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Do Childhood Attachment and Adverse Childhood Experiences Predict Adulthood Attachment?

A Thesis

Presented to

the Faculty of the Department of Psychology

University of South Carolina Aiken

In Partial Fulfillment

of the Requirements for the Degree

Master of Science

By

Jamie Glass

May 2021

Abstract

Objective: It is well established that childhood attachment style generally predicts adulthood attachment style. However, less is known about how adverse childhood experiences – including abuse, neglect, and trauma – predict adulthood attachment security. The purpose of this study was to better understand how childhood attachment security and adverse childhood experiences (ACEs) predict adulthood attachment security with measures that have not yet been used. ***Methods:*** Eighty-four participants aged 18 years and older completed the Retrospective Attachment Questionnaire (RAQ), the Adverse Childhood Experiences Questionnaire (ACE Questionnaire), and Experiences in Close Relationships – Revised Questionnaire (ECR-R). Participants were recruited through Amazon Mechanical Turk for the purpose of collecting a diverse demographic sample. It was hypothesized that the interaction between childhood attachment security and ACEs would predict adulthood attachment security. ***Results:*** Positive correlations were found between childhood and adulthood security and ACEs and adulthood attachment security. The interaction of childhood anxious attachment and ACE scores was not significant, but ACE scores did significantly contribute to the change in adulthood attachment anxiety. The interaction of childhood avoidant attachment and ACE scores was significant as a predictor, but it was not significant enough to make the overall regression model significant. ***Conclusions:*** Support was found for the lifespan approach of attachment and prototype perspective. ACEs appear to contribute to the development of adulthood attachment anxiety. ACEs combined with an avoidant childhood attachment style appear to sustain a pattern of avoidant attachment from childhood through adulthood. Limitations and implications of these findings are discussed.

Keywords: attachment security, adverse childhood experiences, Mechanical Turk

Adverse Childhood Events Predicting Adulthood Attachment Security

It is well established that childhood attachment predicts adulthood attachment, but less is known about how exposure to adverse childhood experiences predicts adulthood attachment security. The proposed study intends to gain a better understanding of the relationships among childhood attachment security, adverse childhood experiences, and adulthood attachment security with use of a measure of adverse childhood experiences that has not been used in this research area to date – the Adverse Childhood Experiences (ACE) Questionnaire. It is hypothesized that an interaction between childhood attachment security and adverse childhood experiences will predict adulthood attachment security, such that poorer childhood attachment security paired with greater exposure to adverse childhood events will predict poorer adulthood attachment security. The proposed study would inform the field of developmental psychology about the implications of adverse childhood events as they relate to attachment security across the lifespan.

History of Attachment Theory

Attachment is a deep and enduring emotional bond that connects one person to another across time and space (Ainsworth, 1973; Bowlby, 1969). Attachment theory in psychology originated with John Bowlby. In 1978 he observed that there was a link between early infant separations with the mother and maladjustment later in life.

Bowlby (1969) was led to consider the evolutionary significance of the infant-caregiver attachment. He noticed that when an infant was separated from its primary caregiver (typically the mother) for various lengths of time, the infant goes through a predictable series of emotional reactions, which are protest (i.e., crying, active searching, and resistance to others' soothing efforts), despair (i.e., a stage of passivity and obvious sadness), and detachment (i.e., an active

defensive disregard for and avoidance of the mother if she returns). He proposed these feelings and behaviors evolved to protect infants from danger by keeping their primary caregiver close and helping them to survive. When an infant is healthy, alert, unafraid, and in the presence of his or her mother, or secure base, this allows the infant to explore his or her environment and establish affiliative contact with other family members. A secure base is a sensitive or responsive attachment figure who can meet a child's needs when feeling upset or anxious.

Childhood Attachment Styles

Developmental psychologist Mary Ainsworth and her team of researchers expanded upon Bowlby's original work on childhood attachment. Ainsworth and Silvia Bell (1970) conducted a groundbreaking study where attachment behavior of infants between the ages of 12 and 18 months were explored through their newly-created Strange Situation Classification assessment. In their study, 100 middle-class American infants were observed after being briefly left alone in a room and then reunited with their mother. The Strange Situation assessment (Ainsworth & Bell, 1970) involved a sequence of eight steps with the mother, infant, and experimenter that lasted between one to three minutes each. The steps were conducted as follows: 1) the mother and baby are introduced to the room with the experimenter, (2) mother sits and baby plays freely alone, (3) a stranger joins the mother and infant, (4) mother leaves baby and stranger alone in the room, (5) mother returns to baby and stranger leaves, (6) mother leaves and the infant is left completely alone, (7) stranger returns ad tries to interact with baby, and (8) mother returns and stranger leaves quietly. The behavior of the baby in steps five and eight after the mother returns to the room are the most useful indicators of attachment quality. The behavior of the infants was observed from an adjoining room through a one-way vision window, and observations were recorded every 15 seconds then placed into behavioral categories. The behavioral observations

were grouped into three main attachment styles: secure, insecure ambivalent, and insecure avoidant (Ainsworth & Bell, 1970). A follow-up study using the Ainsworth Strange Situation Procedure found further support for the classification of these three infant attachment styles (Ainsworth et al., 1978).

The maternal sensitivity hypothesis (Ainsworth et al., 1971) explains that a child's attachment style is dependent upon the behavior their mother shows toward them and how their mother responds to their needs and mental states (Ainsworth et al., 1978). The quality of the infant-caregiver interactions during the first few months of life have an important influence on the quality of the attachment to the relationship (De Wolff and Van Ijzendoorn, 1997; Bakermans-Kranenburg et al., 2003). Infant attachment depends on what the infant and primary attachment figure contribute to one another – for example a mother's attunement to the infant's overtures, involving tone, pitch, rhythm of voice, posture, facial expression, movement, and touch (Stern, 2009). Bakermans-Kranenburg and colleagues (2003) conducted a meta-analysis of 70 studies describing 88 intervention strategies on parental sensitivity or infant attachment, and they found that interventions that enhance parental sensitivity of infants were more effective in enhancing infant attachment security, supporting the role of parental sensitivity in shaping infant attachment security.

Attachment style security refers to the consistency and quality in which the caregiver responds to an infant's distress. Secure attachment develops when a caregiver responds in a consistent manner to an infant's needs in sensitive and loving ways. Insecure attachment develops when a caregiver responds to an infant's needs in poor and inconsistent ways. Having a primary caregiver who displays a secure attachment style towards an infant and an infant's development of secure attachment to a primary caregiver acts as protective factors against social

and emotional maladjustment for infants and children (Egeland & Hiester, 1995; Van Ijzendoorn et al., 1992). In contrast, having a primary caregiver who displays insecure attachment styles towards an infant is associated with an infant's increased risk for developing social and emotional maladjustment (Green & Goldwyn, 2002).

Failure to develop secure attachment in infancy can lead to difficulties with relationships, emotional regulation, and the stress response across the lifespan (Ein-Dor et al., 2018). Regulation of stress mediated by the hypothalamus-pituitary-adrenal (HPA) axis is set in infancy at a level that is adaptive to the prevalent environment (Schore, 2005). Attuned parenting teaches children that others recognize their needs and establishes trust, empathy, understanding relationships, and verbal and non-verbal communication (Bowlby, 1969). Over-attuned and under-attuned parenting can result in children's insecurity.

Secure Attachment in Childhood

In the Strange Situation study (Ainsworth & Bell, 1970), 70% of infants were securely attached and were observed to be distressed when their mother left the room, avoidant of the stranger when alone, but friendly when the mother was present. They were positive and happy when reunited with their mother and used their mother as a secure base from which to explore their environment.

In the secure attachment style, caregivers who consistently respond to an infant's distress in loving ways, like picking up and comforting an infant who is crying, make infants feel secure in knowing they can freely express negative emotion which will elicit comforting from the caregiver. Securely attached infants seek to maintain contact with their caregiver until they feel safe (Van Ijzendoorn et al., 1999).

Mothers of securely attached infants were more likely to describe their infants as less difficult and were more sensitive to their infants in free play than mothers of insecurely attached infants (Fuertes et al., 2006). Mothers of securely attached infants are more willing or able to attribute meaning to their children's early vocalizations (Meins, 1998), more likely to focus on their mental characteristics rather than their physical appearance or behavioral tendencies when describing their children two years later (Meins et al., 1998).

Longitudinal studies show developing a secure attachment to a primary caregiver is a protective factor against social and emotional maladjustment for infants and children (Egeland & Hiester, 1995; Van Ijzendoorn et al., 1992). A longitudinal study that followed children from 15 months to 8-9 years found that children who had been secure as infants were more socially active, positive and popular at school age, and tended to report less social anxiety than children who had been insecure (Bohlin et al., 2000). Another longitudinal study followed children at the ages of 7, 9, 12, and 15 years and securely (versus insecurely) attached children had significantly more favorable outcomes on attention–participation, insecurity about self, and grade point average (Jacobsen & Hofmann, 1997).

Insecure-Ambivalent Attachment in Childhood

Insecure ambivalent attached infants, which made up about 15% of the infants studied, were observed to cry more and explore less than the other two types in the Strange Situation study (Ainsworth & Bell, 1970). They had intense distress when their mother left, and they avoided the stranger or showed fear of the stranger. When reunited, the infant approached their mother, but resisted contact.

In the ambivalent attachment style, caregivers are inconsistent or unpredictable in the way in which they respond to infant distress. Caregivers who expect the infant to worry about

their own needs amplify the infant's distress and the infant becomes overwhelmed. Thus, infants display extreme negative emotion to draw the attention of their inconsistently responsive caregiver by exaggerating their distress or resisting the caregiver, so that the distress response cannot be missed by the inconsistently responsive caregiver (Van Ijzendoorn et al., 1999).

Mothers of insecure ambivalent infants respond preferentially to infants' negative emotions (Goldberg et al., 1994) due to differences in maternal perceptions of emotional distress (Zeanah et al., 1999). Mothers of insecure ambivalent infants were more unresponsive during free play (Fuertes et al., 2006). They have been found to be inconsistent in their patterns of mothering, sometimes demonstrating high levels of sensitivity and other times being insensitive to their infants' needs (Isabella, 1993). Mothers of insecure ambivalent infants were found to be the most inconsistent in their availability and least competent in comforting their infants. They also tended to directly interfere with their infant's exploration (Cassidy & Berlin, 1994).

Bowlby (1973) believed anxiety originated from an infant's uncertainty about caregiver availability. Of the attachment styles, insecure ambivalent attachment is most often associated with the development of subclinical and clinical levels of anxiety (Cassidy & Berlin, 1994; Warren et al., 1997). In frightening situations, children with an insecure ambivalent style show an exaggerated fear response, constituting overt anxiety (Manassis, 2001). Fifteen percent of adolescents whose mother-infant attachment was assessed at 12 months of age met criteria for at least one anxiety disorder at 17 years old (Warren et al., 1997). Insecure ambivalent children at 5-7 years old were found to have elevated externalizing problems (Moss et al., 1998), whereas another team of researchers found that ambivalent attachment is related to the development of internalizing symptoms (Finnegan et al., 1996; Hodges et al., 1999).

Insecure-Avoidant Attachment in Childhood

Insecure avoidant infants, the remaining 15% of infants observed in the Strange Situation study (Ainsworth & Bell, 1970), did not show any signs of distress when their mother left the room. When the stranger entered the room, the infant was okay with the stranger and played normally. When their mother returned, the infant showed little interest, and the mother and stranger were able to comfort the infant equally well.

In the insecure-avoidant attachment style caregivers consistently respond to distress in rejecting ways, like ignoring, ridiculing, or becoming annoyed with the infant. In response, infants avoid their caregiver when distressed and minimize displays of negative emotion when the caregiver is present. Thus, in times of need the infant ignores the caregiver (Van Ijzendoorn et al., 1999). This attachment style increases the risk for developing adjustment problems.

Mothers of insecure-avoidant infants respond preferentially to infants' positive emotions due to differences in maternal perceptions of emotional distress (Manassis, 2001). Mothers of insecure-avoidant infants were more controlling during free play (Fuertes et al., 2006). Mothers of insecure-avoidant infants are the least sensitive of the attachment categories, tending to reject their infants' bids for attention and interaction (Ainsworth et al., 1978; Main, 1981). Mothers of insecure-avoidant infants have been shown to express an aversion to physical contact with their infant was upset (Ainsworth et al., 1978). Bradley (2000) has argued that insecure-avoidant attachment may also lead to anxiety disorders because mothers of avoidant children are consistently rejecting, especially in times of distress, and respond preferentially to positive emotions. Therefore, children may learn to mask negative affect in order to ensure receiving care when distressed (Goldberg et al., 1994). Infants minimized expressions of negative affect and

avoided their mothers upon reunion, possibly as a defense against painful feelings in relation to their mother's unavailability (Cassiday & Kobak, 1988).

Insecure attachment, particularly avoidant attachment relationships early in life, have been found to be associated with internalizing behaviors like depression and anxiety (Madigan et al., 2013). Goldberg (1997) proposed that avoidant children, who learn to suppress their feelings and needs, appear most likely to display internalizing problems in which the child experiences pain and distress but rarely disturbs others (e.g., depression, anxiety, social withdrawal). Moss et al. (1998) also reported elevated internalizing problems in males with insecure-avoidant children at age 5-7 years. However, Burgess et al. (2003) found evidence that insecure avoidant attached children had more externalizing problems (aggressive behaviors) at age 4 years than either securely or ambivalently attached infants but only when these children also had uninhibited temperament.

Disorganized Attachment in Childhood

Main and Solomon (1986) identified a fourth attachment style known as insecure disorganized attachment, in which there is an absence of an organized strategy to deal with emotional distress and there is a breakdown of an otherwise consistent and organized strategy of emotion regulation. An insecure disorganized attachment style shows a lack of clear attachment behavior, and as a result, infants with a disorganized style demonstrate inconsistent behaviors towards their caregivers and are apprehensive or confused in the presence of a caregiver.

In the disorganized attachment style, caregivers present with atypical or unusual caregiver behaviors. They may respond to infants in frightened, dissociated, sexualized, and other unusual ways. Infants are exposed to distorted parenting during interactions with their children that are not limited to when the child is distressed. Maltreating parents who act as

figures of both fear and reassurance to a child contribute to a disorganized attachment style because they confront their children as a potential source of comfort and at the same time frighten their children through their unpredictable abusive behavior (Main & Hesse, 1990). Parents who are struggling with unresolved loss of an attachment figure or with other traumatic experiences also contribute to a disorganized attachment style (Van Ijzendoorn, 1995).

In the Strange Situation, infants who are distressed display unusual behavior like indifference upon mother's return after excessive distress during separation, misdirected behavior consisting of seeking proximity to a stranger instead of a parent after separation, stereotypical behavior concerns like repeated pulling of hair when the child is distressed and the parent available, freezing and unable to choose between seeking proximity or avoiding the parent, and direct apprehension or even fear of the caregiver because the infant is unable to find a solution to their distress (Lyons-Ruth & Jacobvitz, 1999; Main & Solomon, 1986). Multiple studies, including longitudinal studies, have shown that disorganized attachment in infancy and early childhood has been found to be a powerful predictor for serious psychopathology and maladjustment in children, particularly externalizing problem behaviors (Carlson, 1998; Green & Goldwyn, 2002; Lyons-Ruth et al., 1993; Zeanah et al., 1999, among others). There is predictive validity of disorganized attachment in terms of problematic stress management, the elevated risk of externalizing problem behavior, and the tendency of disorganized infants to show dissociative behaviors later in life (Carlson, 1998). This may be due to their vulnerability for more stress and poor regulation of negative emotions (Van Ijzendoorn et al., 1999).

Adulthood Attachment Styles

Attachment extends throughout the lifespan into adulthood as an individual develops. Childhood experiences with caregivers are internalized and in turn shape an individual's

expectations, perceptions, reactions, and behaviors throughout life (van der Kolk, 1996). Childhood attachment continues to function as a working model for relationships in adulthood, and early parent-child relationships are prototypes of love relationships later in life (Fraley, 2002). Although Bowlby acknowledged the importance of the attachment system across the lifespan, he provided few guidelines concerning its specific function and expression later in life. Where childhood attachment styles are focused on the relationship between the primary caregiver and infant, adulthood attachment styles are used to describe patterns of attachment in romantic relationships (Hazan & Shaver, 1987).

Adulthood attachment styles classify adults into categories that are parallel to Ainsworth's childhood attachment typology, where there is also one secure and three insecure adult attachment styles. Relations between adulthood attachment types are similar to attachment in infancy and early childhood (Hazan & Shaver, 1990). However, attachment styles formed in childhood are not always identical to those demonstrated in adulthood romantic attachments. Still, childhood attachment continues to function as a working model for relationships in adulthood, and early parent-child relationships are prototypes of love relationships later in life (Fraley, 2002).

A child's attachment relationship with their primary caregiver leads to the development of internal working models by the age of 3 years (Bowlby 1969, 1973). Internal working models describe a cognitive framework comprising mental representations for understanding the world, the self, and others, and they are fundamental to the development of mental representations about the worth of the self and expectations of others' reactions to the self (Bowlby, 1969). Bowlby (1969) originally conceptualized two internal working models: global beliefs about the self (positive versus negative) and global beliefs about others (positive versus negative). Bowlby

believed these working models and behavior patterns that result are the basis of all future interactions with others, are central components of personality, and appear to be relatively stable over time. Thus, internal working models are the mechanisms by which the influence of childhood experiences are sustained into adulthood (Bowlby, 1969).

Bartholomew and Horowitz (1991) defined four prototypic forms of adulthood attachment patterns and hypothesized they are formed by the intersection of Bowlby's proposed two internal working models: image of self and image of others, where the dimensions range from positive to negative. See Figure 1 for a visual representation of the Bartholomew and Horowitz's (1991) model of adulthood attachment. According to this model, a positive model of others and positive model of self indicate secure attachment style; a negative model of others and positive model of self indicate dismissive attachment style; a positive model of others and negative model of self indicate preoccupied attachment style; and a negative model of others and negative model of self indicate fearful attachment style. Each dimension of attachment can be either high or low, yielding the four attachment styles. Although there are four attachment categories, most individuals do not fit into the attachment prototypes precisely. Researchers can better measure attachment style with a dimensional approach, where the two attachment dimensions that are measured are attachment anxiety and attachment avoidance.

The image of self internal working model is associated with the degree of self-confidence versus anxiety and dependency on others' approval in close relationships (Bartholomew & Horowitz, 1991). Those who are high in attachment avoidance are adults with dismissive and fearful attachment style. They have learned to be self-reliant with a tendency to not seek support and care because their parents were absent and/or unresponsive (Shaver & Mikulincer, 2005; West & Sheldon-Keller, 1994). Those who are high on attachment anxiety are adults with a

preoccupied and fearful attachment style. They have memories of their parents as critical, rejecting, and less warm and may have learned to seek approval from and fear the rejection and abandonment of others (Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994; Park et al., 2004).

A person's image of self that is positive indicates a person has internalized a sense of self-worth or self-confidence and believes they are worthy of love and support (high self-confidence) versus a person's negative image of self, which indicates a person has internalized anxiety and is uncertain of their self's lovability (high anxiety). Similarly, with regard to the degree of dependence, a positive self-regard indicates a person does not require external validation (low dependency) and a negative self-regard indicates a person will require external validation because self-regard can only be maintained by others (high dependency).

The image of others internal working model is associated with the tendency to seek others out versus the degree of avoidance in close relationships (Bartholomew & Horowitz, 1991). Those with a positive model of others tend to have low avoidance and seek others out in close relationships, whereas those with a negative model of others have high avoidance in close relationships (Bartholomew & Horowitz, 1991). People with a positive image of others view others as available and supportive, whereas people with a negative image of others view others as unreliable and rejecting (Bartholomew & Horowitz, 1991). Avoidance of intimacy reflects the degree to which people avoid close contact with others as a result of their expectations to aversive consequences.

Secure Attachment in Adulthood

Bartholomew and Horowitz (1991) stated individuals with a secure adulthood attachment style are both low avoidance and low anxiety/dependence. Thus, they are described as

comfortable with intimacy and autonomy in close relationships, self-confident, and resolves conflict constructively. Secure attachment in adults is comparable to secure attachment in children. Adults with secure attachment style generally recall consistently reliable caregiving as children. They are comfortable with intimacy and autonomy in close relationships, are self-confident, and resolve conflict constructively. They have a positive view of self and others and are comfortable depending on others. People with secure attachment style may have learned from parents who were supportive, responsive, and sensitive that others will be available (Mikulincer et al., 2003) and that they are worthy of the care and love of others (Park et al., 2004).

Secure parental attachment relationships develop into script-like representations, which are then used to negotiate intimate relationships in a satisfying way during adulthood (Waters & Waters, 2006). In general, secure attachment in childhood leads to positive adjustment throughout the lifespan (Murray et al., 2000; Kumar & Mattanah, 2016). Healthy adjustment through parental attachment can lead to a multitude of favorable outcomes including positive affect and willingness to explore (Luke et al., 2012), healthy problem solving, seeking social support, positive coping skills (Li, 2008), and the development of positive virtues such as humility, gratitude, and forgiveness (Dwiwardani et al., 2014).

With regard to the Big Five personality traits among college students, secure individuals were less neurotic and more extroverted than avoidant and anxious individuals, and secure individuals were more agreeable than avoidant individuals (Shaver & Brennan, 1992). Self-esteem has also been found to be higher in securely attached individuals than insecurely attached individuals (Collins & Read, 1990; Feeney & Noller, 1990). Securely attached individuals have been found to be more socially skilled and socially competent and have lower perceived levels of loneliness than insecurely attached individuals (DiTommaso et al., 2003). Adults with secure

attachment reported less depression and physical symptoms than those adults with insecure attachments (Hazan & Shaver, 1990). Secure adults can be characterized as more able and willing to trust romantic partners and share ideas and feelings with them in a flexible, appropriate manner that is sensitive to their partners' needs and concerns (Mikulincer & Nachshon, 1991; Simpson et al.,1992). Secure attachment in adults has been related to higher levels of marital satisfaction compared to insecure attachment (Banse, 2004).

Insecure Attachment in Adulthood

Hostile and negative home environments contribute to the development of insecure patterns of attachment to parents (i.e., dismissive, preoccupied, or fearful attachment), which have been associated with the development of several indicators of psychological distress emerging into adulthood including shame, anger, depression, anxiety, loneliness, and negative affect (Wei et al., 2005). Meta-analytic results that examined the relationship between insecure attachment dimensions of anxiety and avoidance confirmed that both anxiety and avoidance were detrimental to the cognitive, emotional, and behavioral aspects of relationship quality in adults (Li & Chan, 2012). Insecure attachment is associated with less marital satisfaction, where some spouses may be caught in a cycle that maintains chronic feelings of insecurity and dissatisfaction over time (Davila et al., 1999). It is also associated with dissatisfaction, poor communication, and poor support behavior in marriage (Davila et al., 1999; Feeney et al., 1994; Kobak & Hazan, 1991).

Dimension of Attachment Anxiety. Anxiously attached individuals have anxiety about closeness in their relationships, tend to overvalue relationships, cling to romantic partners, and fear separation. Those who are high on attachment anxiety have a negative model of self and are adults with either a preoccupied or fearful attachment style. They have memories of their parents

as critical, rejecting, and less warm and may have learned to seek approval from and fear the rejection and abandonment of others (Bartholomew & Horowitz, 1991; Griffin & Bartholomew, 1994; Park et al., 2004). High scores on attachment anxiety are associated with hyper-activating strategies to attain greater proximity, support, and love combined with a lack of confidence that they will be provided (Mikulincer & Shaver, 2012).

Research has found that adults with anxious attachment are more likely to have depression and borderline personality disorder than adults with avoidant attachment styles (Patrick et al., 1994). Individuals who experienced attachment problems at an early age are more at risk for disorders characterized by eruptions of anger and are more likely to view themselves as vulnerable to abandonment (West & George, 1999). There is support in the current research for the relationship between anxious attachment and the experience of anger or angry temperament, controlling behaviors toward a partner, fear of abandonment, and expression of anger to intimate violence (Follingstad et al., 2002). For example, battering men were more fearful and preoccupied than nonviolent non-distressed men and nonviolent distressed men, respectively (Holtzworth-Munroe & Smutzler, 1996). More attachment anxious individuals hold somewhat unrealistic, perfectionist expectations, which may reflect wishes to be loved and to overcome self-doubts about caregiving skills (Snell et al., 2005). Anxiously attached participants were rated by judges as less supportive, less responsive, and more negative towards their distressed partner than participants who scored lower on attachment anxiety (Collins & Feeney, 2000). A meta-analysis comparing anxious to avoidant attachment styles found that anxious attachment was more positively associated with general conflict in relationships than avoidant attachment (Li & Chan, 2012).

Dimension of Attachment Avoidance. Avoidantly attached individuals avoid intimacy in their relationships, minimize the importance of relationships, and fear becoming involved or committed to others (Brennan et al., 1998; Mikulincer & Shaver, 2007). Those who are high in attachment avoidance have a negative model of others and are adults with either a dismissive or fearful attachment style. They have learned to be self-reliant with a tendency to not seek support and care because their parents were absent and/or unresponsive (Shaver & Mikulincer, 2005; West & Sheldon-Keller, 1994). High scores on avoidant attachment are associated with deactivating strategies that inhibit proximity seeking while attempting to handle stress and distress oneself (Mikulincer & Shaver, 2012).

Avoidant attachment with mothers is especially detrimental to adjustment during adulthood among college aged-students and they are more likely to experience heightened levels of distress and life dissatisfaction, perhaps due to avoidant students feeling less comfortable checking in with their mothers (Kumar & Mattanah, 2016). Avoidant attachment was associated with tendencies to bottle up emotions and hide them from romantic partners (Feeney, 1995, 1999). Avoidant individuals reported fewer and less intimate disclosures in everyday conversations (Bradford et al., 2002). Avoidant participants laughed less, looked at their partners less, and smiled less during a conversation about positive couple experiences than less avoidant participants (Tucker & Anders, 1998). People who scored high on avoidant attachment sometimes became violent when involved in an escalating series of conflicts, especially with an anxiously attached partner who demanded attention, care, and support (Bartholomew & Allison, 2006). Adults with an avoidant attachment style are more likely to have persistent depressive disorder, and adults who are avoidantly attached are more likely to be heavy drinkers among those with insecure compared to secure attachment styles (Patrick et al., 1994; Senchak &

Leonard, 1992). Avoidant attachment was more negatively associated with general satisfaction, connectedness, and general support in relationships than anxious attachment (Li & Chan, 2012).

Preoccupied Attachment in Adulthood. Bartholomew and Horowitz (1991) stated individuals with a preoccupied adulthood attachment style are characterized as high dependency and high anxiety/dependence. Thus, they are described as overly invested and involved in close relationships, dependent on others for self-worth, demanding, and needy (Bartholomew & Horowitz, 1991). Preoccupied attachment is comparable to insecure-ambivalent attachment in children. Preoccupied individuals anxiously seek to gain acceptance and validation from others, believing that they could gain safety or security from others if they could get them to respond properly toward them. Never sure of getting what they need, preoccupied individuals become vigilant and "clingy" in efforts to get support from others (Bartholomew & Horowitz, 1991).

Main and Goldwyn (1998) found that an insecure-preoccupied state of mind reflects a stated of under controlled emotion, vacillates between expressions of love and anger, and confused thought patterns when reflecting on attachment experiences. Men classified as preoccupied were more likely to be classified as violent and more likely to become violent when their partners attempted to withdraw during a laboratory argument compared to secure or insecure-dismissing men (Babcock et al., 2000; Holtzworth-Munroe et al., 1997). This attachment pattern is characterized by an overly dependent manner of relating, low self-worth, fear of abandonment, and an excessive desire to gain others' approval (Bartholomew, 1990).

Dismissive Attachment in Adulthood. Bartholomew and Horowitz (1991) stated individuals with a dismissive adulthood attachment style are characterized as high avoidance and high self-confidence. Thus, they are described as compulsively self-reliant, distant in relationships, and downplaying the importance of intimate relationships. Dismissing attachment

is comparable to avoidant attachment in children Bartholomew and Horowitz (1991). They avoid closeness because of negative expectations, but defensively deny their value of close relationships to preserve their sense of self-worth. Bartholomew and Horowitz (1991) stated adults with a dismissive attachment style typically report experiencing unresponsive caregiving, resulting in the need to see themselves as self-sufficient because others cannot be relied upon. Adults with a dismissive attachment style tend to report having had caregivers who were not consistently responsive to their needs. This inconsistency fosters the development of a negative image of the self as unlovable, along with the expectation that others are able but not always willing to provide support Bartholomew and Horowitz (1991).

Those who are classified as insecure-dismissing are characterized by the lack of attachment, minimization of valuing emotions, lack of memory and/or idealization of caregivers when describing one's attachment experiences (Main & Goldwyn, 1998). They have been found to be more likely to avoid communication regarding emotions or problems with friends, they are more withdrawn from problem-solving with partners, and they are rated as more controlling and distancing in marital discussion tasks (Babcock et al., 2000; Berger 2003; Paley et al., 1999; Roisman, 2006). They are also more likely to report feeling confident in their ability to regulate their negative feelings, yet they are rated as exhibiting high levels of defensiveness, stonewalling, and contempt during observed romantic partner conflict (Creasey & Ladd, 2004).

Fearful Attachment. Bartholomew and Horowitz (1991) stated individuals with a fearful adulthood attachment style are characterized as high avoidance and high anxiety/dependence. Thus, they are described as having low self-esteem, high attachment anxiety, and high dependence on others, but these individuals avoid intimacy due to fear of rejection and negative expectations of others (Bartholomew & Horowitz, 1991). Fearful attachment is comparable to

disorganized attachment in children. Those with a fearful attachment style simultaneously want to approach and to avoid attachment figures, and this can be seen in the behaviors of the children who were classified as disorganized in the Strange Situation task. Adults with a fearful attachment style typically report rejecting experiences with caregivers, resulting in negative images of both self and others. Fearfully attached adults long for closeness but fear rejection and, as a result, fluctuate between approach and avoidance behaviors when attempting to get close to others (Bartholomew & Horowitz, 1991).

Dutton, Saunder, Starzomski, and Bartholomew (1994) stated fearful attachment could also be described as angry attachment. The constellation of anger, jealously, borderline personality traits, and trauma symptoms in a sample of males who were referred for treatment for wife assault were correlated significantly and positively with a fearful attachment style (Dutton et al., 1994). Another study found that 43% of women who were fearfully attached experienced recurrent major depression (Cyranowski et al., 2002). The adherence to a fearful view of relationships has been associated with numerous other interpersonal problems, especially those involving intimacy and sociability, as well as chronically low self-esteem (Cyranowski et al., 2002). A fearful attachment style was found to be associated with significantly higher levels of depression and pain catastrophizing (Ciechanowski et al., 2003).

Childhood Attachment Predicting Adulthood Attachment

Bowlby hypothesized childhood attachment styles are continuous, persistent throughout the lifespan, and influence the expectations that people bring to their interactions with others. In particular, the attachment styles influence interactions with those they might depend on for needed support or advice, such as family members and romantic partners, because attachment representations guide people’s expectations about relationships (Collins, 1996). Attachment

functions are transferred from the secure base in childhood to the romantic partner in adulthood, where the romantic relationship is the primary adulthood attachment relationships (Hazan & Shaver, 1987). The adulthood romantic relationship follows similar processes and serves similar functions as the childhood attachment relationship (Fraley & Davis, 1997; Hazan & Shaver, 1994). Although Bowlby acknowledged the importance of the attachment system across the lifespan, he provided few guidelines concerning its specific function and expression later in life. One of the cornerstones of Bowlby's theory is that attachment-related expectations and working models remain open to revision in light of changes in the availability and responsiveness of secure base figures. So, the question remains, how do internal working models influence attachment behavior later in life?

Childhood experiences with caregivers are internalized and in turn shape an individual's expectations, perceptions, reactions, and behaviors throughout life (van der Kolk, 1996). These mental representations or internal working models appear to be relatively stable over time (Bowlby, 1969) and are the mechanisms by which the influence of childhood experiences is sustained into adulthood (Fraley, 2002). Mental representations are conceptualized as global beliefs about the self (positive versus negative) and others (positive versus negative). Bowlby (1969) believed these working models and behavior patterns that result are central components of personality.

The prototype perspective can help to explain how mental representations influence attachment over time. The prototype perspective is summarized by Fraley (2002) as nonlinguistic representations, procedural rules of information processing, and behavioral strategies that are constructed and serve as an adaptation to the individual's early caregiving environment. It assumes that early mental representations remain unchanged and can play a direct role in

influencing relationship experiences later in life. He stated as more complex cognitive abilities develop, mental representations develop that are consciously accessible and are continuously updated to reflect ongoing relationship experiences. The early prototype remains unchanged and influences future relationship experiences because it plays an ongoing role in shaping the quality of the caregiving environment. Thus, the prototype can contribute a stable, unchanging source of variance to attachment dynamics throughout the lifespan and therefore allows for the possibility that attachment patterns will be highly stable from infancy to adulthood.

A meta-analysis of the existing longitudinal data up to 1991, which used Ainsworth's Strange Situation Task on infants and followed up later in life to measure adulthood attachment, was conducted to test attachment stability from the prototype perspective (Fraley, 2002). Fraley found evidence that the prototype perspective contributes to attachment stability across the life course. The model indicates that people's attachment styles are unlikely to change substantially because early prototypes continue to play an enduring and powerful role in shaping people's caregiving environments. The estimated prototype model indicates that the true degree of attachment stability between the age of 1 year and subsequent ages is equivalent to a correlation of $r = .39$. Though important, this moderate correlation suggests there must be other factors influencing the stability of adulthood attachment styles above and beyond the influence of childhood attachment styles.

Other studies have demonstrated moderate continuity between childhood and adulthood attachment security, as well. Parental attachment security and partner attachment security were found to be correlated at $r = .29$ in one study that used an interview for data collection (Owens et al., 1995) and $r = .30$ in another that used a self-report measure (Fraley & Shaver, 1999). A longitudinal study that assessed adulthood attachment security from children who participated in

the Ainsworth Strange Situation task found 72% of the infants received the same secure versus insecure attachment classification in early adulthood (Waters et al., 2000). In other studies, adults who were secure in their romantic relationships were more likely to recall their childhood relationships with their parents as being affectionate, caring, and accepting, lending support to the continuity between childhood and adulthood attachment security (Feeney & Noller, 1990; Hazan & Shaver, 1987; Levy et al., 1998).

Fraley (2002) stated for an enduring change in attachment styles to take place, a stable external or internal influence like chronic household challenges, abuse, or neglect must be incorporated into the person's psychological or social world to counterbalance the effects of the existing prototype. Therefore, if someone is securely attached in infancy, then a highly negative and persistent source of influence would have to be incorporated into the attachment system for the individual to change attachment styles and permanently become insecurely attached. Likewise, a highly positive and persistent source of influence would have to be incorporated into the attachment system for the individual to change attachment styles and become securely attached.

Adverse Childhood Experiences

Since the seminal publication by Hazan and Shaver (1987), a large number of studies have shown that individual differences in self-reported adulthood attachment are related to the quality and stability of romantic relationships, and numerous constructs have been identified that may be directly or indirectly responsible for the influence of attachment on the functioning of romantic relationships (see Feeney, 1999, for an overview). Because much variance in adulthood attachment styles is not accounted for by childhood attachment styles, it is important to consider the role of adverse childhood experiences in adulthood attachment styles, as well.

Adverse childhood experiences could account for variance in adulthood attachment styles. In the United States, the total lifetime economic burden associated with child abuse and neglect was approximately $124 billion in 2008. This economic burden rivals the cost of other high profile public health problems, such as stroke and type 2 diabetes (Center for Disease Control, 2019b). According to the Center for Disease Control (2019c), there are four types of abuse and neglect of children under the age of 18 years by a parent, caregiver, or another person in a custodial role (e.g., clergy, a coach, a teacher) that result in harm, potential for harm, or threat of harm to a child: physical abuse, sexual abuse, emotional abuse, and neglect.

Physical abuse is the intentional use of physical force that can result in physical harm. Examples include hitting, kicking, shaking, burning, or other shows of force against a child. Sexual abuse involves pressuring or forcing a child to engage in sexual acts. It includes behaviors such as fondling, penetration, and exposing a child to other sexual activities. Emotional abuse refers to behaviors that harm a child's self-worth or emotional well-being. Examples include name calling, shaming, rejection, withholding love, and threatening. Neglect is the failure to meet a child's basic physical and emotional needs. These needs include housing, food, clothing, education, and access to medical care. Subtypes and frequencies of abuse are psychological (11%), physical (28%), and sexual (21%). Subtypes and frequencies of neglect are emotional (15%) and physical (10%). Subtypes of household dysfunction are substance abuse (27%), parental separation/divorce (23%), mental illness (17%), battered mother (13%), and criminal behavior (6%) (CDC, 2019b).

The ACE Study

The Adverse Childhood Experiences (ACE) study originated in 1985 in Dr. Vincent Felitti's obesity clinic in California. This study is one of the largest investigations of childhood

abuse, neglect, household challenges, later-life health, and well-being ever conducted. It examined the health and social effects of ACEs throughout the lifespan among 17,421 members of the Kaiser Health Plan in San Diego County. Health Maintenance Organization members from Southern California receiving physical exams completed confidential surveys regarding their childhood experiences and current health status and behaviors. The ACE Study was conducted from 1995 to 1997 with two waves of data collection.

The ACE study revealed that ACEs were very common across all populations and that these experiences are linked to major chronic illness and social problem that the United States grapples with and spends billions of dollars on. At least 1 in 7 children have experienced child abuse and/or neglect in the past year, and this is likely an underestimate. Children living in poverty experience more abuse and neglect. Rates of child abuse and neglect are five times higher for children in families with low socio-economic status compared to children in families with higher socio-economic status. Almost two-thirds of study participants reported at least one ACE, and more than one in five reported three or more ACEs (Center for Disease Control, 2019a). Some populations are more vulnerable to experiencing ACEs because of the social and economic conditions in which they live, learn, work and play.

ACEs and Negative Health Outcomes

Abuse and neglect are important public health concerns because they have a strong influence on adolescent health, reproductive health, smoking, alcohol abuse, illicit drug abuse, sexual behavior, mental health, risk of re-victimization, stability of relationships, homelessness, and performance in the workplace (Center for Disease Control, 2019a). These experiences raise the individuals' risks for severe emotional, distress, suicide, physical illness, substance abuse, and a host of other life difficulties (Center for Disease Control, 2019a). The data collected

showed that ACEs are common, rarely occur in isolation, they come in groups, and are strong predictors of health risks and disease from adolescence to adulthood (Center for Disease Control, 2019a).

The literature broadly supports the connection between ACEs and negative health outcomes in both childhood and adulthood. Figure 2 serves as an illustration for the conceptual model of the ACE Study and how ACEs are strongly related to development of risk factors for disease and well-being throughout the life course. Early adverse experiences are frequently associated with major depressive and anxiety disorders in adulthood (Bifulco et al., 1998; Brown & Harris, 1993; Harkness & Wildes, 2002). Chang, Jiang, Mkandawire, and Shen (2019) found increased ACE scores were significantly related to increased risks of drinking, chronic disease, depression, and posttraumatic stress disorder (PTSD) in adulthood. Current drinkers were more likely to report experiencing domestic violence during childhood than non-drinkers; the presence of chronic diseases was significantly related with childhood emotional abuse, physical abuse, being bullied, and family drug abuse; and adulthood PTSD was significantly associated with sexual abuse, domestic violence, community violence, and emotional and physical abuse during childhood.

ACEs seem to have a dose-respondent effect; that is, as the number of ACEs increases, so does the risk for negative outcomes. Those who reported more ACEs reported more risk behaviors, depression, and PTSD. For example, Felitti et al. (2019) as well as other researchers have found a graded dose-response relationship between ACEs and negative health and well-being outcomes. There is an increase in psychopathology when ACE exposure is four or more (Dong et al., 2003).

Relationship Between Childhood Attachment and ACEs

A central principle of attachment theory is a lifespan approach whereby the origins of insecure attachment style stem from adverse childhood experiences (Bowlby, 1977). Generally, ACEs have been found to foster insecure childhood attachment. Yates (2007) postulated that childhood emotional abuse, like other forms of early maltreatment, pose a serious challenge to the formation and maintenance of secure attachments. He found support for this and determined that childhood emotional abuse causes significant interference with the adaptive development of emotional regulation and internal working models of the self and others. Other researchers have also found evidence to support his hypothesis (see Cicchetti & Toth, 2000; Collins et al., 2004). There are competing findings about which insecure childhood attachment style is fostered by ACEs. Some research indicates a disorganized childhood attachment pattern results, and other research shows that an ambivalent childhood attachment style can result (Carlson et al., 1989; Crittenden & Ainsworth, 1989).

Carlson et al. (1989) found maltreated children are more likely to be classified as having a disorganized attachment, with as many as 80% of maltreated children classified as disorganized. For disorganized infants, the parent is at the same time the source of danger/harm, as well as safety and protection. This leads to the development of an irresolvable conflict or "irresolvable paradox" (George & Solomon, 1996). The result is a breakdown in the infant's attachment strategy for enlisting caregiver protection and disorganized attachment behaviors are expressed (Hesse & Main, 2000). As a consequence, disorganized attachment predicts later maladaptive internal working models of attachment in both preschoolers and school-age children (Main & Cassidy, 1988; Solomon et a., 1995). Behaviors that result in children with disorganized attachment are associated with role reversal and controlling behavior with caregivers, aggressive and fearful peer relationships, and externalizing symptoms in school-age children (Lyons-Rith et

al., 1993). Carlson et al.'s (1989) sample was comprised of 59% physical neglect, 27% emotional maltreatment which included emotional neglect, and 18% combined abuse and neglect. Neglected children were equally as likely as abused children to show a disorganized attachment strategy.

Another study assessing attachment in abused and neglected children found that they are more likely to have insecure, specifically ambivalent, attachments to their caregivers than non-maltreated children (Crittenden & Ainsworth, 1989). Egeland and Sroufe (1981) yielded similar findings. Fifty-seven percent of emotionally neglected children participating in the Minnesota Mother-Child Project were securely attached at 12 months, but at 18 months their attachment style changed to ambivalent attachment.

Relationship Between ACEs and Adulthood Attachment

The research on the relationship between ACEs and adulthood attachment indicates individuals who are exposed to ACEs are likely to form and maintain insecure attachments that sustain and continue into adulthood. For example, Carol and Davies (1995) found in a sample of 40 women reporting a history of childhood sexual abuse, 68% of childhood sexual abuse survivors were preoccupied with attachment issues in adulthood, and 88% met criteria for one or more Axis II personality disorders measured by the Structured Clinical Interview for Diagnostic and Statistical Manual-III-Revised (First et al., 1995). There was a relationship between borderline personality disorder and the unresolved attachment classification in the Berkeley Adult Attachment Interview (Carol & Davies, 1995). Alexander (1993) found that in a sample of 112 adult female survivors of incestuous abuse, insecure adult attachment predicted avoidant, dependent, self-defeating, and borderline personality disorders. Styron and Janoff-Bulman (1997) conducted a study of 879 college students and those who reported childhood abuse were

more depressed, more likely to use destructive behaviors in conflict situations, and less secure in childhood and adulthood relationships compared to non-abused students.

In a longitudinal study of 30 children's development, negative life events were significantly related to change in attachment classification from childhood to adolescence, and infant attachment classification was a significant predictor of adolescent attachment classification (Hamilton, 2000). This supports the idea that negative life events maintain insecure attachments. Maltreated children are likely to form insecure adulthood attachments that contribute to sustained problems managing relationships throughout the life span (Morton & Browne, 1998). Morton & Browne's (1998) descriptive analysis of 13 studies about the quality of attachment in maltreated samples found that on average maltreated children are less securely attached to their mothers than those who are non-maltreated; therefore, maltreated children may have problems forming relationships with peers, partners, and their own children because the early infant-mother relationship is internalized and form a prototype by which all future relationships are assimilated.

Hinnen, Sanderman, and Sprangers (2009) conducted a study that contributes to the idea that individuals' adulthood attachment style is associated with specific developmental experiences and that adulthood attachment style is a mediator of the relationship between childhood recollection and life satisfaction. They asked 437 participants to recollect about their family of origin, childhood adversities experiences before the age of 16 years (measured by a list of 20 yes or no items), adulthood attachment style (measured by the Experiences in Close Relationship-Revised Questionnaire), and life satisfaction. Parental divorce, poor quality of parental relationship (e.g., violence between parents), the presence of parent psychopathology (e.g., depression, alcohol abuse), and interpersonal traumas (e.g., sexual and physical abuse,

neglect) were positively related to attachment anxiety and attachment avoidance in adulthood. Participants who reported more parental rejection, less parental support, less family warmth and harmony, and ACEs were found to be associated with an insecure attachment style in adulthood, and then in turn they were less satisfied about themselves, their current relationships, and their life in general even after controlling for age, gender, whether or not participants has an intimate relationship, and with whom they were living.

Attachment representations appear to be vulnerable to difficult and chaotic life experiences (Weinfield et al., 2000). Discontinuity between childhood and adulthood attachment security appears to be related to experiencing negative life events and circumstances that alter the parent-child relationship and increase life stress for the parents, and change is more likely in participants who experience negative life events (Waters et al., 2000). Bowlby (1953) first identified these events as death of a parent, foster care, parental divorce, chronic and severe illness of parent or child, single parent, parental psychiatric disorder, drug and alcohol abuse, and child experience of physical or sexual abuse. Weinfield and colleagues (2000) found changes in attachment classifications were associated with specific factors in early adolescence, such as child maltreatment, maternal depression, and family functioning, which have the likelihood of negatively affecting caregiver availability and responsiveness. Hamilton (2000) also found that these negative life events operated primarily by maintenance of already established patterns of insecurity or by movement from secure to insecure patterns.

Waters, Merrick, Treboux, Crowell, & Albersheim (2000) conducted a longitudinal study of 66 Caucasian middle-class infants seen in the Ainsworth Strange Situation at 12 months, and 50 of them were interviewed with the Berkeley Adult Attachment Interview 20 years later. Negative life events were measured from the information obtained in each participant's Adult

Attachment Interview and included loss of a parent, parental divorce, life-threatening illness of parent or child (diabetes, cancer, heart attack), parental psychiatric disorder, and physical or sexual abuse by a family member. Seventy-two percent of the infants received the same secure versus insecure classification in early adulthood ($K = .44$, $p < .001$). Thirty-six percent of participants changed attachment classification from infancy to early adulthood, and changes in attachment classification from childhood and adulthood were associated with the occurrence of negative life events.

They also found that securely attached infants changed their attachment styles from secure to insecure attachment in adulthood through exposure to negative life events. Forty-four percent of the infants whose mothers reported negative life events changed attachment styles in their sample. Although negative life events have been found to be significantly related to the likelihood of a securely attached infant becoming insecurely attached during adulthood, stressful life events were not significantly related to attachment style changes in infants who were identified to have insecure attachment styles already. They also found that 22% of the infants whose mothers reported no negative life events changed classification from secure to insecure later in life. This suggests that infants who do not experience negative life events in childhood can become insecurely attached later in life due to additional negative life experiences that occur later in life.

It appears that exposure to just one adverse experience can lead to this effect. Another finding from Waters et al.'s investigation (2000) found experiencing at least one or more negative events in childhood was related significantly to the likelihood of a secure infant becoming insecure by early adulthood. Sixty-six percent of infants who experienced just one negative event changed attachment classifications in adulthood, such that securely attached

infants would become insecurely attached. Those who experienced no negative events had only a 15% probability of becoming insecurely attachment by early adulthood.

The Present Study

The main points gathered from the literature that are relevant to this study are summarized here. Parental sensitivity during the first few months of life shapes infant attachment security (Bakermans-Kranenburg et al., 2003; De Wolff & Van Ijzendoorn, 1997). An insecurely attached child who experiences at least one or more ACEs is likely to develop and maintain that insecure attachment style into adulthood due to the internalization of internal working models of self and others (Alexander, 1993; Carole and Davies, 1995; Hamilton, 2000; Styron & Janoff-Bulman, 1997; Waters et al., 2000). To the contrary, a securely attached infant receives consistent loving behavior and responsiveness from their primary caregiver when the infant is in emotional distress, but even so can still develop an insecure attachment style into adulthood due to exposure to ACEs (Waters et al., 2000).

Inconsistent and insensitive parenting plus parental separation, abuse, and neglect have been identified as contributing factors to the development of attachment difficulties later in life (Bifulco et al., 2000; Nakazawa, 2016; Whiffen, Judd, & Aube, 1999). This relationship is important because insecure attachment styles in adulthood have been associated with higher levels of negative romantic relationships and negative health outcomes, including psychopathology, including depression, anxiety, and substance abuse (Bifulco et al., 1998; Brown & Harris, 1993; Center for Disease Control, 2019a; Chang et al., 2019; Harkness & Wildes, 2002; Mickelson et al., 1997). Because much variance in adulthood attachment styles is not accounted for by childhood attachment styles, it is important to study the role of ACEs in adulthood attachment styles.

Thus, the present study investigated the relationship between the combination of childhood attachment and adverse experiences with adulthood attachment with measures that have not yet been used in studies on this topic. This study collected cross-sectional data and used self-report measures of childhood attachment with the Retrospective Attachment Questionnaire (RAQ; Parkes, 2006), ACEs with the ACE Questionnaire (Felitti et al., 1998), and adulthood attachment with the Experiences in Close Relationships – Revised questionnaire (ECR-R; Fraley et al., 2000). In accordance with the aforementioned literature, the present study hypothesized the following:

1. Childhood attachment anxiety measured by RAQ anxiety items will be positively associated with adulthood attachment anxiety measured by the ECR-R (main effect).
2. ACEs measured by the ACE items will be positively associated with adulthood attachment anxiety measured by the ECR-R (main effect).
3. Childhood attachment avoidance measured by the RAQ avoidance items will be positively associated with adulthood attachment avoidance measured by the ECR-R (main effect).
4. ACEs measured by the ACE items will be positively associated with adulthood attachment avoidance measured by the ECR-R (main effect).
5. The interaction of childhood attachment anxiety and ACEs will predict adulthood attachment anxiety (interaction effect). Specifically, high childhood attachment anxiety paired with greater exposure to adverse childhood events will predict higher adulthood attachment anxiety.
6. The interaction of childhood attachment avoidance and ACEs will predict adulthood attachment avoidance (interaction effect). Specifically, high childhood attachment

avoidance paired with greater exposure to adverse childhood events will predict higher adulthood attachment avoidance.

Method

Participants

Participants were current "workers" on the Amazon's Mechanical Turk (MTurk) website. Workers were required to be 18 years of age or older to be approved to participate in "tasks." MTurk is a crowdsourcing marketplace that allows researchers to collect data from a large and diverse participant population online. The use of MTurk provided the opportunity for a diverse sample in terms of participant demographics and generalizability to the general population of the US. Approved workers can browse through tasks on the MTurk website and participate in the tasks that interest them. Workers were compensated eighty-cents for their participation in this study.

MTurk allows the researcher set up restrictions on those who can participate, as a part of developing the survey. The criteria for participation included individuals who are 18 years old and currently reside in the United States. Those who have never had a romantic relationship since the age of 16 years old were allowed to participate in the study because there was no way to exclude them from participation up front with MTurk; however, these participants were excluded from data analyses because participants must have had at least one experience in a romantic relationship as an adult in order for the questions in the Experiences in Close Relationships – Revised questionnaire to be answered appropriately.

A total of 139 participants were recruited through Amazon's Mechanical Turk (MTurk) website. From this pool, 55 participants were excluded from data analyses, as they had either not completed the survey in its entirety (n = 25) or reported they had never been in a romantic

relationship since the age of 16 (n = 30). The average age of participants who stated they had not been in a romantic relationship since the age of 16 was 33.7 years old and the average age for those who had did not complete the survey in its entirety was the same, 33.7 years old. This resulted in a sample of 84 participants, whose ages ranged from 18 to 70 (M = 32.5). Demographically, the sample was 42.9% female (n = 36) and 57.1% male (n = 48). Sixty-eight participants reported their ethnicity as White or Caucasian (80%), 8 as Hispanic, Latino, or Spanish Origin (9.5%), 5 as Black or African American (6%), 2 as Asian (2.4%), and 1 as Native Hawaiian or Other Pacific Islander (1.2%). Fifty-five participants reported they were raised in a household with two biological parents (65.5%), 19 in a household by one biological parent (22.6%), 7 in a household with one biological parent and another parent figure (e.g., step parent or another parental figure) (8.3%), 2 in a household with one biological parent and another extended family member (e.g., grandparent, Aunt, Uncle, etc.) (2.4%), and 1 in a household with one foster parent and another extended family member (e.g., grandparent, Aunt, Uncle, etc.) (1.2%). The majority of the sample described themselves as secure in childhood (57.14% reported they were secure and 42.86% reported they were insecure as a child), anxious (52.38% reported they were anxious and 47.62% reported they were not anxious as a child), and not avoidant (59.52% reported they were not avoidant and 40.48% reported they were as a child).

Measures and Instruments

Retrospective Attachment Questionnaire. Participants completed the Retrospective Attachment Questionnaire (RAQ; Parkes, 2006) to determine their childhood attachment security (see Appendix A). The RAQ is a self-report 157-item questionnaire that is divided into four major sections. Only Sections I and II were used for this study because these sections focus on childhood attachment, whereas Sections III and IV focus on participants' experiences as adults.

Section I, “About your Parents,” is composed of 30 questions that inquire about a person’s parents (biological or adoptive). The RAQ assumes parents are heterosexual and asks questions about mothers and fathers. To include same-sex parents, the RAQ prompts were modified to include biological, adoptive parents, and same-sex parents. Instead of stating “Please answer yes or no for both your Mother and your Father,” the prompt was modified to “Please answer yes or no for both your parents.” Example items of the RAQ include, “Were you separated from either parent for more than a month before the age of 6 years?” and “Did you have mixed feelings of love and hate, affection and resentment, towards either parent?” Items predominantly use a dichotomous forced-choice response scale of yes or no. Most items are scored as yes=1 and no=0, except questions 1, 2a, 29, which are scores as yes=0 and no=1. Item 32 is subdivided into 32a never=1, sometimes or often =0, and 32b often=1, never or sometimes=0. Section I has six subscales (Parental Distant Control, Parental Overprotection, Parental Depression/Psychiatric Problem, Parental Separation, Parental Unusual Closeness, and Parental Rejection/Violence scores) that, when summed, make up the Overall Problematic Parenting Scale.

Section II, “About Your Childhood,” has 31 questions about participants’ childhood experiences, including questions about their schooling, physical health, mental health, personality, and experiences with their caregivers. Example items include, “Would you describe yourself as an insecure child?” and “Did you lack self-confidence as a child?” Items are scored as yes=1 and no=0. Section II has six subscales (Childhood Illness, Childhood Timidity, Childhood Aggressiveness/Distrust, Childhood Dresden Vase, Childhood Unhappiness, and Childhood Compulsive Caregiving). The sum of these subscales except the Childhood Illness subscale, make up the Childhood Overall Vulnerability Scale.

The sum of the scores from the Overall Problematic Parenting Scale and Childhood Overall Vulnerability Scale results in a measurement of Attachment Security/Insecurity that ranges from 0 to 76. A high score represents attachment insecurity, while a low score represents attachment security. In a sample of bereaved adults, the average score for the Secure/Insecure attachment scale is 17; below 11 can be considered secure, 11 to 21 are intermediate levels of insecurity, and 21 is the cutoff for insecure attachment (Parkes, 2006). The test also yields a scale for three types of insecure attachment: anxious, avoidant, and disorganized. Low scores mean low levels and high scores mean high levels of the particular attachment style. The Anxious Attachment Score was calculated by summing the Parental Distant Control (Section 1 items 11, 15, 16, and 28), Parental Closeness (Section 1 items 6 and 24), Parental Overprotection (Section 1 items 17, 18, 19, and 20), Childhood Timidity (Section 2 items 7, 10, 12, 15, 16, 24, and 25), and Childhood Dresden Vase subscales (Section 2 items 8, 14, 17, 18, and 19). The anxious score has a range of 0-32; the average score for Parkes' sample was 7 and scores of 10 or more are considered to be high. The average RAQ anxiety score for the sample collected in this study fell in the high range, and 56 percent of participants had a high childhood attachment score, a score of 10 or greater (M = 10.67, SD = 5.62). The RAQ anxiety subscale had high reliability, with a Cronbach's α = .87.

The Avoidant Attachment Score was calculated by summing the Parents Intolerant of Closeness (Section 1 item 28), Child Intolerant of Closeness (Section 2 item 26), and Childhood Aggressiveness/Distrust subscale (Section 2 items 20, 26, 27, 28, 29, 30, and 31). The avoidance score has a range of 0 to 10, the average score for Parkes' sample was 3.8 and a score of 6 and above is considered high. The mean of the RAQ avoidance scores for the sample collected in this study was considered to be normative (M = 3.87, SD = 2.63). The percent of participants who

had a high avoidance score of 6 or greater was 29.8. The RAQ avoidance subscale had high reliability, with a Cronbach's $\alpha = .74$.

The RAQ measure has been found to have good reliability and has been reported as reliable by Parkes (2006) with a Cronbach's $\alpha = .85$ for the Overall Problematic Parenting Scale, .90 for the Overall Childhood Vulnerability Scale, and .94 for the Attachment Security/Insecurity score, of .91 for the anxious attachment score, and .80 for the avoidant attachment score. Parkes stated there is good discriminant validity of the different scales of the RAQ, and criterion validity has been established, as well.

The Experiences in Close Relationships – Revised Questionnaire. Participants completed the Experiences in Close Relationships – Revised questionnaire (ECR-R; Fraley et al., 2000) to determine their adulthood attachment security (see Appendix C). The ECR-R is a 36-item self-report attachment measure. Each item was rated on a 7-point scale where 1 = strongly disagree and 7 = strongly agree.

The ECR-R yields scores on two subscales or factors, Attachment Related Anxiety and Attachment Related Avoidance. The first factor, which comprises the first 18 items, reflects the extent to which participants demonstrate attachment anxiety. A sample item is, "I worry about being abandoned." A high score on this subscale indicates worry about whether one's partner is available, responsive, attentive, etc., and a low score indicates more security in the perceived responsiveness of one's partner. The score for this subscale was obtained by averaging responses to items 1-18, with items 9 and 11 reverse scored.

The second factor comprises the last 18 items and corresponds to the degree to which participants experience attachment avoidance. A sample item is, "I prefer not to show a partner how I feel deep down." A high score on this subscale indicates the extent to which people are

uncomfortable opening up to others and depending on them, and low score on this subscale indicates one prefers being intimate with others and are more secure depending upon and having others depend upon them. The score for this subscale was obtained by averaging responses to items 19-36, with items 20, 22, 26-31, and 33-36 reverse scored. Prototypical attachment security is represented as the "low" ends on both of these two dimensions. For reference, ECR-R norms based on a sample of over 17,000 people (73% female) with an average age of 27 (*SD* = 10) had a mean Anxiety score of *M* = 3.56, *SD* = 1.12 and a mean Avoidance score of *M* = 2.92, *SD* = 1.19. For the sample collected in the current study, the mean ECR-R anxiety score (*M* = 4.27, *SD* = 1.37) and the mean ECR-R avoidance score (*M* = 3.18, *SD* = .88) were both higher than ECR-R norm mean scores for anxiety and avoidance.

The ECR-R's Chronbach's alpha coefficients have been found to be .90 or higher for the two ECR-R subscales (Fraley et al., 2000; Sibley & Liu, 2004) indicating excellent internal consistency (see also Mikulincer & Shaver, 2007). In Gillath, Hart, Noftle, and Stockdale (2009), alpha reliability was .94 and .93 for anxiety and avoidance subscales, respectively. The ECR-R subscales for this analysis were found to have high reliability, as well. The anxiety Cronbach's α for the ECR-R anxiety subscale was .95 and it was avoidance subscale was .88.

Adverse Childhood Experiences Questionnaire. Participants completed the Adverse Childhood Experiences (ACEs) Questionnaire (see Appendix B) which is a 10-item self-report questionnaire developed by Felitti and colleagues (1998) to assess the impact of abuse, neglect, and household dysfunction during childhood. The ACE Questionnaire is used by researchers and mental health professionals to identify exposure to childhood abuse, neglect, and family dysfunction and potentially traumatic events that occur in childhood.

The questions specifically refer to emotional, physical, and sexual abuse; emotional and physical neglect; and household challenges that include mother treated violently, substance abuse in the household, mental illness in the household, parental separation or divorce, and incarcerated household member. Examples of items include, "Did a parent or other adult in the household often or very often… Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?" and "Did a parent or other adult in the household often or very often… Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured?" The 10 questions used a dichotomous forced-choice response scale of yes or no, and a score of 10 was the highest score possible. The ACE Questionnaire was scored by summing the different categories (i.e., abuse, neglect, and household challenges) of ACEs reported by participants. Higher scores represented more ACEs, while lower scores represented fewer ACEs. The mean of the ACE scores for the sample collected in this study was normative compared to other studies (M = 3.81, SD = 3.41) (Dube et al., 2003; Murphy et al., 2014).

Psychometric analyses of the ACE questionnaire demonstrate good to excellent test–retest reliability and moderate to very good inter-rater reliability, with a Cohen's kappa of .66 for emotional abuse, .55 for physical abuse, .69 for sexual abuse, .77 for mother treated violently, .75 for household substance abuse, .51 for mental illness in the household, .46 for incarcerated household members, and .86 for parental separation or divorce (Dube et al., 2003; Dube et al., 2004). The ACE questionnaire was also found to have good internal consistency with a Cronbach's α = .88 for the 10 items (Murphy et al., 2014). The ACE items were found to be reliable in this analysis, as well, with a Cronbach's α = .89.

The ACE question that was most endorsed by the sample of participants was question number 1, “Prior to your 18th birthday, did a parent or another adult in your household often or very often swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?” (*n* = 42), followed by question number 9, “Prior to your 18th birthday, was a household member depressed or mentally ill, or did a household member commit suicide?” (*n* = 40). The third and fourth most endorsed questions were questions number 3, “Prior to your 18th birthday, did an adult or person at least 5 years older than you ever… Touch or fondle you or have you touch their body in a sexual way? or Attempt or actually have oral, anal, or vaginal intercourse with you?” (*n* = 35) and question 4 “Prior to your 18th birthday, did you often or very often feel that … no one in your family loved you or thought you were important or special? or Your family didn’t look out for each other, feel close to each other, or support each other?” (*n* = 35). The least endorsed ACE questions were question number question 5, “Prior to your 18th birthday, did you often or very often feel that … You didn’t have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?” (*n* = 26) and question 10, “Prior to your 18th birthday, did a household member go to prison?” (*n* = 23).

Demographic Survey. Lastly, participants were asked demographic information (see Appendix D): age, gender (male, female, other), race, socioeconomic status, household configuration (i.e., two parent, single parent, step parent), and if they have had at least one romantic relationship since the age of 16.

Procedure

Eligible participants on MTurk were advised before participating in the survey that the survey would last about 15 minutes in duration, and participants who completed the survey

would be compensated eighty cents. Participants read a brief description of the nature of the study and a statement that informed them their responses to the surveys will be kept anonymous and only used for educational research purposes. Participants were made aware that by participating in this study, they understood that there would be some questions about childhood abuse, neglect, and household challenges, which may cause some emotional distress. However, they were made aware that their participation in the survey was completely voluntary and they could exit the survey at any point in time. After agreeing to participate in the study, they were instructed to copy the link provided and paste it in their web browser to complete the survey on an external website. Mechanical Turk has an option of building a survey on their website without utilizing an external survey website; however, this option was not be used because it requires knowledge of website design programming language.

The link took them to an external site, Survey Hero, where the actual surveys existed. Participants were instructed to complete the series of questionnaires. The first page was the Retrospective Attachment Questionnaire, the second page was the Experiences in Close Relationships - Revised questionnaire, the third page was the Adverse Childhood Experiences questionnaire, and the fourth page was the demographic questionnaire. Participants could not skip ahead at any point the survey, and they had to answer all questions before being able to move on to the next page. The final page provided a statement thanking the participants for taking time to complete the survey and provided a code to put into MTurk to receive compensation for their participation. Participants received their compensation within one day after participation.

Results

Data Preparation

Prior to conducting regression analyses, data were screened for multicollinearity, missing values, and outliers. Because there were high levels of correlation, multicollinearity statistics for the study variables were investigated and tolerance statistics indicated that the predictor variables were not highly correlated. The Shapiro Wilk Test for the dependent variable showed that the data was not normally distributed. The ECR-R was found to violate assumptions, as the adulthood attachment anxiety scores $D(84) = .129$, $p < .001$, and adulthood attachment avoidance scores $D(84) = .192$, $p < .001$, were both significantly non-normal. The adulthood attachment anxiety distribution was mildly positively skewed and slightly platykurtic. There were some outliers on the adulthood attachment avoidance measure and the distribution was mildly positively skewed and slightly leptokurtotic. To reduce the bias on the sample, the bootstrapping method was used in regression analyses as recommended by Field (2013).

Descriptive Statistics

Table 1 provides a summary of the descriptive statistics for the study variables and Table 2 provides the Pearson Correlations of all the constructs utilized in analyses. To test Hypotheses 1, 2, 3, and 4 Pearson correlations were conducted.

Hypothesis 1. It was hypothesized that childhood attachment anxiety measured by the RAQ Anxious Attachment score would be positively associated with adulthood attachment anxiety as measured by the ECR-R Attachment Related Anxiety subscale. As predicted, childhood anxious attachment was significantly and positively correlated with adulthood attachment anxiety, $r = .476$, $p < .001$, which is a medium effect size (Cohen, 1998).

Hypothesis 2. It was hypothesized that adverse childhood experiences measured by the ACE scores would be positively associated with adulthood attachment anxiety as measured by the ECR-R Attachment Related Anxiety subscale. Adverse childhood experiences scores were

significantly and positively correlated with adulthood Attachment Related Anxiety scores, r = .519, $p < .001$, which is a large effect size.

Hypothesis 3. It was hypothesized that childhood attachment avoidance measured by the RAQ Avoidance Attachment score would be positively associated with adulthood ECR-R Attachment Related Avoidance. As predicted, childhood avoidant attachment was significantly and positively correlated with adulthood attachment avoidance, r = .323, p = .003, which is a medium effect size.

Hypothesis 4. Similarly, it was hypothesized that ACE scores would be positively associated with ECR-R Attachment Related Avoidance. Adverse childhood experiences were significantly and positively correlated with adulthood attachment avoidance scores, r = .352, p = .001, which is a medium effect size.

Regression Analyses Predicting Adulthood Attachment Anxiety and Avoidance

Hypotheses 5 and 6 were analyzed using two hierarchical regressions with the bootstrapping procedure to explore the interaction between childhood attachment styles, adverse childhood experiences, and adulthood attachment styles. Data was centered before running these models.

Hypothesis 5. It was hypothesized the interaction of childhood RAQ Anxious Attachment Scores and ACE scores would predict adulthood ECR-R Attachment Related Anxiety Scores (interaction effect). Childhood RAQ Anxious Attachment Scores and ACE scores were regressed onto Adulthood ECR-R Attachment Related Anxiety Scores in Step 1. The interaction between childhood RAQ Anxious Attachment Scores and ACE scores was included in Step 2.

The first model reached significance (F (2,81) = 16.34, $p < .001$); entered variables explained 28.7% of the variance in adulthood ECR-R Attachment Related Anxiety Scores (R^2 =.287). ACE scores had a statistically significant impact on ECR-R Attachment Related Anxiety Scores (β = .37, p = .005), but RAQ Anxious Attachment Scores did not (β = .20, p = .16).

The second model that included the interaction term did not reach significance, (F (1,80) = 11.30, p = .29). Variables in this model explained 29.8% of the variance adulthood ECR-R Attachment Related Anxiety Scores (adjusted R^2 =.27; R^2 change = .01). The interaction term did not significantly increase the amount of variance explained. ACEs remained significant (β = .41, p = .002), and childhood attachment anxiety scores remained non-significant (β = .19, p = .19). When the interaction of childhood attachment anxiety and ACEs was factored in the second model, the interaction did not significantly predict adulthood attachment anxiety (β = -.11, p = .20). Table 3 presents the linear model of predictors of adulthood attachment anxiety. The assumption of independent errors was likely met because the Durbin-Watson statistic is equal to 2.24 and meets Field's (2013) rule of being close to 2 and between 1 and 3.

Hypothesis 6. It was hypothesized the interaction of childhood RAQ Avoidant Attachment Scores and ACE scores would predict adulthood ECR-R Attachment Related Avoidance (interaction effect). Childhood RAQ Avoidant Attachment Scores and ACE scores were regressed onto Adulthood ECR-R Attachment Related Avoidance Scores in Step 1. The interaction between RAQ Avoidant Attachment Scores and ACE scores was included in Step 2.

The first model reached significance (F (2,81) = 6.05, p = .004); entered variables explained 13% of the variance in adulthood attachment avoidance (R^2 =.13). However, neither ACEs (β = .26, p = .12) nor childhood attachment avoidance scores (β = .12, p = .48) had a statistically significant impact on adulthood attachment avoidance independently. The second

model, that included the interaction term, approached significance (F (1,80) = 5.11, p = .09). Variables in this model explained 16.1% of the variance in ECR-R Attachment Related Avoidance Scores (adjusted R^2 = .13; R^2 change = .03). The interaction of ACEs and childhood attachment avoidance significantly predicted adulthood attachment avoidance, however it was not in the predicted direction (β = -.19, p = .02). Table 4 presents the linear model of predictors of adulthood attachment avoidance. The assumption of independent errors was likely met because the Durbin-Watson statistic is equal to 2.23 and meets Field's (2013) rule of being close to 2 and between 1 and 3.

A simple slope analysis was performed to further interpret the significant, negative interaction term found in hypothesis 6. The effect of childhood attachment avoidance at ACEs one standard deviation above and below the mean was calculated. When ACE scores were low, or one standard deviation below the mean, there was a non-significant positive relationship between childhood attachment avoidance and adulthood attachment avoidance, b = .11, 95% CI [-.03, .24], t = 1.60, p = .11. When ACE scores were high, or one standard deviation above the mean, there was a non-significant negative relationship between childhood attachment avoidance and adulthood attachment avoidance, b = -.02, 95% CI [-.15, .11], t = -.28, p = .78.

Discussion

It is well established in the attachment literature that childhood attachment style predicts adulthood attachment style. However, less is known about how adverse childhood experiences – including abuse, neglect, and trauma – predict adulthood attachment security. The purpose of this study was to better understand how childhood attachment security and adverse childhood experiences predict adulthood attachment security and to investigate how the use of survey methodology faired in measuring these variables. Previous research indicates much variance in

adulthood attachment styles is not accounted for by childhood attachment styles. The role of ACEs and their impact on adulthood attachment styles was investigated in this study because previous research indicates that individuals who are exposed to ACEs are likely to form and maintain insecure attachments that sustain and continue into adulthood. The methodology of the present study differed from previous studies examining the relationship between attachment in childhood and adulthood, and adverse childhood experiences in that because it used cross-sectional data, participants were recruited and data was collected online, and self-report measures were utilized. I predicted childhood attachment anxiety would be positively associated with adulthood attachment anxiety. Similarly, I predicted childhood attachment avoidance would be positively associated with adulthood attachment avoidance. These hypotheses were supported.

These findings are consistent with previous research that found the relationship between attachment types in infancy and early childhood are similar to adulthood attachment types (Hazan & Shaver, 1990; Waters et al., 2000). Additionally, these findings support the stability of the lifespan approach to attachment styles and that internal working models are relatively stable across the life course (Bowlby, 1969; Fraley, 2002). These findings further support Fraley's (2002) prototype perspective which proposes that early mental representations in childhood remain unchanged later in life and can play a direct role in influencing romantic relationship experiences in adulthood.

Studies previously conducted examining the relationship between childhood attachment styles and adulthood attachment styles largely used observational and interview measures of attachment and found a moderate relationship between childhood and adulthood attachment styles (Fraley, 2002; Fraley & Shaver, 1999; Owens et al., 1995). The present study examined anxious and avoidant childhood and adulthood attachment styles using self-report measures and

also found a moderate effect in the relationship between anxious and avoidant childhood and adulthood attachment styles. Given the similar findings across three methods of measurement, the findings are robust.

Fraley (2002) stated for an enduring change in attachment styles to take place, a stable external or internal influence like chronic household challenges, abuse, or neglect must be incorporated into the person's psychological or social world to counterbalance the effects of the existing prototype. This is why I predicted that ACEs would predict adulthood attachment anxiety and adulthood attachment avoidance (hypotheses 2 and 4). These hypotheses were supported - adverse childhood experiences were positively related to insecure adulthood attachment styles later in life.

These results provide further support for the idea that hostile and negative home environments contribute to the development of insecure patterns of romantic attachment. The research on the relationship between ACEs and adulthood attachment indicates individuals who are exposed to ACEs are likely to form and maintain insecure attachments that sustain and continue into adulthood (Hamilton, 2000; Hinnen et al., 2009).

Finally, I predicted the interaction between childhood attachment anxiety and exposure to adverse childhood events would predict adulthood attachment anxiety (hypothesis 5). Likewise, I predicted the interaction between childhood attachment avoidance and exposure to adverse childhood events would predict adulthood attachment avoidance (hypothesis 6). These hypotheses were not supported.

The interaction of childhood attachment anxiety and ACEs did not predict adulthood attachment anxiety above and beyond childhood attachment anxiety and ACEs alone. ACEs and childhood attachment anxiety scores accounted for 28.7% of the variation in adulthood

attachment anxiety. When the interaction between ACEs and childhood attachment anxiety was included as well (Model 2), the variability in adulthood attachment anxiety increased to 29.8% or an additional 1%. The inclusion of the interaction term did not explain a significant amount of additional variability in adulthood attachment anxiety.

When looking at the relationship between adulthood attachment anxiety and each predictor we can see ACE scores alone significantly contributed to the change in adulthood attachment anxiety. Childhood attachment anxiety and the interaction term did not significantly contribute to the prediction of adulthood attachment anxiety. The relationship between ACEs and adulthood attachment anxiety scores was positive. As ACE scores increased by one standard deviation (3.41), adulthood attachment anxiety increased by 0.41 standard deviations. The standard deviation for adulthood attachment anxiety is 1.37, so this constitutes a change of 0.56 points (0.41 x 1.37). Therefore, for every 3.41-point increase in ACE score, adulthood attachment anxiety scores increased by .56 points. In other words, those who experienced about 3 adverse childhood experiences had a .56-point increase in their adulthood attachment anxiety score.

When the interaction term was included in the model, the model was no longer significant, which is likely the result of lost power. While the model was not significant, ACEs remained a significant predictor, accounting for 27% of the variability in anxious adulthood attachment scores.

This suggests that exposure to ACEs are more influential in predicting adulthood attachment anxiety than adults' ratings of their childhood attachment anxiety. These findings are consistent with previous studies, which report that changes in attachment classification from childhood and adulthood were associated with the occurrence of negative life events (Waters et

al., 2000). ACEs could begin occurring during the initial formation of attachment during infancy and/or extend after the initial attachment formation and potentially persist throughout childhood development, thus increasing adulthood attachment anxiety.

When examining at the relationship between adulthood attachment avoidance, Model 1 was significant, explaining 13% of the variance in adult avoidance attachment, however, neither ACEs nor childhood attachment avoidance scores had a statistically significant impact on adulthood attachment avoidance independently. In Model 2, when the interaction term of childhood attachment and ACEs was added, the model approached significance and the interaction term was a significant predictor, however, not in the predicted direction. When the interaction between ACEs and childhood attachment anxiety was included (Model 2), the variability in adulthood attachment anxiety explained increased to 16%.

When looking at the relationship between adulthood attachment avoidance and each predictor we can see neither ACE scores nor childhood attachment avoidance as predictors significantly contributed to adulthood attachment avoidance. However, the interaction between childhood avoidance and ACEs did significantly contribute to the change in adulthood attachment avoidance, just not enough to make the model significant. Interestingly, the relationship between the interaction term and adulthood attachment avoidance scores was negative. As the interaction term score increased by one standard deviation (9.24), adulthood attachment avoidance decreased by .19 standard deviations. The standard deviation for the interaction term is 9.24, so this constitutes a change of -1.76 points (-.190 x 9.24). Therefore, for every 9.24-point increase in the interaction term score, adulthood attachment avoidance scores decreased by -1.76 points.

Based on prior research, I predicted that a child with avoidant attachment who also experienced ACEs, may avoid intimacy in adulthood romantic relationships due to the fear of becoming committed to someone who is absent or unresponsive to their needs. The significant interaction term for hypothesis 6 indicates that the slope of childhood attachment predicting adult attachment avoidance is different depending on ACEs. The slope is descriptively positive for low ACEs and negative for high ACEs. The test of the simple slopes determined that the relationship between childhood attachment avoidance and adulthood attachment avoidance at high and low ACEs were not statistically different from zero.

The interaction term was the only predictor that significantly contributed to adulthood attachment avoidance. ACEs was not a significant predictor for adulthood attachment avoidance in Model 2, but the *p*-value changed from .12 in Model 1 to .07 in Model 2, indicating a positive trend for predicting adulthood attachment avoidance. The interaction between ACEs and avoidant childhood attachment appears to be more important than the interaction between ACEs and anxious childhood attachment, since the interaction term for adulthood attachment avoidance was significant and the interaction term for adulthood attachment anxiety was not. One possible explanation for the difference between the results of hypothesis 5 and hypothesis 6 can be found by further investigating the differences between anxious and avoidant attachment.

Limitations

What made this particular study unique was the use of a cross-sectional design based on survey methodology. This is also considered to be a limitation for this study. This design allowed for a snapshot in time and not a longitudinal perspective. Participants' responses represent their views at one point in time and may not adequately reflect the complex construct of attachment. Surveys may not capture the complexity of social-emotional attachment and development across

the lifespan. Observational, longitudinal, or interview methods of measurement that have historically been used to assess attachment across the lifespan.

The lack of a longitudinal design introduces problems associated with the retrospective reporting of childhood attachment. Participants' recollection of the closeness of their relationship with a secure base involves emotions and feelings and may be more vulnerable to bias. Scharfe and Bartholomew (1998) found participants perceived that the stability of their patterns was consistently higher than the actual or objective stability of their patterns, suggesting a strong consistency bias for individuals, independent of their attachment security over time. Participants were moderately accurate when asked to remember past attachment patterns using continuous ratings. However, there was no evidence that secure individuals were more accurate than insecure individuals when asked to recall their attachment ratings, therefore individual differences in attachment were not related to accuracy of recall of attachment patterns.

The lack of a longitudinal design also introduces problems associated with the retrospective reporting of ACEs. One methodological flaw present in many ACE studies is the self-reported retrospective nature of the data. Usually adults are asked questions about trauma and adversities they may have experienced during childhood. Such questions are vulnerable to recall bias, where adults with poor health may be more likely to report adversity during childhood (Kelly-Irving & Delpierre, 2019).

This study has limited external validity because Caucasians were overrepresented in the sample of participants in this study. MTurk workers tend to be younger, overeducated, underemployed, less religious, and more liberal than the general population (Berinsky et al., 2012; Paolacci et al., 2010; Shapiro et al., 2013). Workers are also more socially anxious than the U.S. population at large but no more likely to display clinically relevant emotional dysregulation

than the general population (Shapiro et al., 2013). Despite differences with the general population, internet subject populations are at the least, representative of the U.S. population as a whole than subjects recruited from traditional university subject pools, with gender, race, age, and education (Paolacci et al., 2010).

The online format of the study was also a limitation, as participants could have rushed through responses, not read the questions fully, or they could have been influenced by distractions in their environment. The data collected was obtained online and represents a reduction in experimenter control. One drawback of MTurk experiments that also applies to all web-based experiments is that unsupervised subjects tend to be less attentive than subjects in a lab with an experimenter (Oppenheimer, Meyvis, & Davidenko, 2009).

Conclusions and Future Directions

The purpose of the current study was to better understand how childhood attachment security and adverse childhood events predicts adulthood attachment anxiety and avoidance with self-report questionnaires on an online format using Amazon Mechanical Turk. Results from this study showed that childhood attachment security is positively associated with adulthood attachment security and ACEs are positively associated with adulthood attachment security. The interaction between childhood attachment anxiety and ACEs did not predict adulthood attachment anxiety above childhood attachment and ACEs alone. The interaction between childhood attachment avoidance and ACEs approached significance in predicting adulthood attachment avoidance. These findings are not in line with prior research that establishes a relationship between childhood attachment security, ACES, and adulthood attachment security. Perhaps this is due to the self-report and online nature of the study's design. To our knowledge, no published research has used self-report measures in an online format to measure the

relationship between childhood attachment security, ACEs, and adulthood attachment security. Future studies should continue to investigate self-report measures of attachment across the lifespan and adverse childhood experiences. The RAQ, ACE questionnaire, and ECR-R can be beneficial for efficient data collection due to their practicality of being self-report measures in contrast to longitudinal, interview, or observational measures.

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Appendix A

Retrospective Attachment Questionnaire

Section I: About your parents (or adoptive parents). Please answer yes or no for both your parents.

1. Were you brought up by your true parents?
2. Are your parents still alive?

   If not, write in how old you were when they died

Section I continued: For both your Parents, respond Yes or No

3. Were you separated from either parent for more than a month before the age of 6 years?
4. Were you separated from either parent for more than a month between the ages of 6 and 10 years?
5. Were you separated from either parent for more than a month between the ages of 11 and 16 years?
6. During your childhood were you ever afraid that a parent would die or be killed?
7. Was either parent nervous, insecure or a worrier?
8. Was your parent subject to episodes of gloom or depression?
9. Did your parent ever receive psychiatric treatment?

   If so, was he/she ever admitted to a hospital for psychiatric treatment?
10. Did your parent ever assault or injure his or her partner?
11. Did either parent obtain your obedience by threatening to leave you or give you away?
12. Did either parent threaten to kill themselves?
13. Did either parent drink more alcohol than was good for them?
14. Was your parent often away or not available?

15. Was your parent inconsistent, sometimes responding, and at other times ignoring your needs for attention and affection?
16. Did either parent discourage you from playing with other children?
17. Did either parent give you the impression that the world is a very dangerous place in which children will not survive unless they stay very close?
18. Did either parent worry a great deal about your health?
19. Did either parent worry a great deal about your safety?
20. Was either parent overprotective?
22. Was your parent dependent on or inclined to cling to his or her spouse?
24. Were you unusually close to your parent?
25. Was either parent inclined to tease you or make you feel small?
26. Did either parent beat you or physically punish you more than most parents?
27. Did either parent sexually interfere with you or expect you to touch their genitals?
28. Was either parent unable to show warmth or to hug or cuddle you?
29. Was your birth planned and wanted by your parents?
30. Did you have mixed feelings of love and hate, affection and resentment, towards either parent?

Section II: About your childhood (Respond Yes or No)

1. Were you, at any time before the age of 10, sent to a boarding school, orphanage or children's home for more than a few weeks?
2. Were you an only child for more than five years of your childhood?
4. Was your family subjected for a long time to serious danger or persecution?
5. Did you suffer from severe illness which threatened your life before the age of 6?

6. Or a similar illness from 6 to 16?
7. Would you describe yourself as an insecure child?
8. Would you describe yourself as an anxious child?
9. Would you describe yourself as an unhappy child?
10. Were you an underachiever, never doing as well at school as your intelligence led people to expect?
11. Were you, as a child, always looking after others?
12. Did you lack self-confidence as a child?
14. Were you afraid to be left alone or easily upset by separation from your parents?
15. Were you timid and reluctant to visit new places, meet new people or do new things?
16. Were you a passive child, leaving it to others to tell you what to do?
17. Did you feel helpless and unable to cope?
18. Did people baby you and regard you as sweet and appealing?
19. Did people regard you as a delicate or fragile child?
20. Did you distrust most adults through much of your childhood?
23. Did people often think of you as tougher or more capable than you really were?
24. Were you a loner, avoiding others as a child?
25. Did you find it hard to ask other people to help you?
26. Did you find it hard to accept cuddles, or other demonstrations of affection?
27. Were you, as a child, inclined to be suspicious or distrustful of other people?
28. Did you find it important to be the one in control, were you “bossy” or inclined to dominate your friends?
29. Did you have a bad temper?

30. Did you get into trouble for rebellious, aggressive or antisocial behavior?

31. Were you stubborn?

Section II continued (Respond Never, Sometimes, or Often)

32. How often did you cry?

Section II continued (Respond Yes or No)

33. Did you, as a child, often wish you were dead?

34. Were you born outside of the U.S. or Canada?

35. If so, at what age did you immigrate or move permanently to the U.S. or Canada?

Appendix B

Adverse Childhood Experiences Questionnaire

Prior to your 18th birthday:

1. Did a parent or other adult in the household often or very often… Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?

   No___If Yes, enter 1 __

2. Did a parent or other adult in the household often or very often… Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured?

   No___If Yes, enter 1 __

3. Did an adult or person at least 5 years older than you ever… Touch or fondle you or have you touch their body in a sexual way? or Attempt or actually have oral, anal, or vaginal intercourse with you?

   No___If Yes, enter 1 __

4. Did you often or very often feel that … No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other?

   No___If Yes, enter 1 __

5. Did you often or very often feel that … You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?

   No___If Yes, enter 1 __

6. Were your parents ever separated or divorced?

   No___If Yes, enter 1 __

7. Was your mother or stepmother:

   Often or very often pushed, grabbed, slapped, or had something thrown at her? or

   Sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard? or

   Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?

   No___If Yes, enter 1 __

8. Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs?

   No___If Yes, enter 1 __

9. Was a household member depressed or mentally ill, or did a household member attempt suicide? No___If Yes, enter 1 __

10. Did a household member go to prison?

    No___If Yes, enter 1 __

Appendix C

Experiences in Close Relationships – Revised Questionnaire

The statements below concern how you feel in emotionally intimate relationships. We are interested in how you generally experience relationships, not just in what is happening in a current relationship. Respond to each statement by circling a number to indicate how much you agree or disagree with the statement on a 7-point scale where 1 = Strongly Disagree……7 = Strongly Agree

1. I'm afraid that I will lose my partner's love.
2. I often worry that my partner will not want to stay with me.
3. I often worry that my partner doesn't really love me.
4. I worry that romantic partners won’t care about me as much as I care about them.
5. I often wish that my partner's feelings for me were as strong as my feelings for him or her.
6. I worry a lot about my relationships.
7. When my partner is out of sight, I worry that he or she might become interested in someone else.
8. When I show my feelings for romantic partners, I'm afraid they will not feel the same about me.
9. I rarely worry about my partner leaving me.
10. My romantic partner makes me doubt myself.
11. I do not often worry about being abandoned.
12. I find that my partner(s) don't want to get as close as I would like.
13. Sometimes romantic partners change their feelings about me for no apparent reason.

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

15. I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am.

16. It makes me mad that I don't get the affection and support I need from my partner.

17. I worry that I won't measure up to other people.

18. My partner only seems to notice me when I’m angry.

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

20. I feel comfortable sharing my private thoughts and feelings my partner.

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

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

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

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

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

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

27. It's not difficult for me to get close to my partner.

28. I usually discuss my problems and concerns with my partner.

29. It helps to turn to my romantic partner in times of need.

30. I tell my partner just about everything.

31. I talk things over with my partner.

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

33. I feel comfortable depending on romantic partners.

34. I find it easy to depend on romantic partners.

35. It's easy for me to be affectionate with my partner.

36. My partner really understands me and my needs.

Appendix D

Demographic Survey

What is your age? _____

What is your gender:

□ Female

□ Male

□ Transgender Female to Male

□ Transgender Male to Female

□ Non-binary

□ Other _____ (please specify)

What is your race/ethnicity?

□ American Indian or Alaskan Native

□ Asian

□ Black or African American

□ Hispanic, Latino, or Spanish Origin

□ Native Hawaiian or Other Pacific Islander

□ White or Caucasian

□ Other: _____ (please specify)

What was your total combined family income for the past 12 months? _____

Which best describes the type of household in which you were raised?

_____With one biological parent

_____With two biological parents

_____With one biological parent and another parent figure (e.g., step parent or another parental figure)

_____With one biological parent and another extended family member (e.g., grandparent, Aunt, Uncle, etc.)

_____With one extended family member (e.g., grandmother, grandfather, Aunt, Uncle, cousin)

_____With two extended family members (e.g., grandparents, Aunt and Uncle)

_____With one adoptive parent

_____With one adoptive parent and another parent figure (e.g., step parent or another parental figure)

_____With one adoptive parent and another extended family member (e.g., grandparent, Aunt, Uncle, etc.)

_____With two adoptive parents

_____With one foster parent

_____With one foster parent and another parent figure (e.g., step parent or another parental figure)

_____With one foster parent and another extended family member (e.g., grandparent, Aunt, Uncle, etc.)

_____With two foster parents

_____With no parents

_____ Other (please specify)

Since you were 16 years old, have you had at least one romantic relationship?

_____Yes

_____No

Table 1

Descriptive Statistics for Study Variables

Measure	*M*	*SD*	Range	Norm Data Comparison
Childhood Attachment Anxiety	10.67	5.62	0 – 22.00	(*M* = 7.40, *SD* = 4.89)*
Childhood Attachment Avoidance	3.87	2.63	0 – 9.00	(*M* = 3.80, *SD* = 2.01)*
ACE Score	3.81	3.41	0 – 10.00	(*M* = 3.92, *SD* = 2.74)**
Adulthood Attachment Anxiety	4.27	1.37	1.33 – 6.33	(*M* = 3.56, *SD* = 1.12)***
Adulthood Attachment Avoidance	3.18	.88	1.00 – 5.33	(*M* = 2.92, *SD* = 1.19)***

* (Parkes, 2006)
** (Murphy et al., 2014)
*** (Fraley et al., 2000)

Table 2

Pearson Correlation Matrices of Study Variables

	1	2
1. Childhood Attachment Anxiety	-	
2. Adulthood Attachment Anxiety	.476**	-
3. Total ACE	.746**	.519**

	1	2
1. Childhood Attachment Avoidance	-	
2. Adulthood Attachment Avoidance	.323*	-
3. Total ACE	.776**	.352**

**$p < .001$, *$p < .01$

Table 3

Linear Model of Predictors of Adulthood Attachment Anxiety

Variable	*Adjusted R^2*	*R^2*	*B*	*SE B*	*β*	*p*	*F*
Step 1							
Constant			4.27 (4.02, 4.52)	.13		.001	
Childhood Attachment Anxiety			.05 (-.03, .11)	.04	.20	.163	
Total ACEs	.27	.29	.15 (.05, .26)	.05	.37	.005	16.336
Step 2	*Adjusted R^2*	*R^2 Change*					
Constant			4.38 (4.07, 4.69)	.16		.001	
Childhood Attachment Anxiety			.05 (-.02, .11)	.04	.19	.19	
Total ACEs			.16 (.08, .28)	.05	.41	.002	
Interaction between Childhood Attachment Anxiety and ACES	.27	.01	-.007 (-.02, .004)	.006	-.11	.20	11.30

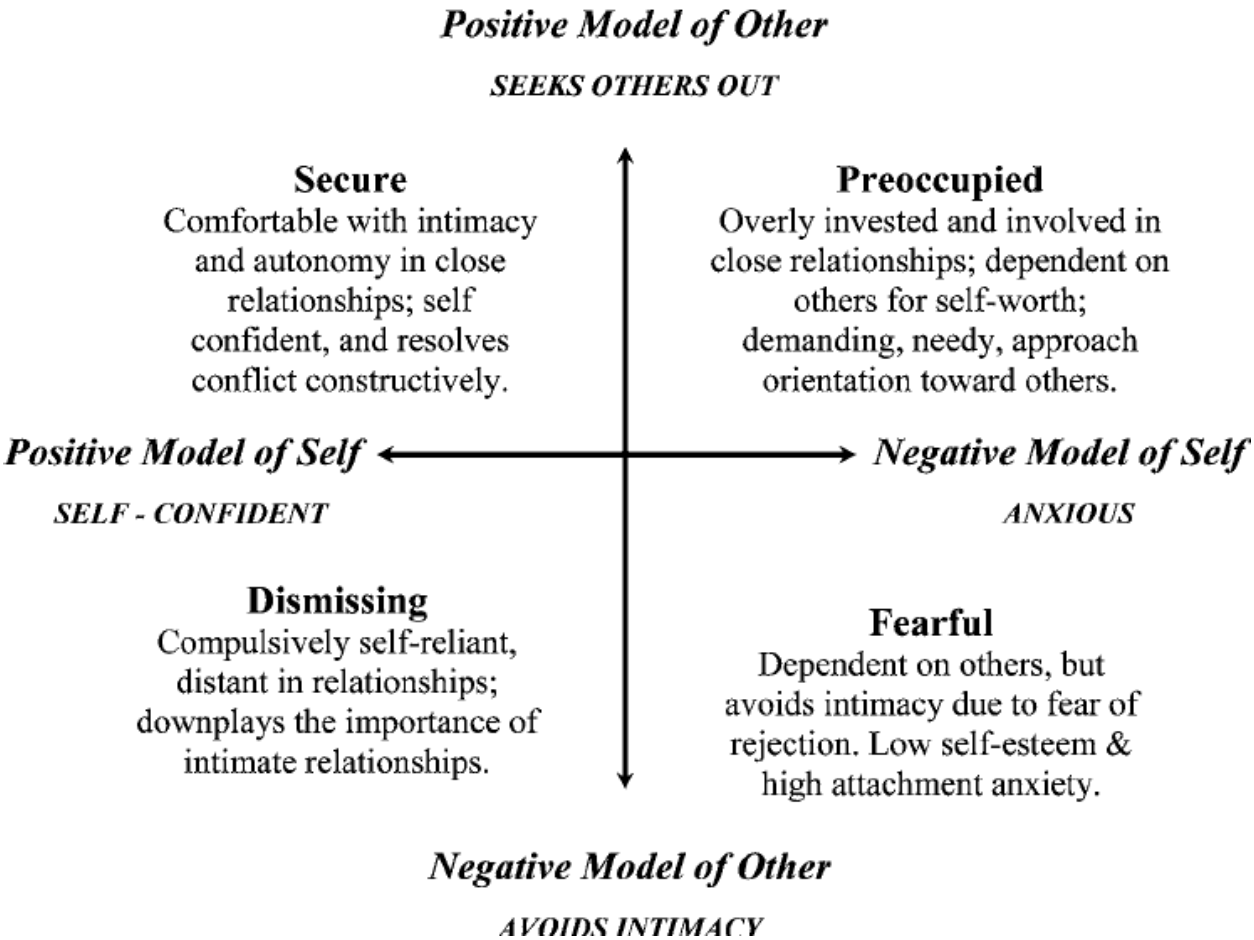
Table 4

Linear Model of Predictors of Adulthood Attachment Avoidance

Variable	*Adjusted R^2*	*R^2*	*B*	*SE B*	*β*	*p*	*F*
Step 1							
Constant			3.18 (3.00, 3.36)	.09		.001	
Childhood Attachment Avoidance			.04 (-.08, .15)	.06	.12	.48	
	.11	.13					
Total ACEs			.07 (-.02, .15)	.04	.26	.12	6.05
Step 2	*Adjusted R^2*	*R^2 Change*				*R^2*	
Constant			3.31 (3.06, 3.55)	.12		.001	
Childhood Attachment Avoidance			.04 (-.09, .15)	.06	.13	.48	
Total ACEs			.08 (-.001, .19)	.05	.32	.07	
Interaction between Childhood Attachment Avoidance and ACES	.13	.03	-.02 (-.03, -.002)	.01	-.19	.02	5.11

Figure 1

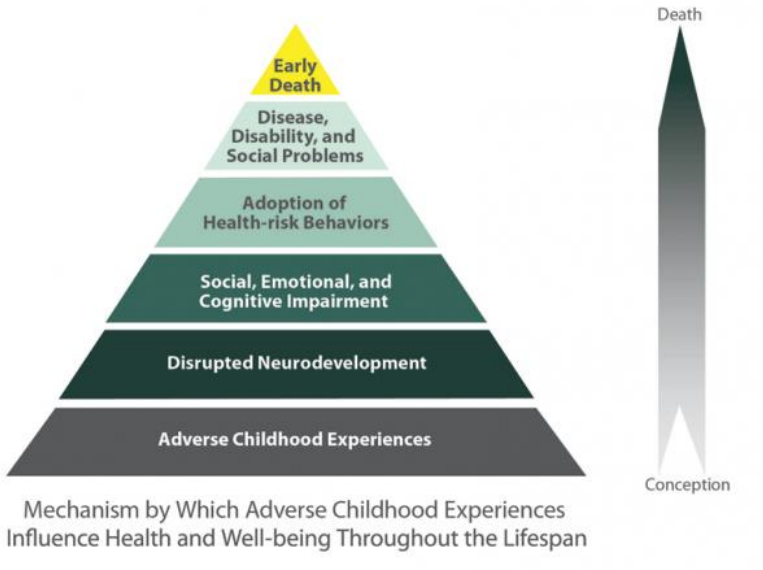
Bartholomew and Horowitz's Four-Category Model of Adult Attachment (1991)



Note. This has been retrieved from https://www.researchgate.net/figure/Bartholomews-two-dimensional-model-of-attachment_fig1_226512393.

Figure 2

ACE Pyramid Representing the Conceptual Framework for the ACE Study



Note. The ACE Study has uncovered how ACEs are strongly related to development of risk factors for disease, and well-being throughout the life course. This has been retrieved from https://www.cdc.gov/violenceprevention/acestudy/about.html.