1 SD above the attachment anxiety total mean. A star denotes a significant simple slope.

Discussion

The present study replicated and extended findings from Study 1, using both self-report and behavioural measures. First, the sequential mediation model that demonstrated good fit in Study 1 was re-tested. Consistent with predictions, this model fit the data well, suggesting that emotional maltreatment contributes to internalizing symptoms through the sequential mediating influences of attachment and mindfulness. Second, individual differences in attachment and mindfulness were evaluated to determine their moderating effects on internalizing symptoms and emotional processing outcomes. Variations in these constructs predicted different levels of internalizing distress and emotion processing biases. This indicated that, although childhood emotional maltreatment likely elicits an array of negative consequences for many young adults, individual differences in proximal processes could result in alternative outcomes for some individuals.
Internalizing Symptoms

In order to replicate the finding that attachment and mindfulness act as sequential mediators of the relation between childhood emotional maltreatment and internalizing symptoms, a structural model was tested and determined to have good fit. All pathways followed similar patterns as Study 1, although the direct path between attachment anxiety and internalizing was not significant, suggesting that both attachment anxiety and avoidance exerted their influence through mindfulness. Given the known detrimental consequences associated with emotional maltreatment (Briere & Runtz, 1988; Gibb et al., 2007; Sachs-Ericsson et al., 2006; Stuewig & McCloskey, 2005) and its generally negative impact on attachment representations (Ainsworth et al., 1978; van Ijzendoorn, 1995; Riggs & Kaminiski, 2010), it is not surprising that both predicted internalizing distress (Cassidy, 1995; Davila et al., 1996; Eng et al., 2001; Shonk & Cicchetti, 2001; Toth & Cicchetti, 1996; Warren, Huston, Egeland, & Sroufe, 1997; Williams & Raskind, 2004). Additional research attests that attachment insecurity mediates the relation between emotional maltreatment and internalizing symptoms (Hankin, 2005; Riggs & Kaminski, 2010), as was found in the present study, although this occurred through the intermediate influence of mindfulness. Working models of the self and others, derived from early attachment experiences, become increasingly solidified over time (in the absence of contradictory interpersonal experiences and/or critical life events) and influence an array of intrapersonal and interpersonal outcomes (Fraley & Waller, 1998; Hazan & Shaver, 1987; Mikulincer, 1998; Sroufe & Waters, 1977; Weinfield, Sroufe, & Egeland, 2000). Overall, the current findings lend some support to aspects of Riggs (2010) model, which hypothesizes a sequential relationship between emotional maltreatment and disrupted attachment, which eventually leads to emotional dysregulation, negative internal working models of the self and others, poor coping, interpersonal challenges with peers and romantic partners, and internalizing distress.

Insecure attachment may be conceptualized as a distal vulnerability factor that exerts its influence through a variety of mechanisms (e.g., Williams & Riskind, 2004). Attachment anxiety is associated with excessive pre-occupation with and sensitivity to indicators of interpersonal rejection. Through the activation of cognitive biases that alter the processing of incoming interpersonal information, individuals with high levels of attachment anxiety are hypervigilant to negative interpersonal information. The use of hyperactivating strategies (e.g., dependence, excessive clinging) to cope with worries associated with threatening cues could place these
individuals at risk for internalizing symptoms. Attachment avoidance, in contrast, is associated with a distancing from interpersonal connectedness and the implementation of deactivating strategies (e.g., reducing interpersonal proximity, avoiding intimacy) (Mikulincer & Shaver, 2003). Ironically, this avoidance of interpersonal cues, as a defence against the repeated experience of psychological pain, increases overall psychological distress over time. Individuals with higher levels of attachment anxiety or avoidance could conceivably be at risk for social deficits (e.g., Diamond & Doane, 1994) and the reduced concomitant benefits of positive social interactions, initiating a cascade that elicits internal distress. Moreover, deficits in self-regulatory abilities (e.g., Mikulincer, 1998) could further exacerbate existing difficulties, resulting in increased attachment-related anxiety or avoidance. The interaction of these factors with genetic and/or neurobiological risk could thereby produce enduring psychopathological responses. In other words, “internal working models of attachment can be perceived as representational bridges that mediate – through a variety of information processing mechanisms – longitudinal links between early experience and later adaptation” (Dykas & Cassidy, 2011, p. 23).

With this perspective in mind, it is conceivable that attachment insecurity may elicit internal distress by inhibiting the development of mindfulness or reducing dispositional mindfulness. This lends some substantiation to the theoretical speculation that insecure attachment relationships may influence attentional processes, like mindfulness. Disruptions in the attachment relationship may compromise an individual’s mindful attunement, which then contributes to reduced physical and mental health (Ryan et al., 2007; Kabat-Zinn, 2003). As Siegel (2007) noted, attachment and mindfulness each represent aspects of attunement within intrapersonal and interpersonal domains. Each stimulate growth in areas of the prefrontal cortex that are responsible for processes (e.g., emotional regulation, empathy, response flexibility) associated with mental health and well-being. Therefore, it is not surprising that the disruption of these processes at multiple levels (e.g., neurological, behavioural) elicits a host of detrimental outcomes.

Although the more direct pathways between the attachment and internalizing symptoms were not directly significant, these relations were indirectly significant through mindfulness. Research has been mixed regarding the direct relation between attachment avoidance and internalizing symptoms, with some studies finding a relation and others not (Carlson & Sroufe, 1995; Carnelley et al., 1994; Cole-Detke & Kobak, 1996; Riggs & Jacobvitz, 2002; Williams &
Riskind, 2004). In fact, some studies posit that avoidant attachment style contributes more significantly to externalizing, rather than internalizing, difficulties (e.g., Allen, Hauser, & Borman-Spurrell, 1996; Cole-Detke & Kobak, 1996; Rosenstein & Horowitz, 1996). It is possible that avoidance could contribute to adaptation in some circumstances, by reducing repeated activation in the presence of potentially upsetting emotional stimuli. However, if avoidance elicits more global inattention biases (i.e., through reduced mindfulness), this could elicit more negative internalizing effects.

Attachment avoidance and mindfulness may be conceptualized somewhat similarly along a spectrum of attentional orientation. Avoidance is related to attentional orientation away from threatening information, specifically information that is interpersonally relevant and/or emotion laden. Mindfulness is associated with a more global attentional orientation toward meaningful intrapersonal, interpersonal, and environmental stimuli. Unlike avoidance, mindfulness is further associated with non-judgemental and present-focused attention. Accordingly, if maltreatment leads to high levels of attachment avoidance, this could stimulate more global attentional biases outside of the interpersonal domain (i.e., low mindfulness). The generalization of this suppressed awareness with regard to the self, others, and world could feasibly provide a foundation for the development of stress, anxiety, and depression.

In somewhat related terms, attachment anxiety could be implicated in a reduction of trait mindfulness. The biased hypervigilance to interpersonal stimuli could reduce attention to environmental cues. By ignoring these extraneous cues and focusing on a biased interpretation of incoming interpersonal information, anxious individuals could lose opportunities to regulate their emotions and/or consider alternative interpretations. As well, the tendency to ruminate about perceived interpersonal challenges and to predict negative future relational outcomes is at odds with mindful qualities (e.g., non-judgment, present-oriented focus) (Jain et al., 2007; Ramel et al., 2004). Following emotional maltreatment, attachment anxiety could therefore lead to internalizing symptoms through an attentional mechanism like mindfulness.

Although the preceding mediation models provide a general framework from which we can understand the development of internalizing symptoms following early adversity, additional moderation analyses suggested that individual differences in relational schemas and trait mindfulness resulted in unique outcomes. With regard to internalizing symptoms, an interaction between emotional maltreatment and mindfulness indicated that emotional maltreatment
contributed to internalizing symptoms only for individuals with low levels of mindfulness. However, individuals who reported higher levels of trait mindfulness were protected against the development of internalizing symptoms following childhood emotional maltreatment. That is, they reported less severe symptoms than individuals with a history of emotional maltreatment and lower levels of mindfulness. Although this was somewhat different from the interaction found in Study 1, this moderation nevertheless told a similar story. That it, both findings are in line with some theoretical speculations and empirical findings regarding the adaptive outcomes associated with mindfulness (e.g., Bernstein et al., 2011; Brown & Ryan, 2003; Carlson & Brown, 2005; Siegel, 2007), however these are two of the first studies to examine mindfulness as a protective trait following emotional maltreatment. We can only speculate on the reasons behind the development of individual variation in trait mindfulness following early emotional maltreatment, and future studies are required to more clearly delineate the mechanisms underlying such differences. It is possible that some maltreated individuals have had corrective emotional experiences (e.g., therapy, a positive interpersonal relationship) that enhance their self-compassion and non-judgemental attentiveness. It is also possible that underlying genetic and/or neurobiological variations predispose these individuals to mindfulness, even when faced with traumatic experiences. In the face of early adversity, this awareness of environmental and social cues, without judgement, could facilitate more positive mental health outcomes. As well, the tendency to remain focused on the present-moment without ruminating about past events (e.g., maltreatment) or future possibilities (e.g., abandonment, rejection) could be powerful protection against the development of internalizing symptoms. Given that emotional maltreatment affects areas of the brain typically associated with mindfulness (e.g., frontotemporal regions), mindfulness is a promising candidate for this recovery role. That is, mindfulness facilitates enhanced immune response, physiological recovery from stress, and increased volume in areas of the brain responsible for emotional regulation (Davidson et al., 2003; Lazar et al., 2005). Research also implicates mindfulness training in the reduction of internalizing symptoms (e.g., Davidson et al., 2003). This study suggests that mindfulness as a trait could result in similar outcomes for individuals with difficult early life experiences.

Overall, the mediation and moderation results found in the present study contributed to increasingly supported theoretical models of co-occurring continuity and discontinuity in development (e.g., Collins & Sroufe, 1999; Fraley, 2002). That is, factors such as attachment
insecurity following emotional maltreatment may remain stable over time and engender negative outcomes. However, variations in individual traits, personal experiences, and environmental influences could result in more resilient outcomes for some individuals.

The perceptual information required to recognize emotional faces.

It was anticipated that individual variation in the nature and extent of preferential processing of emotional facial expressions would emerge based on individuals’ unique life experiences and intrapersonal qualities. Although happy, sad, angry, and fearful emotional expressions were tested, significant effects only emerged for the recognition of fear. Under low cognitive load, high levels of attachment avoidance and mindfulness were associated with low perceptual thresholds for the identification of fear. Under high cognitive load, high levels of emotional maltreatment, attachment anxiety, and mindfulness predicted lower thresholds for identifying fear. As well, emotional maltreatment interacted with both mindfulness and attachment anxiety, revealing that high levels of attachment anxiety or mindfulness predicted lower perceptual thresholds only for individuals without a history of maltreatment. Previously maltreated individuals identified fear with less perceptual information regardless of their self-reported attachment anxiety or mindfulness.

The lack of predictive effects for the identification of anger failed to replicate past research indicating that maltreated children and young adults require less perceptual information to identify anger (e.g., Pollak & Tolley-Schell, 2003; Pine et al., 2005; Gibb et al., 2009). However, this past research focused on the experience of physical maltreatment, which may elicit stronger attentional biases for anger than emotional maltreatment. That is, the recognition of anger may be particularly adaptive for physically abused individuals. In line with the present study’s findings, Leist & Dadds (2009) found a preferential awareness for fear, but not anger, in young adults with a history of maltreatment. The authors speculated that the recency of maltreatment experiences could affect individuals’ hypervigilance to emotional facial expressions of fear. If young adults have not been exposed to persistent demonstrations of anger in the recent past, their responses may be discrepant from those displayed by recently maltreated children. The effects for fear may also reflect an evolutionary bias that is particularly pronounced in individuals with adverse life experiences. Fear likely evolved as an important component of a human’s defense system, signaling danger and eliciting distress and escape (Öhman, 2008). The
tendency to interpret emotional cues as threatening or fear-provoking likely enabled survival for human ancestors. Indeed, the tendency to be overly cautious or attuned to these cues, and therefore increase the potential for false positives (i.e., eliciting a response in non-threatening situations) would benefit survival more than a moderate approach that could result in false negatives (i.e., failing to respond in a dangerous situation). Consequently, the rapid detection of fearful faces, which likely cue individuals to the near presence of danger, would be automatic for most and enhanced for some. Previous research suggests that biases are pronounced when the experience of fear is actually induced in individuals with phobias or anxiety disorders (Juth, Lundqvist, Karlsson, & Öhman, 2005; Rinck, Reinecke, Ellwart, Heuer, & Becker, 2005). Similarly, those with a history of emotional maltreatment may be particularly sensitive and reactive to facial expressions, perhaps especially those related to fear. Neurobiological evidence supports the hypothesized advantages of fear recognition. It has been found that the amygdala is activated while viewing fearful faces (e.g., Anderson, Christoff, Panitz, De Rosa, & Gabrieli, 2003), and is biased towards false positives over false negatives. This amygdala response then activates adaptive behavioural responses. The repeated activation of these response systems, based on interpersonal life experiences, could support individual variability in individuals’ responsivity to fearful faces.

Given the behavioural correlates of attachment avoidance and mindfulness, it is not surprising that individuals with high self-reported levels of these constructs could identify fear sooner in a sequence under low-stress (i.e., low cognitive load) conditions. It is possible that the ability to quickly detect highly salient facial cues (e.g., fear) could enable highly avoidant people to disengage from emotionally charged or threatening situations (Niedenthal et al., 2002). Previous studies have demonstrated that avoidant individuals require less perceptual information to quickly identify emotion-laden pictures, including facial expressions (Maier et al., 2005; Niedenthal et al., 2002). The rapid identification of other emotions may not support these avoidant coping mechanisms. After this early stage of information processing, secondary and effortful avoidant strategies could occur (Edelstein & Gillath, 2008; Sonnby-Börgstrom & Jönsson, 2004). The lack of predictive effects for attachment avoidance under high memory load could indicate a break-down in avoidant strategies when cognitive resources are taxed. When focused on regulating their own emotional responses to the competing demands of a cognitive task, biases for the fast identification of fear could be attenuated. Studies have documented that
stressful events can elicit a re-surfacing of suppressed information, resulting in negative emotions and reduced self-control for avoidant individuals (Berant, Mikulincer, & Florian, 2001; Berant, Mikulincer, & Shaver, 2008).

Mindfulness is associated with present-focused attention, and therefore could facilitate the identification of emotions with less explicit perceptual information, regardless of cognitive load. Although limited research exists in this area, one study found reduced interference when viewing emotional pictures in mindful individuals (Ortner et al., 2007). The present investigation, to the author’s knowledge, is the first to demonstrate the influence of mindfulness on the identification of emotional faces. The ability to maintain focus on perceptual cues, despite competing demands for mental resources, could enable mindful individuals to effectively manage their own emotional well-being overall in a variety of situations.

Interestingly, highly anxious individuals were vigilant to alterations in facial indicators of fear, but only when cognitively taxed. A general hypervigilance to emotional and interpersonal cues has been well documented in previous studies (e.g., Fraley et al., 2006; Mikulincer et al., 2002; Niedenthal et al., 2002). However, research has found that the perceptual biases for emotional faces has been more inconsistent in individuals with high levels of attachment anxiety compared to those with high levels of attachment avoidance (e.g., Maier et al., 2005). The restriction of these effects to the high cognitive load condition in the present study could be the by-product of an activated attachment system, due to exposure to potentially threatening emotional cues when attentional resources are otherwise compromised. Perhaps it is only under sufficiently taxing situations that attachment anxiety exerts its influence on perceptual bias to faces. The limited resources available to complete the task may be particularly disconcerting for attachment-anxious individuals, who compensate by increasing attention to emotional indicators in faces. This would corroborate research concerning the effects of attachment anxiety on the identification of facial emotions when placed under duress (e.g., Niedenthal et al., 2002). Highly attachment anxious individuals, who arguably possess relational schemas that enhance their attention to signals of abandonment or rejection, likely pay close attention to negative facial expressions when their mental schemas are activated by the joint presentation of emotional material under cognitive taxation.
The effects observed for attachment anxiety and mindfulness under high memory load were only apparent for individuals without a history of emotional maltreatment. For those with a history of emotional maltreatment, the fast identification of fearful faces may serve adaptive purposes in a chaotic environment. Therefore, regardless of attachment and mindfulness, these individuals continue to demonstrate emotional processing biases that enhance their attunement to fearful faces when placed under mental stress.

**Interference effects for emotional words.**

Whereas the facial task required participants to carefully focus on emotional material, the emotional Stroop task required participants to *ignore* contextual emotional cues. Individual differences in this emotional processing paradigm revealed additional information regarding varying patterns of responses biases to emotional stimuli. As anticipated, participants took longer to colour-name negative words, social words, and words under high cognitive load. This corroborates research on patterns of response latencies for emotional and interpersonal words, particularly with the inclusion of competing cognitive demands (e.g., Edelstein & Gillath, 2008; McKenna & Sharma, 1995; Pratto & John, 1991). One interpretation of this effect is that the attention devoted to processing the content of these words delays colour naming. Although response times are generally interpreted in relation to the interference effects of word content (i.e., higher response latencies for more salient content), it is possible that some of these effects arose from the triggering of extraneous processes. For example, the elicitation of negative thoughts could require cognitive effort that competes with task demands (e.g., de Ruiter & Brosschot, 1994).

Overall, regardless of the word valence or presence of competing cognitive demands, individuals with strong attentional control showed faster times. Attentional control was measured using a traditional Stroop task, which is an indicator of individuals’ ability to focus exclusively on task demands in a situation involving conflict between top-down and bottom-up systems. Based on the attentional control theory (Derakshan & Eysenck, 2009; Eysenck, Derakshan, Santos, & Calvo, 2007), the top-down system directs executive attention to task-related goals while the bottom-up system directs attention to environmental stimuli (e.g., emotional cues, perceived threat). Accordingly, interference for emotional or threatening words is hypothesized as a facilitation of the bottom-up system. Individuals with particularly strong attentional control
may be capable of enhancing top-down control and inhibiting bottom-up processes, thereby resulting in faster reaction times. The elaborative processing of emotional word cues would therefore not occur to a great extent, and no interference effects would be observed. Rather, fast reaction times would be observed regardless of word content. Therefore, it was important to control for this general attentional ability in our analyses.

Individual differences according to other variables of interest (i.e., attachment, mindfulness) were apparent in both no cognitive load and high cognitive load conditions, but followed different patterns. For the prediction of negative social words under no cognitive load, two interactions emerged. First, an interaction between emotional maltreatment and attachment avoidance suggested that maltreatment predicted longer reaction times (i.e., greater interference) only for those with low levels of attachment avoidance. Those with high levels of avoidance showed demonstrated similar reaction times regardless of their history of maltreatment. Individuals who have been emotionally maltreated are likely biased to emotional cues that possess social content. For individuals without defensive mechanisms that orient them away from social-emotional content, longer reaction times would be expected. Indeed, these individuals focused on the word content at the expense of task demands. In contrast, maltreated avoidant individuals have likely experienced suffering in the past that instigated the development of defensive schemas. These avoidant schemas would be activated by negative emotional material, thus prompting the suppression of information that may cause additional psychological pain. This likely allowed avoidant individuals, even those with a history of maltreatment, to focus on Stroop demands without interference from the word content. Theorists have posited that avoidant individuals use deactivating strategies for the purpose of self-regulation. That is, these individuals likely orient their attention away from threatening emotional stimuli in order to limit their experience of negative affect (Edelstein & Gillath, 2008; Edelstein & Shaver, 2004; Fraley et al., 1998). Bowlby (1987) termed this tendency “defensive exclusion”, which protects individuals from the internal distress that accompanies cues related to interpersonal loss or intimacy. Overall, either high levels of avoidance or low levels of maltreatment allowed individuals to successfully avoid negative, interpersonally relevant contextual information.

Although this suppression of negative emotional material may initially seem contradictory to the perceptual bias for fearful facial expressions found in the present study, these results are nevertheless consistent with the proposal offered by Neidenthal and colleagues.
INVESTIGATING CHILDHOOD EMOTIONAL MALTREATMENT

(2002), who suggested that avoidant individuals quickly process emotional stimuli in the earliest stages of processing in order to then implement avoidant defensive strategies (e.g., suppression) at secondary stages of processing. This all occurs relatively soon after stimulus presentation, which may explain why avoidant children and adults struggle to encode and subsequently recall attachment-related emotional information (e.g., Edelstein et al., 2005; Fraley, Garner, & Shaver, 2000; Kirsh & Cassidy, 1997; Mikulincer & Orbach, 1995). When faced with emotional information that must be processed quickly and efficiently (e.g., fear) in order to promote adaptive responding, avoidance may elicit a perceptual bias towards emotional information. However, when faced with less immediately threatening cues (e.g., emotional words) at secondary stages of processing, avoidance may elicit a perceptual bias away from emotional information.

A separate interaction between avoidance and mindfulness also was found for negative social words under no cognitive load. That is, attachment avoidance only predicted reduced interference for those with high levels of mindfulness. For individuals with low levels of mindfulness, longer reaction times were observed regardless of their level of attachment avoidance. Although it may seem unlikely that an individual could demonstrate high levels of both avoidance and mindfulness, it is possible that individuals who avoid interpersonal relational triggers have learned to direct their attention to less stimulating environmental and internal cues. This tendency, particularly if accomplished in a relatively neutral and non-judgemental way, could help individuals regulate emotions and avoid overwhelming triggers. Indeed, some research suggests that high levels of mindfulness in insecurely attached adults can buffer individuals from adverse relational outcomes by preventing the repeated activation of the attachment system (Saavedra et al., 2010). The ability to maintain focus on the task demands, without becoming distracted by extraneous cues, was anticipated for both avoidant and mindful individuals. Therefore, it is unsurprising that individuals with high levels of both avoidance and mindfulness were particularly capable of responding without interference. It is fascinating to note that the same brain areas activated by the Stroop paradigm are also activated by mindfulness. That is, the anterior cingulate cortex is a hub that facilitates the enhanced attentional functioning that is inherent to both mindfulness and Stroop performance (e.g., Bush et al., 2000; Cahn & Polich, 2006; Ives-Deliperi et al., 2011). Therefore, individuals with lower
levels of mindfulness are likely vulnerable to distraction by emotional cues, even when possessed of avoidant tendencies.

Interestingly, the interactions with attachment avoidance disappeared under conditions of high cognitive load. The attenuation of avoidant strategies in situations that are stressful and/or include competing cognitive demands has been demonstrated previously (Berant et al., 2001, 2008; Edelstein & Gillath, 2006; Mikulincer et al., 2004). This suggests that avoidant strategies do not, as some speculate, operate effortlessly. Rather, the imposition of a secondary task causes a reduction in this attentional bias, likely because avoidant individuals are sufficiently taxed by remembering digits and suppressing their reaction to the emotional content. Therefore, their reaction times are compromised under these conditions, similar to others with lower levels of attachment avoidance.

For positive social words, which also likely activated the attachment system, interactions between emotional maltreatment and attachment variables were found under no cognitive load conditions. The interaction with attachment avoidance suggested that maltreatment predicted increased reaction times (i.e., more interference) only for those with low attachment avoidance. Although similar to the pattern noted for negative social words, more interference overall was noted for individuals with high attachment avoidance (regardless of maltreatment history). Perhaps some break-down in the implementation of avoidant strategies occurred because of the highly salient and activating nature of these positive social words. In fact, it is possible that positive social words (unlike negative social words) are more ambiguous with regard to threat among those with an avoidant attachment style. Words denoting positive interpersonal relationships or interactions (e.g., father, cuddle) could be interpreted along a spectrum of threat for avoidant individuals, resulting in a need for enhanced monitoring of these cues.

The interaction with attachment anxiety suggested that maltreatment predicted increased reaction times to positive social words, but only for those with high levels of attachment anxiety. This is consistent with the hypervigilance to interpersonal cues expected for highly anxious individuals, which has been found in previous research (Mikulincer et al., 2004). In those with a history of maltreatment, hypervigilance to words associated with attachment relationships would be anticipated, given their increased exposure to threat during development and their biased inclination to attend to attachment-related information and interpret it as important and potentially threatening (Ein-Dor, Mikulincer, & Shaver, 2011; Ein-Dor, Mikuliner, Doron, &
This tendency may allow anxious individuals to engage interpersonally with significant others and enlist support if needed.

Under high cognitive load, an interaction between emotional maltreatment and mindfulness was found across all word conditions. Maltreatment predicted increased reaction times to positive, negative, positive social, and negative social words only for individuals with high levels of self-reported mindfulness. In line with hypotheses, mindful individuals demonstrated reduced interference for emotional words under high cognitive load. However, this was only true for mindful individuals with no history of emotional maltreatment. Contrary to hypotheses, mindful individuals with a history of emotional maltreatment demonstrated increased interference for emotional words under high cognitive load. It is possible that these individuals have learned to pay careful attention to both positive and negative cues under threatening situations. When cognitively taxed, these individuals may shift attention away from less important task demands and devote remaining cognitive resources to emotional cues that may help with self-regulation in a stressful condition. Perhaps mindfulness exerts some of its positive influences by allowing individuals to capitalize on positive emotions, which can serve a number of protective functions and promote recovery from the detrimental effects of negative emotions (Fredrickson, 2000; Fredrickson & Branigan, 2001; Fredrickson & Levenson, 1998; Folkman & Maskowitz, 2000). The dynamic model of affect proposed by Zautra and colleagues (2001) speculates that attending to positive emotions could prevent individuals from becoming overwhelmed by negative affect in stressful situations. Mindful individuals may have practice attending to and capitalizing on positive emotions, even when faced with competing negative emotions. According to Fredrickson’s (1998, 2000) broaden-and-build theory, this is particularly important for promoting faster recovery from exposure to negative affect. As well, this regular attention to positive emotions could, over time, reduce the longer term consequences of exposure to negative emotions (Kiecolt-Glaser, McGuire, Robles, & Glaser, 2002; Nolen-Hoeksema, 1991).

As well, an interaction between emotional maltreatment and attachment anxiety followed a similar pattern. That is, emotional maltreatment predicted an increase in reaction times to negative social words, but only for those with high levels of attachment anxiety. Unlike previous studies, which have found this vigilance under low cognitive load, attachment anxiety only emerged as a significant predictor under high cognitive load in this study. It is possible that the
words used in the present study were not as interpersonally threatening without the imposition of a stressful additional task. Other studies have found particularly pronounced Stroop effects for attachment-related and/or self-relevant words (e.g., Mikulincer et al., 2004). The inclusion of these more salient words may have also elicited effects under low cognitive load in our sample. However, under conditions of mental taxation and stress, it is not surprising that highly anxious individuals were particularly attuned to emotional cues that could signal negative interpersonal threat, even if these cues were not as threatening under low cognitive load. This is consistent with empirical evidence relating attachment anxiety to the preferential processing of emotional and attachment-related information (e.g., Fraley et al., 2006; Gillath et al., 2005; Mikulincer et al., 2002). Arguably, for individuals with a history of emotional maltreatment, this tendency would be adaptive and promote compensatory coping strategies.

General Discussion

Overall, the purpose of this dissertation was to explore the underlying processes associated with the internalizing symptoms and biased emotional processing that result from early adversity. The results suggested that emotional maltreatment leads to internalizing symptoms through the sequential mediational influences of attachment and mindfulness, although individual differences contribute to variability in internalizing outcomes. This outcome variability extends to behavioural indicators of emotional information processing, including individuals’ attunement to emotional facial cues and attentional suppression of emotion-laden words.

Summary of Findings

Both Study 1 and Study 2 provided evidence for a model that placed attachment and mindfulness as sequential mediators underlying the development of internalizing symptoms following childhood emotional maltreatment. In this model, childhood emotional maltreatment enhanced anxious or avoidant attachment orientations, which subsequently inhibited mindful inclinations. Theoretically, avoidant individuals’ suppression of attachment-related information could generalize to more global inattentive, judgmental, and non-present oriented qualities (i.e., low mindfulness). Similarly, anxious individuals’ biased hypervigilance to interpersonal cues could reduce the non-judgemental attunement to other meaningful contextual information.
Eventually, this cascade could give rise to the development of internalizing symptoms such as depression, stress, and anxiety.

However, the interactive effects noted in both studies suggested that individual variability in trait mindfulness may protect individuals from such negative sequelae. In Study 1, attachment anxiety interacted with mindfulness, such that individuals with high levels of mindfulness demonstrated reduced internalizing symptoms at both high and low levels of self-reported attachment anxiety. In Study 2, a similar pattern was observed in the interaction between emotional maltreatment and mindfulness, such that those with high levels of mindfulness demonstrated lower internalizing symptoms regardless of their self-reported history of childhood emotional maltreatment. Combined, these results provided some evidence for variability in trait mindfulness in at-risk individuals, and supported the notion that high levels of trait mindfulness buffer individuals from the negative internalizing consequences associated with emotional maltreatment and insecure attachment.

Interestingly, individual differences were also apparent in behavioural tasks of emotional processing. The perceptual information required to identify fear was lower for individuals with high levels of attachment avoidance and mindfulness under low cognitive load. Consistent with previous studies, avoidant individuals’ rapid detection of fear likely facilitated their attempts to reduce activation of the attachment system and disengage from a potentially threatening situation (e.g., Edelstein & Gillath, 2008; Maier et al., 2005; Niedenthal et al., 2002). Similarly, mindfulness enabled the fast identification of fearful faces, which is consistent with a present-focused orientation that supports healthy coping and adaption.

When cognitively burdened with the imposition of a secondary task (i.e., remembering a 7-digit number), individuals with a history of maltreatment required less perceptual information to identify fear regardless of mindfulness or attachment avoidance. This tendency likely served a protective function for those who experienced maltreatment as children. However, the continued adherence to these perceptual biases, particularly in the context of judgmental interpretations and/or rumination, could place these individuals at risk for negative consequences. Individuals without a history of maltreatment could identify fearful faces quickly under high cognitive load only if they were mindful or high in attachment anxiety. This suggests that mindful inclinations allow non-maltreated individuals to attend to important emotional stimuli in a variety of circumstances. With regard to attachment anxiety, heightened awareness of fearful faces under
High cognitive load corroborates research suggesting that the activation of the attachment system initiates hypervigilant responses in anxious individuals (e.g., Fraley et al., 2006; Mikulincer et al., 2002; Niedenthal et al., 2002), which likely occurs whether or not they have experienced emotional maltreatment in the past.

Finally, the mechanisms underlying interference effects for emotional words were explored using an emotional Stroop task. Overall, general attentional control predicted faster reaction times to emotional words, regardless of condition or cognitive load. Controlling for this ability to reconcile top-down and bottom-up attentional demands allowed for an exploration of other factors contributing to individual differences in interference effects. Under low cognitive load, emotional words with social content elicited the most individual variation, which was not surprising given their overall salience and hypothesized tendency to activate the attachment system. Interference effects were attenuated for avoidant individuals regardless of emotional maltreatment, particularly for those with high levels of mindfulness. This suppression of negative emotional material likely protected these individuals from the potential experience of psychological pain. Some breakdown in the inhibiting tendencies of avoidant individuals was noted for positive social words, perhaps because of the increased monitoring requirements of these ambiguous emotional cues. Highly anxious individuals demonstrated enhanced interference for positive social words, but only if they also reported a history of maltreatment. This maltreatment history likely exacerbated their hypervigilance to the potentially threatening nature of these words.

Under high cognitive load, comparable patterns were observed across all emotional word types. Individuals with high levels of mindfulness and no history of emotional maltreatment were able to focus on task demands and showed little interference for emotional words, as expected. However, mindful individuals with a history of maltreatment demonstrated the most interference for emotional words. Under conditions of stress, it is possible that these individuals abandoned task requirements in favour of focusing on important positive and negative emotional cues, which could enable effective self-regulation strategies in a challenging situation. One additional interaction indicated that highly anxious individuals with a history of emotional maltreatment were particularly attuned to negative social words under high cognitive load, possibly due to their enhanced vigilance to threatening and socially relevant cues as a method of adaption to stress.
Cumulatively, these findings contribute to an expanding literature supporting the connection between childhood maltreatment and the presence of internalizing symptoms and attentional biases for emotional cues in young adulthood. The concurrent examination of attachment and mindfulness variables represents a novel contribution to this literature, and individual differences in these constructs and their emotional correlates provide an interesting theoretical framework regarding alternative trajectories to emotional development and implications for future research and clinical intervention.

Limitations and Future Directions

The results from these studies should be considered within the context of some limitations. Given the cross-sectional design of the studies, no direct causal conclusions can be determined. Rather, these studies provide correlational substantiation regarding the relationship between emotional maltreatment, attachment, mindfulness, internalizing symptoms and emotional processing that would benefit from additional longitudinal investigations. An exploration of the generalizability of these results beyond a university sample of female students is another avenue for future research, given that variability in functioning may be more or less pronounced in another sample. Undergraduates likely constitute a particularly resilient subpopulation, given their intellectual abilities and other abilities related to academic success. The replication of these findings in a more heterogeneous sample (e.g., community, clinical), with a mix of males and females, would provide additional contextualized information about the interplay of these important constructs. Considering research suggesting that the quality of current romantic relationships may affect attachment representations, it would be interesting to investigate relationship status in future studies.

As well, the focus on self-report measures for many of the measured variables required considerable introspection and attention on the part of participants. The reliance on self-reported childhood maltreatment rather than documented cases may have contributed to recall biases or different patterns of results compared to research using maltreatment records. However, reviews on the retrospective recall of abuse indicate that adults can accurately report these experiences, particularly when provided with clear and detailed assessment measures (Brewin, Andrews, & Gotlib, 1993; Cicchetti & Manly, 2001; Rutter & Maughan, 1997). Additionally, studies that exclude participants based on a lack of a verified record may underestimate the actual experience
of maltreatment, particularly in cases of emotional maltreatment that are notoriously underreported. The occurrence of other forms of childhood abuse (e.g., physical) were low in our sample, which allowed for a clearer picture regarding the effects of emotional maltreatment alone, although it precluded an examination of the broader effects of experiencing multiple forms of maltreatment. Similarly, internalizing symptoms were assessed only based on retrospective accounts regarding the past week. Future studies should examine whether clinical levels of specific internalizing disorders (both current and past) yielded similar results. Mindfulness was measured as a trait in the present study, therefore it was difficult to ascertain whether mindfulness practice would yield similar results. Accordingly, future studies could implement mindfulness-based training in order to clarify whether comparable trends emerge. The use of self-report measures in mediation analyses may have been influenced by common method variance. It is possible that some individuals are less accurate reporters of personal characteristics and functioning, which could be due to a variety of factors. Although social desirability was examined in Study 2, the low internal consistency within the sample rendered it difficult to interpret the lack of effects noted. Other factors may have resulted in self-report inaccuracies (e.g., defensive mechanisms, genuine lack of personal insight).

As well, participants completed Study 1 online, and it was difficult to determine their engagement and attention to the process, which may have affected the findings. Although Study 2 included some behavioural indices, future studies that include a mix of questionnaires, interviews, and observational techniques could clarify the potential impact of these variables. Study 2 had a smaller sample size, which may be problematic for SEM analyses according to the $N > 200$ criteria suggested by some researchers (e.g., Garver & Mentzer, 1999). Future studies should therefore replicate these findings using a larger sample. That being said, many researchers contend that a sample size of 100 is sufficient for attaining a sound SEM solution, particularly given the use of strong, reliable measures and sound theoretical justification (Gerbing & Anderson, 1985; Iacobucci, 2010).

With regard to the actual stimuli used in the emotional information processing tasks, it would be interesting to examine whether self-relevant emotional cues would garner similar or even more pronounced results. For example, some evidence suggests that individuals demonstrate enhanced interference for emotional material that either reflects their current concerns or were selected based on their previous judgements (Segal et al., 1995; Williams,
Matthews, & MacLeod, 1996). When exposed to the faces of significant others, it would be interesting to determine participants’ ability to use perceptual information to determine the presence of an emotion. Similarly, for the emotional Stroop task, allowing participants themselves to rate the valence and arousal of personally relevant words may produce more or less interference according to word condition and variables of interest (i.e., maltreatment, attachment, mindfulness).

Clinical Implications

A few clinical implications can be derived from the present studies, at least with regard to a young adult population. The reductions in internalizing symptoms noted for individuals with high levels of mindfulness indicates that mindfulness interventions could hold considerable promise for addressing the negative internalizing consequences of childhood maltreatment. This may be particularly important, given that emotional maltreatment theoretically contributes to insecure attachment relationships, reduced mindfulness, and increased psychological symptoms for many individuals. Some preliminary studies have explored the utility of mindfulness for treating maltreatment and trauma-related concerns such as experiential avoidance, psychological distress, inflexibility, distress tolerance and emotion regulation (e.g., Batten & Hayes, 2005; Batten, Orsillo, & Walser, 2005; Follette & Vijay, 2009). Considerable evidence suggests that mindfulness is very effective for the amelioration of a variety of psychological disorders in young adulthood and adulthood, many of which are associated with childhood maltreatment. Rather than attempting to change specific thoughts and emotions, the overarching goal of most mindfulness-based therapies is to effectuate change in an individual’s relationship with these thoughts and emotions. Consequently, these internal experiences are viewed as private and alterable experiences, rather than immutable reality. A few approaches to mindfulness, such as mindfulness-based stress reduction (MBSR; Kabat-Zinn, 2003), mindfulness-based cognitive therapy (MBCT; Teasdale, Segal, & Williams, 1995), dialectical behaviour therapy (DBT; Linehan, 1993), and acceptance and commitment therapy (ACT; Hayes, Strosahl, & Wilson, 1999) have resulted in decreased stress, anxiety, depression, and suicidality (Bach & Hayes, 2002; Bond & Bunce, 2000; Carlson, Speca, Patel, & Goodey, 2003; Kabat-Zinn, Massion, Kristeller, & Peterson, 1992; Kristeller & Hallett, 1999; Linehan, Armstrong, Suarez, & Allmon, 1991; Linehan et al., 1999; Safer, Telch, & Auras, 2001; Shapiro, Schwartz, & Bonner, 1998;
Teasdale et al., 2000; Telch, Agras, & Linehan, 2001; Zettle, 2003; Zettle & Raines, 1989). In fact, in one meta-analysis of 22 studies that implemented mindfulness to treat various clinical conditions (including anxiety, depression, stress reduction, and chronic pain), Baer (2003) concluded that mindfulness interventions “may bring participants with mild to moderate psychological distress into or close to the normal range” (p. 137).

Given the relation between mindfulness and attachment, it is interesting to speculate on the benefits of mindful parenting interventions for addressing the complex and enduring consequences of child maltreatment. However, these implications must be considered cautiously, given the young adult population who participated in the present studies and the need for additional research in this area. It is possible that mindfulness may address significant disruptions to the attachment relationship that occur following maltreatment. Most conventional approaches to treatment do not elicit longstanding changes because treatments are strategy-focused and often become ineffective when a child or adolescent progresses through new developmental stages. The literature indicates that mindfulness produces enduring changes for both parents and children (e.g., Greco & Hayes, 2008). Mindfulness interventions have been shown to address the abilities that are impaired in maltreating parents such as stress reactivity, empathy, overall well-being, and the ability to read others’ nonverbal cues (Davidson et al., 2003). These are critical abilities for effective parenting, and are often diminished in those who maltreat their children (e.g., Azar, 2002). Mindfulness also confers upon parents the ability to brainstorm multiple solutions to any given situation. Given that maltreating parents often misattribute their children’s behaviours (Azar, 2002; Larrance & Twentyman, 1983), this ability would allow parents to consider their children’s developmental needs and respond appropriately. Moreover, adult mindfulness studies have elicited change in substance abuse difficulties, anxiety, and depression (e.g., Linehan et al., 1999; Shapiro et al., 1998), all of which are also difficulties for maltreating parents (Milner & Chilamkurti, 1991). Addressing these personal struggles would allow parents to benefit further from other components of treatment. Interestingly, mindfulness studies involving children have produced benefits that overlap with the short- and long-term outcomes of maltreatment. Mindfulness-based interventions improve the internalizing, externalizing, and academic difficulties that are characteristics of many maltreated children (Kaufman, 2008). At a neurological level, consistent practice with mindfulness may stimulate the growth of middle prefrontal fibers, which enhances abilities such as empathy and
interpersonal awareness (Siegel, 2007). These prefrontal areas are compromised in maltreated individuals (Bremner et al., 1995, 1997; DeBellis, 2002; Teicher et al., 2003).

**Final Thoughts**

Childhood emotional maltreatment may initiate a cascade of negative consequences by disrupting critical attachment relationships and altering the development of attentional processes like mindfulness. This can result in heightened internalizing symptoms and emotional processing biases. However, different trajectories are possible, given the presence of secure attachment schemas and mindful tendencies. Additional prospective studies are needed to clarify the processes underlying the effects of emotional maltreatment, however the current findings have some interesting implications for understanding the nature of these mechanisms and designing future studies that evaluate both negative and positive outcomes in the aftermath of hardship.
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Appendices
Appendix A: Pre-screening Questionnaire (Study 1 and Study 2)

Please rate your answers to the following questions based on the indicated scale, where 1 = rarely and 7 = Most or all of the time.

1. Rarely
2. Some of the time
3. Moderate amount of the time
4. Most or all of the time

1. I was blamed for the problems in my family
2. My parents called me hurtful things like “stupid” or “worthless”.
3. My parents were available to talk to. (R)
4. When bad things happened, my parents said it was my fault.
5. People in my family threatened to hurt me.
6. My parents chose to spend time with me instead of doing activities on their own. (R)
7. My parents were aware of my interests, likes, and dislikes. (R)
8. My family hated me.
9. People in my family threatened to leave me.
10. My parents comforted me when I cried. (R)
11. I felt valued by my parents. (R)
12. My parents respected me. (R)

(R) = Reverse Scored
Appendix B: Recruitment Email (Study 1)

Dear (Student),

We would like to invite you to participate in a research study entitled “Childhood Experiences and Current Functioning”, currently being conducted by Dr. Heidi Bailey and Lianne English.

During this study, you will be asked to complete a couple of online computer tasks that involve looking at and responding to pictures. Then, you will be asked to answer some online questionnaires asking about difficult early life experiences, current experiences, and relationships with significant individuals in your life.

In total, this study will take approximately 45 minutes -1 hour to complete, and you will receive 1.0 participant pool credit. Your participation is completely voluntary, and if you choose to participate you may withdraw at any time without consequences of any kind.

If you are interested in participating, please sign up using your student account on the sign-up website: http://uoguelph.sona-systems.com_ (Study Name: Childhood Experiences and Current Functioning). The link for the study will direct you to an online consent form. Please read the consent form and, if you agree to participate, fill in your email address. You will then receive an email with a unique password and a link to the online study. The password may be used only once to complete the entire survey.

If you have any questions or concerns about the research, please feel free to contact Dr. Heidi Bailey, Faculty Supervisor, at 519-824-4120 ext 56399, or Lianne English at 519-824-4120 ext. 54581.
Appendix C: Consent Form (Study 1)

**CONSENT TO PARTICIPATE IN RESEARCH**

**Childhood Experiences and Current Functioning**

You are asked to participate in a research study conducted by Dr. Heidi Bailey and Lianne English from the Department of Psychology at the University of Guelph. The results of the study will contribute towards the PhD dissertation of Lianne English.

If you have any questions or concerns about the research, please feel free to contact Dr. Heidi Bailey, Faculty Supervisor, at 519-824-4120 ext 56399, or Lianne English at 519-824-4120 ext. 54581.

**PURPOSE OF THE STUDY**

The purpose of this study is to examine whether difficult childhood experiences are related to current functioning in terms of mood and the processing of emotions. In the current study, the processing of emotions will be measured using an emotional picture task, during which you will be asked to rate the way various positive, negative, and neutral pictures make you feel. You will also be asked to complete a number of questionnaires asking about difficult early life experiences, current experiences and relationships with significant individuals in your life. Please note that some questions in this study can be emotionally upsetting. Although we care about collecting as much information as possible, we care more that your emotional state. Therefore, it is important to remember that you do not have to answer every question in the survey and you are free to withdraw at any time.

**PROCEDURES**

If you volunteer to participate in this study, we would ask you to do the following things:

Please set aside at least 1 hour to complete this online study in a quiet location.

First, you will be asked to read this informed consent form. This may take 5 minutes. Then you will be directed to a series of questionnaires presented online.

**Questionnaires**

You will be asked to complete several questionnaires on topics related to difficult early life experiences, current experiences, and relationships with various people in your life. These questionnaires may take 40 minutes to complete.

At the end of this study, you have the opportunity to request a written summary of the results of this study. If requested, the summary will be electronically mailed to you at a later date.

If you are using a public computer, please follow the following steps after you finish the study to ensure that your information is kept confidential:
1. Clear the browsing history
2. Clear the cache
3. Clear the cookies
4. Clear the authenticated session
5. LOG OFF

If you are using Internet Explorer, the first 4 steps may be accomplished by going to Tools and selecting Delete Browsing History.

**POTENTIAL RISKS AND DISCOMFORTS**

A small portion of the pictures used in the emotional picture task are negative, and some of the questionnaires at the end of the study ask about difficult life experiences: these might cause you to feel uncomfortable. Thus it is important to remember that you can withdraw from the study at any point if you do not feel comfortable and want to discontinue. You also may choose not to answer any specific questions.

**POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY**

The results of this study may benefit the scientific community by contributing to the understanding of positive and negative outcomes associated with early experiences. In addition, you will receive an information sheet listing on-campus and on-line mental health resources.

**PAYMENT FOR PARTICIPATION**

You will receive one course credit for your participation.

**CONFIDENTIALITY**

Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study. Each participant will be assigned a number that will be used instead of his or her name. This number is linked to your email and personal information on a master list, which will be stored on a password protected computer in a locked office for 5 years (after which it will be eliminated). Questionnaires will be password protected. Only Dr. Heidi Bailey and Lianne English will have access to the data collected. Data will be kept for five years at which time it will be shredded. There is insufficient information provided by the survey to determine whether you and/or siblings are at current risk of abuse, however you will have the opportunity to disclose this information (if you choose) on the Feedback and Resources page at the end of the survey. If you decide to disclose this information, the researchers can provide you with contact information and support around reporting this information to Family and Children’s Services. As well, a number of mental health and counselling resources will be provided to you at the end of the study.

**PARTICIPATION AND WITHDRAWAL**

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing
your data from the study. You may also refuse to answer any questions you don’t want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

RIGHTS OF RESEARCH PARTICIPANTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. This study has been reviewed and received ethics clearance through the University of Guelph Research Ethics Board. If you have questions regarding your rights as a research participant, contact:

Director, Research Ethics
University of Guelph
437 University Centre
Guelph, ON N1G 2W1
Telephone: (519) 824-4120, ext. 56606
E-mail: sauld@uoguelph.ca
Fax: (519) 821-5236

SIGNATURE OF RESEARCH PARTICIPANT/LEGAL REPRESENTATIVE

I have read the information provided for the study “Childhood Experiences and Current Functioning” as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study. I have been given the option of printing out this form:

☐ YES

Please enter your email address here to be contacted by the researcher with your unique password and study website:

[Enter email address]
Appendix D: Mental Health Resource Form (Study 1 and Study 2)

INFORMATION FOR PARTICIPANTS:
ON-CAMPUS MENTAL HEALTH RESOURCES

Research study: Childhood Experiences and Current Functioning

In this study you filled out questionnaires that assess symptoms of depression and anxiety. If you found yourself endorsing quite a few of these symptoms, you may benefit from

(1) seeking a consultation to determine more comprehensively the intensity of your symptoms and their effect on your functioning,
(2) seeking counseling or medication to alleviate symptoms, and/or
(3) learning more about these conditions.

The following resources are available to students on campus:

- Counseling Services - Ext. 53244  www.slcs.uoguelph.ca/counselling (registered students may receive up to 8 sessions free of charge)
- Student Health Services - Ext. 52131 www.studenthealth.uoguelph.ca
- Student Support Network - Ext. 55002

The University of Guelph Counseling Services has put together a page of links to mental health resources available on the internet. Although these resources are not intended to take the place of a face-to-face consultation with a trained counselor, Counseling Services encourages interested students to look over the information and use what they find helpful:

http://www.counselling.uoguelph.ca/counselling/resources.shtml
Appendix E: Consent Form (Study 2)

CONSENT TO PARTICIPATE IN RESEARCH

Childhood Experiences, Current Functioning, and the Processing of Emotions

You are asked to participate in a research study conducted by Dr. Heidi Bailey, Lianne English, and Gillian MacDonald from the Department of Psychology at the University of Guelph. The results of the study will contribute towards the PhD dissertation of Lianne English and the Honours thesis of Gillian MacDonald.

If you have any questions or concerns about the research, please feel free to contact Dr. Heidi Bailey, Faculty Supervisor, at 519-824-4120 ext 56399, or Lianne English at 519-824-4120 ext. 54581.

PURPOSE OF THE STUDY

The purpose of this study is to examine whether difficult childhood experiences are related to current functioning and differences in attention to, and processing of, emotional words and pictures. In the current study, attention and processing will be measured using a series of computerized Stroop Tasks and a facial expression recognition task. During these tasks, you will be asked to attend and respond to pictures and words. You will also be asked to complete a number of questionnaires asking about difficult early life experiences, current experiences, and relationships with significant individuals in your life.

PROCEDURES

If you volunteer to participate in this study, we would ask you to do the following things:

First, you will be asked to read and sign the informed consent form and address any questions you may have. This may take 5 minutes.

Computer Stroop Task

You will be asked to complete 32 practice trials of a traditional Stroop task. After learning the task and completing the 32 trials, you will be randomly presented 225 words, each in one of four colours. Words will be presented in the middle of a black computer screen and will differ in emotional valence: some will be negative, some positive, and some neutral. You will be asked to name the colour aloud as fast as you can through a voice activated microphone, while ignoring the word meaning. This will take approximately 10 minutes.
Facial Expression Task

Next, you will be asked to view 240 images on the computer screen of various emotions (angry, happy, sad, scared, neutral). You will be asked to state the emotion shown in the picture as quickly as possible. This will take approximately 10 minutes.

Questionnaires

Finally, you will be asked to complete several questionnaires on topics related to difficult early life experiences, current experiences, and relationships with various people in your life. These questionnaires may take 20 minutes to complete.

At the end of this study, you have the opportunity to request a written summary of the results of this study. If requested, the summary will be electronically mailed to you at a later date.

POTENTIAL RISKS AND DISCOMFORTS

A small portion of the words used in the emotional Stroop task are abuse related, and some of the questionnaires at the end of the study ask about difficult life experiences: these might cause you to feel uncomfortable. Thus it is important to remember that you can withdraw from the study at any point if you do not feel comfortable and want to discontinue. You also may choose not to answer any specific questions.

POTENTIAL BENEFITS TO PARTICIPANTS AND/OR TO SOCIETY

The results of this study may benefit the scientific community by contributing to the understanding of the attentional processes associated with early experiences. In addition, you will receive an information sheet listing on-campus and on-line mental health resources.

PAYMENT FOR PARTICIPATION

You will receive one course credit for your participation.

CONFIDENTIALITY

Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study. Each participant will be assigned a number that will be used instead of his or her name. Questionnaires will be secured in a locked cabinet and computer files will be password protected. All data will be kept in a locked laboratory and only Dr. Heidi Bailey, Lianne English, Gillian MacDonald and other students directly involved with the project will have access to the data collected. Data will be kept for five years at which time it will be shredded.

PARTICIPATION AND WITHDRAWAL
You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may exercise the option of removing your data from the study. You may also refuse to answer any questions you don’t want to answer and still remain in the study. The investigator may withdraw you from this research if circumstances arise that warrant doing so.

**RIGHTS OF RESEARCH PARTICIPANTS**

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. This study has been reviewed and received ethics clearance through the University of Guelph Research Ethics Board. If you have questions regarding your rights as a research participant, contact:

Director, Research Ethics
University of Guelph
437 University Centre
Guelph, ON N1G 2W1

Telephone: (519) 824-4120, ext. 56606
E-mail: sauld@uoguelph.ca
Fax: (519) 821-5236
### Appendix F: Affective Norms for English Words List, by Category

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<th>Category</th>
<th>Word No. Word</th>
<th>Valence</th>
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Appendix G: Stimuli Used For Emotional Faces Task

1) Happy Emotion Stimuli Sequences
2) Sad Emotion Stimuli Sequences
3) Afraid Emotion Stimuli Sequences
4) Angry Emotion Stimuli Sequences
Appendix H: Life Experiences Questionnaire

Instructions: Please read each item carefully and decide whether you have ever, before you turned 15 years old, had the experience described. Then indicate YES or NO to indicate whether you have ever had the experience. Next, please answer the follow up question(s) by filling in blank spaces or by circling appropriate answers. If you are not sure whether an experience you have had “fits” a given item, please indicate NOT SURE and write a brief description of the experience. Then answer the follow-up questions.

Please note: We use the word “CARETAKER” throughout this interview to refer to adults who were primarily responsible for taking care of you while you were growing up. Parents are the usual caretakers, but many people also grew up with other caretaking adults such as stepparents, grandparents, foster parents, and others. “Siblings” refers to biological brothers and sisters, as well as stepbrothers and stepsisters or adopted siblings.

1. Did you ever have a serious illness or injury, but your caretakers ignored it or failed to obtain necessary medical treatment for it? For example, pneumonia that became serious because it was not treated soon enough, untreated broken bones, or hearing or vision problems that were not treated with glasses or hearing aids.

NO YES NOT SURE (Please describe) _________________________________

IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

2. Did your caretakers fail to provide you with suitable clothes even though they had enough money, so hat you often felt embarrassed around your peers, or did your caretakers often insist that you wear clothes that were so odd or poor that other children made fun of you?

NO YES NOT SURE (Please describe) _________________________________

IF YES: Age first time this happened? ______ Age last time this happened? ______
How often did this situation occur before you turned 15 years old? Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

3. Did your caretakers fail to help you with washing and grooming so that you were often dirty, or had uncombed hair, or wore dirty clothes?

NO YES NOT SURE (Please describe) _________________________________

IF YES: Age first time this happened? ______ Age last time this happened? ______
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

4. Did your caretakers often fail to provide regular meals for you so that you had to go hungry, or eat whatever you could find in the house, or ask other people for food?

NO YES NOT SURE (Please describe) _________________________________

IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

5. Did you ever have to go without things that you needed (i.e., clothes, shoes, school supplies, food, etc.) because your family’s paycheck was spent on the adult’s interests? For example, a parent
spending money on alcohol, gambling, drugs, fancy cars or clothes, so that there was little money left over for the children?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

6. Were you ever required to do chores that were too difficult or dangerous for you? For example, cooking at the stove when you were too small to do it safely, operating farm machinery that could have been dangerous?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

7. Did you "adopt" another family to spend time with because your own caretakers were seldom around to take care of you or spend time with you?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

8. When you had a problem or were worried about something, did you usually decide not to go to your caretakers for help because you believed they would not try to help you?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

9. Did any of your caretakers ever threaten to leave or abandon you and/or your family, or did your caretakers ever threaten to expel you from the family, for example by sending you to live with relatives or in an orphanage?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

10. Were you ever actually abandoned by a caretaker? By abandoned, we mean a caretaker being absent from the child and neither the child nor other adults knew when or if the caretaker would return. This includes either the caretaker leaving the home or the caretaker forcing the child to leave the home.
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

11. Was a caretaker ever seriously ill or hospitalized, and no one would tell you what was wrong?
NO YES NOT SURE (Please describe) _________________________________
INVESTIGATING CHILDHOOD EMOTIONAL MALTREATMENT

IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

12. Was any of your caretakers ever physically or emotionally ill to the extent that s/he was unable to
care for you or pay attention to you because of the illness (e.g., caretaker was depressed, an
alcoholic, or had a serious illness requiring bedrest)?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

13. Did any of your caretakers rarely or never praise you?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

14. Did any of your caretakers rarely or never show you physical affection, such as by hugging,
kissing, or holding you?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

15. Did you ever ask any of your caretakers for attention, affection, or help with a problem, only to
have them ignore you, push you aside, or avoid you?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

16. Did any of your caretakers prevent you from socializing with other children? For example, say
that you had to stay in your own house or yard, could only play with your brothers or sisters, could
not socialize with neighborhood children?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

17. Did you ever have to take on the role of parent in the family? For example, being expected to act
like a parent and take most of the responsibility for household chores or taking care of younger
siblings?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
18. Were you forced to do so many chores or so much housework that you were unable to do much of anything else except go to school?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

19. Did you feel that any of your caretakers clearly preferred your brother(s) or sister(s) over you? For example, were much more affectionate, gave more attention or presents or privileges? Or, did any of your caretakers ever appear to lavish love or attention on another child while acting in a cold, rejecting, or indifferent manner towards you?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

20. Did any adults ever say to you that you were not as good as other children? For example, say that you were not as smart, friendly, talented, or attractive as another child?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Non-family adult (e.g., doctor, teacher, minister, etc.)
2) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
3) Female caretaker (e.g., mother, stepmother, etc.)
4) Male caretaker (e.g., father, stepfather, etc.)

21. Did any of your caretakers ever say they wished they were not parents or that you had never been born?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

22. Did anyone ever say they wished you were dead?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

23. *Were you labeled the “black sheep” or the “bad kid” or the “troublemaker” of your family?*  
NO YES NOT SURE (Please describe) ________________________________

IF YES: Age first time this happened? ____  Age last time this happened? ____

How often did this situation occur before you turned 15 years old?  
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times  
*Who did this? (Indicate as many as apply)*  
1) Stranger  
2) Peer  
3) Non-family adult (e.g., doctor, teacher, minister, etc.)  
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)  
5) Siblings  
6) Female caretaker (e.g., mother, stepmother, etc.)  
7) Male caretaker (e.g., father, stepfather, etc.)  
8) Boyfriend/girlfriend

24. *Were you often punished unfairly for things you did not do?*  
NO YES NOT SURE (Please describe) ________________________________

IF YES: Age first time this happened? ____  Age last time this happened? ____

How often did this situation occur before you turned 15 years old?  
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times  
*Who did this? (Indicate as many as apply)*  
1) Stranger  
2) Peer  
3) Non-family adult (e.g., doctor, teacher, minister, etc.)  
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)  
5) Siblings  
6) Female caretaker (e.g., mother, stepmother, etc.)  
7) Male caretaker (e.g., father, stepfather, etc.)  
8) Boyfriend/girlfriend

25. *Did anyone humiliate or demean you in the presence of other people? (For example, a teacher saying you were stupid in the presence of other students, a parent saying you were fat or ugly in front of your boy/girlfriend)?*  
NO YES NOT SURE (Please describe) ________________________________

IF YES: Age first time this happened? ____  Age last time this happened? ____

How often did this situation occur before you turned 15 years old?  
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times  
*Who did this? (Indicate as many as apply)*  
1) Stranger  
2) Peer  
3) Non-family adult (e.g., doctor, teacher, minister, etc.)  
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)  
5) Siblings  
6) Female caretaker (e.g., mother, stepmother, etc.)  
7) Male caretaker (e.g., father, stepfather, etc.)  
8) Boyfriend/girlfriend
26. Did anyone ever say negative things to you about your personal attributes (e.g., your intelligence, personality, physical appearance, etc.)?
NO YES NOT SURE (Please describe) ______________________________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

27. Did anyone ever say very negative things about your personal attributes (e.g., intelligence, personality, physical appearance, etc.) in a teasing way? For example, say something critical about you but then laugh as if they didn’t mean it.
NO YES NOT SURE (Please describe) ______________________________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

28. Did anyone continue to say something to you that made you feel bad even after you had told them it hurt your feelings or you had acted visibly upset?
NO YES NOT SURE (Please describe) ______________________________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

29. Did anyone consistently swear at you a lot (e.g., calling you a bitch, bastard, etc.)? 
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

30. Did anyone say to you that you were selfish, hateful, no-good, mean, or that you had other negative qualities?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

31. Did anyone ever say that they weren’t giving you something (e.g., a toy) because you didn’t deserve it or you weren’t good enough?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend
32. Did anyone ever tell you that you would be punished or doomed later in life for being a bad person?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

33. Did anyone ever tell you that you wouldn’t succeed in something that was important to you?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

34. Were you ever punished for not doing well enough at something even though you had tried very hard to succeed?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend
35. Did any important person in your life ever express disappointment in your efforts or achievements even though you believed you had made your best effort?

NO YES NOT SURE (Please describe) _______________________________________

IF YES: Age first time this happened? _____ Age last time this happened? _____

How often did this situation occur before you turned 15 years old?

Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

36. Did any important person in your life set such high standards for you that you believed you could not meet the standards? Note that “setting standards” may be done directly by telling you what they expect of you (e.g., “You should earn an A average”), or indirectly by holding up their own or others’ accomplishments as models (e.g., saying “When I was in high school, I was valedictorian” while criticizing your school performance).

NO YES NOT SURE (Please describe) _______________________________________

IF YES: Age first time this happened? _____ Age last time this happened? _____

How often did this situation occur before you turned 15 years old?

Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend

37. Did any of your caretakers or an important boyfriend or girlfriend or a date ever refuse to speak to you (e.g., give you the “silent treatment,” convey messages to you through other people, etc.)?

NO YES NOT SURE (Please describe) _______________________________________

IF YES: Age first time this happened? _____ Age last time this happened? _____

How often did this situation occur before you turned 15 years old?

Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

Who did this? (Indicate as many as apply)
1) Female caretaker (e.g., mother, stepmother, etc.)
2) Male caretaker (e.g., father, stepfather, etc.)
3) Boyfriend/girlfriend/date
38. Did any of your caretakers ever disown you or threaten to disown you or cut off your financial support (e.g., say they would leave you out of their will, say they would no longer pay for your education expenses even though they had agreed to support you through school)?

NO YES NOT SURE (Please describe) _________________________________

IF YES: Age first time this happened? _____ Age last time this happened? _____

How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

39. Did anyone ever keep you under such strict control that you were unable to participate in activities that most other people your age considered ordinary? (For example, a parent demanding that you be at home at all times you were not at school so that you could never date or participate in extracurricular activities such as dances or clubs?)

NO YES NOT SURE (Please describe) _________________________________

IF YES: Age first time this happened? _____ Age last time this happened? _____

How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

40. Did anyone ever deliberately try to frighten you by “playing tricks” or “practical jokes” on you? For example, hiding in your closet at night with a flashlight pointed at his/her face so you were very frightened when you opened your closet door, or holding a pillow over your face so you feared you would smother, then saying it was a joke?

NO YES NOT SURE (Please describe) _________________________________

IF YES: Age first time this happened? _____ Age last time this happened? _____

How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

41. Did anyone ever deliberately and repeatedly try to frighten you? (For example, by threatening to kill you or harm somebody you loved.)

NO YES NOT SURE (Please describe) _________________________________

IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

42. Did anyone ever tell a lie in order to cause you pain? (For example, telling you that your dog had been killed when nothing at all had happened to the dog?)
NO YES NOT SURE (Please describe) _______________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

43. Did anyone ever try to get you to do what he/she wanted by threatening to do something that would have extremely negative consequences for you (not physical consequences)? (For example, “blackmailing” you by threatening to spread a rumor that you had AIDS, threatening to tell your teacher a lie that you cheated on an exam?)
NO YES NOT SURE (Please describe) _______________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times

Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date
44. Did anyone ever try to get you to do what he/she wanted by threatening you or someone you loved with physical harm?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

45. Did anyone ever seem to enjoy being physically cruel or violent to you?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

46. Did any of your caretakers ever fail to protect you from being physically harmed by someone else? For example, one parent watching while the other parent or sibling beat you? Note: This question does NOT apply to a parent’s failure to protect you from sexual abuse.
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Female caretaker (e.g., mother, stepmother, etc.)
2) Male caretaker (e.g., father, stepfather, etc.)

47. Did anyone ever throw or push you? For example, push you down a staircase or throw you into a wall?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

48. Did anyone ever lock you in a room or closet for several hours or longer?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

49. Were you ever hit hard with a fist, kicked, or slapped really hard?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

50. Were you ever beaten up (hit, kicked, or punched repeatedly)?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

51. Did any adults ever hit you with an object such as a belt, whip, coat hanger, brush, wooden spoon, etc.?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

52. Did anyone ever try to choke, strangle, or smother you?
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandparent, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

53. Did anyone ever deliberately cause you serious physical pain? (For example, burn you with a cigarette, break a bone, cut you?)
NO YES NOT SURE (Please describe) _________________________________
IF YES: Age first time this happened? _____ Age last time this happened? _____
How often did this situation occur before you turned 15 years old?
Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Who did this? (Indicate as many as apply)
1) Stranger
2) Peer
3) Non-family adult (e.g., doctor, teacher, minister, etc.)
4) Extended family adult (e.g., aunt, uncle, grandfather, etc.)
5) Siblings
6) Female caretaker (e.g., mother, stepmother, etc.)
7) Male caretaker (e.g., father, stepfather, etc.)
8) Boyfriend/girlfriend/date

54. Did anyone ever attack you with a weapon such as a knife or gun? (Note: Actually being stabbed or shot is not required to say yes; all that is required is that the attacker had the weapon and indicated by words or actions that he/she might use it.)
   NO YES NOT SURE (Please describe) _________________________________
   IF YES: Age first time this happened? _____ Age last time this happened? _____
   How often did this situation occur before you turned 15 years old?
   Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
   Who did this? (Indicate as many as apply)
   1) Stranger
   2) Peer
   3) Non-family adult (e.g., doctor, teacher, minister, etc.)
   4) Extended family adult (e.g., aunt, uncle, grandfather, etc.)
   5) Siblings
   6) Female caretaker (e.g., mother, stepmother, etc.)
   7) Male caretaker (e.g., father, stepfather, etc.)
   8) Boyfriend/girlfriend/date

55. Were you ever tied up, held down, or blindfolded, so you could not protect yourself from harm? For example, one or more people held you while someone else hit you, or someone tied you up and left you alone in a remote place, such as out in the woods?
   NO YES NOT SURE (Please describe) _________________________________
   IF YES: Age first time this happened? _____ Age last time this happened? _____
   How often did this situation occur before you turned 15 years old?
   Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
   Who did this? (Indicate as many as apply)
   1) Stranger
   2) Peer
   3) Non-family adult (e.g., doctor, teacher, minister, etc.)
   4) Extended family adult (e.g., aunt, uncle, grandfather, etc.)
   5) Siblings
   6) Female caretaker (e.g., mother, stepmother, etc.)
   7) Male caretaker (e.g., father, stepfather, etc.)
   8) Boyfriend/girlfriend/date

56. Did a boyfriend/girlfriend/date ever hit, kick, shove, or throw you?
   NO YES NOT SURE (Please describe) _________________________________
   IF YES: Age first time this happened? _____ Age last time this happened? _____
   How often did this situation occur before you turned 15 years old?
   Indicate one: Never 1 time 2-5 times 6-10 times 11-15 times 16-20 times Over 20 times
Appendix I: Childhood Attachment and Relational Trauma Questionnaire

Instructions:

Please list the names of up to 11 people (at least 5) in your family and social network who were influential WHEN YOU WERE GROWING UP (AS A CHILD AND/OR TEENAGER). These can be people who had either a positive and/or negative influence in your life when you were growing up. Please list at least one person from outside your family (e.g., friend, teacher, coach). For each person, indicate your relationship to that person. An example for a theoretical person “Linda” is listed below:

An example:

Person 1: Dad (biological father)
Person 2: Mom (biological mother)
Person 3: Becky (sister #1)
Person 4: Angela (sister #2)
Person 5: Bradley (brother #1)
Person 6: Aunt Stephanie (maternal aunt)
Person 7: Grandma (maternal grandmother)
Person 8: Mrs. Jones (Mom’s best friend)
Person 9: James (high school boyfriend)
Person 10: Jennifer (best friend)
Person 11: Mr. Adams (grade 12 teacher)

Now list the people from your own family and social network:

Person 1:
Person 2:
Person 3:
Person 4:
Person 5:
Person 6:
Person 7:
Person 8:
Person 9:
Person 10:
Person 11:

Now, please read each statement and click on the family members and people outside your family that the statement was true for, WHEN YOU WERE GROWING UP (AS A CHILD AND/OR A TEENAGER). Also, click ‘Myself’ if the statement was true of your own feelings, thoughts, and/or behavior when you were growing up. But if the statement was NOT true for any individual, click ‘No One /Not Applicable’.

The survey begins by asking about positive aspects of relationships. It then asks about negative aspects of relationships. Please answer the survey questions in order.

There are 49 statements in total. Please don't spend too much time thinking about any one statement.
Finally, please remember to rate each statement in terms of what was true WHEN YOU WERE GROWING UP (AS A CHILD AND/OR A TEENAGER), even if things are different now.

(1) = "I liked this person very much."
(2) = "I loved this person very much."
(3) = "This person liked me very much"
(4) = "This person loved me very much"
(5) = "This person took care of me."
(6) = "This person cared about me."
(7) = "This person was proud of me."
(8) = "This person gave me hugs and kisses."
(9) = "This person made me feel calm."
(10) = "This person made me feel happy."
(11) = "This person made me feel good about myself."
(12) = "I had a lot of fun being with this person."
(13) = "I'm happy that this person was in our family."
(14) = "I went to this person when I was feeling sad or upset."
(15) = "I went to this person when I was feeling scared or worried."
(16) = "I went to this person when I was feeling mad and angry."
(17) = "I went to this person for help when I had a problem."
(18) = "This person helped me feel better when I was sad or upset."
(19) = "This person helped me feel better when I was scared or worried."
(20) = "This person helped me feel better when I was mad and angry."
(21) = "This person helped me when I had a problem."
(22) = "This person did NOT help me feel better when I was sad or upset."
(23) = "This person did NOT help me feel better when I was scared or worried."
(24) = "This person did NOT help me feel better when I was mad and angry."
(25) = "This person did NOT help me when I had a problem."
(26) = "This person was sad and upset a lot of the time."
(27) = "This person was mad and angry a lot of the time."
(28) = "This person was scared or worried a lot of the time."
(29) = "This person was usually happy."
(30) = "This person got upset with me and yelled at me a lot."
(31) = "This person got mad and angry with me a lot."
(32) = "This person made me feel sad or upset."
(33) = "This person made me feel scared or worried."
(34) = "This person made me feel mad and angry a lot."
(35) = "This person made me feel bad about myself."
(36) = "This person called me bad names and said mean things to me."
(37) = "This person hurt my feelings."
(38) = "This person called people in my family bad names and said mean things to them."
(39) = "This person hurt people’s feelings in my family."
(40) = "I thought that this person didn’t like me very much."
(41) = "I thought that this person didn’t love me very much."
(42) = "I thought that this person wished that I was NOT in our family."
(43) = "I thought that this person thought I’m bad."
(44) = “I thought that this person hated me.”
(45) = “I did NOT like this person very much.”
(46) = “I did NOT love this person very much.”
(47) = “I wished that this person was NOT in our family.”
(48) = “I thought that this person was a bad person.”
(49) = “I thought that I hated this person.”
Appendix J: Five Facet Mindfulness Questionnaire

Instructions:

Please rate each of the following statements using the scale provided. Choose the number that best describes your own opinion of what is generally true for you.

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<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td></td>
<td>Never or very rarely true</td>
<td>Rarely true</td>
<td>Sometimes true</td>
<td>Often true</td>
<td>Very often or always true</td>
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1. When I’m walking, I deliberately notice the sensations of my body moving.
2. I’m good at finding words to describe my feelings.
3. I criticize myself for having irrational or inappropriate emotions.
4. I perceive my feelings and emotions without having to react to them.
5. When I do things, my mind wanders off and I’m easily distracted.
6. When I take a shower or bath, I stay alert to the sensations of water on my body.
7. I can easily put my beliefs, opinions, and expectations into words.
8. I don’t pay attention to what I’m doing because I’m daydreaming, worrying, or otherwise distracted.
9. I watch my feelings without getting lost in them.
10. I tell myself I shouldn’t be feeling the way I’m feeling.
11. I notice how foods and drinks affect my thoughts, bodily sensations, and emotions.
12. It’s hard for me to find the words to describe what I’m thinking.
13. I am easily distracted.
14. I believe some of my thoughts are abnormal or bad and I shouldn’t think that way.
15. I pay attention to sensations, such as the wind in my hair or sun on my face.
16. I have trouble thinking of the right words to express how I feel about things.
17. I make judgments about whether my thoughts are good or bad.
18. I find it difficult to stay focused on what’s happening in the present.
19. When I have distressing thoughts or images, I “step back” and am aware of the thought or image without getting taken over by it.
20. I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing.
21. In difficult situations, I can pause without immediately reacting.
22. When I have a sensation in my body, it’s difficult for me to describe it because I can’t find the right words.
23. It seems I am “running on automatic” without much awareness of what I’m doing.
24. When I have distressing thoughts or images, I feel calm soon after.
25. I tell myself that I shouldn’t be thinking the way I’m thinking.
26. I notice the smells and aromas of things.
27. Even when I’m feeling terribly upset, I can find a way to put it into words.
28. I rush through activities without being really attentive to them.
29. When I have distressing thoughts or images I am able just to notice them without reacting.
30. I think some of my emotions are bad or inappropriate and I shouldn’t feel them.
31. I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow.
32. My natural tendency is to put my experiences into words.
33. When I have distressing thoughts or images, I just notice them and let them go.
34. I do jobs or tasks automatically without being aware of what I’m doing.
35. When I have distressing thoughts or images, I judge myself as good or bad, depending on what the thought/image is about.
36. I pay attention to how my emotions affect my thoughts and behavior.
37. I can usually describe how I feel at the moment in considerable detail.
38. I find myself doing things without paying attention.
39. I disapprove of myself when I have irrational ideas.
Appendix K: Experiences in Close Relationships

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. Some students have never been in a romantic relationship before. If this is the case for you, please consider your relationship with a person you consider a very close or “best” friend, and indicate in the box below that you will base your answers on this close friendship:

☐ I am basing this questionnaire on a close friendship.

Respond to each statement by indicating how much you agree or disagree with it. Use the following rating scale.

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<tbody>
<tr>
<td>1</td>
<td>Disagree</td>
<td>Neutral/Mixed</td>
<td>Agree Strongly</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>Disagree Strongly</td>
<td>Neutral/Mixed</td>
<td>Agree</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

___ 1. I prefer not to show a partner how I feel deep down.
___ 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.
___ 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: Depression Anxiety Stress Scales

Please read each statement and choose a number 0, 1, 2 or 3 which indicates how much the statement applied to you over the past week. There are no right or wrong answers. Do not spend too much time on any statement.

The rating scale is as follows:

0  Did not apply to me at all
1  Applied to me to some degree, or some of the time
2  Applied to me to a considerable degree, or a good part of time
3  Applied to me very much, or most of the time

1  I found myself getting upset by quite trivial things
2  I was aware of dryness of my mouth
3  I couldn't seem to experience any positive feeling at all
4  I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)
5  I just couldn't seem to get going
6  I tended to over-react to situations
7  I had a feeling of shakiness (eg, legs going to give way)
8  I found it difficult to relax
9  I found myself in situations that made me so anxious I was most relieved when they ended
10 I felt that I had nothing to look forward to
11 I found myself getting upset rather easily
12 I felt that I was using a lot of nervous energy
13 I felt sad and depressed
14 I found myself getting impatient when I was delayed in any way (eg, lifts, traffic lights, being kept waiting)
15 I had a feeling of faintness
16 I felt that I had lost interest in just about everything
17 I felt I wasn't worth much as a person
18 I felt that I was rather touchy
19 I perspired noticeably (eg, hands sweaty) in the absence of high temperatures or physical exertion
20 I felt scared without any good reason
21 I felt that life wasn't worthwhile
22. I found it hard to wind down
23. I had difficulty in swallowing
24. I couldn't seem to get any enjoyment out of the things I did
25. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)
26. I felt down-hearted and blue
27. I found that I was very irritable
28. I felt I was close to panic
29. I found it hard to calm down after something upset me
30. I feared that I would be "thrown" by some trivial but unfamiliar task
31. I was unable to become enthusiastic about anything
32. I found it difficult to tolerate interruptions to what I was doing
33. I was in a state of nervous tension
34. I felt I was pretty worthless
35. I was intolerant of anything that kept me from getting on with what I was doing
36. I felt terrified
37. I could see nothing in the future to be hopeful about
38. I felt that life was meaningless
39. I found myself getting agitated
40. I was worried about situations in which I might panic and make a fool of myself
41. I experienced trembling (eg, in the hands)
42. I found it difficult to work up the initiative to do things
Appendix M: The Reynolds Short Form C of the Marlowe-Crowne Social Desirability Scale

Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is True or False as it pertains to you personally.

1) It is sometimes hard for me to go on with my work, if I am not encouraged
2) I sometimes feel resentful when I don’t get my way
3) On a few occasions, I have given up something because I thought too little of my ability
4) There have been times when I felt like rebelling against people in authority even though I knew they were right
5) No matter who I’m talking to, I’m always a good listener
6) There have been occasions when I took advantage of someone
7) I’m always willing to admit it when I make a mistake
8) I sometimes try to get even rather than forgive and forget
9) I am always courteous, even to people who are disagreeable
10) I have never been irked when people expressed ideas very different from my own
11) There have been times when I was quite jealous of the good fortune of others
12) I am sometimes irritated by people who ask favours of me
13) I have never deliberately said something that hurt someone’s feelings