# DOES DEVELOPMENTAL TASK DISRUPTION MEDIATE THE LINK BETWEEN CHILDHOOD ADVERSITY AND PSYCHOPATHY?

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## Abstract

DOES DEVELOPMENTAL TASK DISRUPTION MEDIATE THE LINK BETWEEN CHILDHOOD ADVERSITY AND PSYCHOPATHY?

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Research has linked adult psychopathy with abuse or neglect in childhood; however, less is known about how it relates to other adverse childhood experiences. The prevention of psychopathic traits may be possible if the issue is examined from a developmental psychopathology perspective, which attempts to understand how early experiences and disruptions in stage-salient tasks may contribute to pathological behavior. ACEs may disrupt the attachment bond between child and parent and continue to impact adult relational functioning, via cognitive templates of adult attachment styles and difficulties with emotion regulation.

This study examined whether ACEs were related to psychopathic trait scores in adulthood in a sample of 359 adults from a convenience sample recruited online and from a university participation pool. Participants completed surveys online through SurveyMonkey. It was hypothesized that different dimensions of psychopathic traits, such as meanness (i.e., callousness) and disinhibition (i.e., low inhibitory control), would be positively correlated with ACEs, while boldness (i.e., fearlessness) would be negatively correlated. Additionally, it was expected that markers of developmental task

disruption (attachment insecurity and emotion dysregulation) would mediate this relationship.

Results revealed that as the number of ACEs increased, meanness and disinhibition scores also increased; however, boldness scores were unrelated to ACEs. Avoidant attachment styles and emotional dysregulation were found to mediate the relationship between ACEs and meanness. Moreover, anxious attachment styles and emotional dysregulation mediated the link between ACEs and disinhibition. This suggests that adults with more ACEs may develop dysfunctional emotion regulation strategies and may become overwhelmed by negative emotions. They may distort or suppress emotional experiences (avoidant attachment-related strategies), or may ruminate over and catastrophize emotion-eliciting events (anxious attachment-related strategies), which may in turn relate to increased displays of callousness, manipulativeness, impulsivity, and aggression. To our knowledge, this is the first study to examine the relationship between psychopathic traits and ACEs. Findings support further exploration into how attachment and emotion regulation may be used as possible targets in prevention and intervention efforts for children demonstrating callous-unemotional behaviors, precursors to psychopathic traits in adulthood.

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# Introduction

Psychopathic traits are associated with an array of socially maladaptive behaviors that impact the individual and society at large (Coid & Yang, 2011; Jonason, Koenig, & Tost, 2010; Patch & Figueredo, 2017; Polaschek, 2015; Shenk, Dorn, Kolko, Rausch, & Insana, 2014). In general, research has suggested a strong positive relationship between violence and psychopathy in clinical, incarcerated, and nonclinical samples (Coid & Yang, 2011; Reidy, Shelley-Tremblay, & Lilienfeld, 2011). With over 1.2 million violent crimes reported in the United States in 2015 (Federal Bureau of Investigation, 2017), an examination of correlated factors, like psychopathy, should be examined further.

Psychopathic traits refer to a group of loosely related interpersonal, affective, and behavioral dimensions, including callousness, impulsiveness, negative affectivity, insensitivity to punishment, defiance, and aggression (Cleckley, 1941/1988; Crego & Widiger, 2016; Patrick, Fowles, & Krueger, 2009). In social and personality psychology, psychopathy is considered to be a socially disagreeable personality type characterized by overall low agreeableness and conscientiousness, as measured by the big five personality traits (Brinkley, Newman, Widiger, & Lynam, 2004; Grigoras & Wille, 2017). In clinical psychology, psychopathy is most closely related to antisocial personality disorder (and its childhood precursor, conduct disorder), which is described in the Diagnostic and Statistical Manual (DSM-5) as violating the rights of others through aggressive, deceptive, and impulsive acts that are often criminal in nature (American Psychiatric Association, 2013; Reidy et al., 2015).

These perspectives have generally framed psychopathy as a highly heritable disorder residing within the individual (Bezdjian, Tuvblad, Raine, & Baker, 2011; Raine, Lee, Yang, & Colletti, 2010; White et al., 2013). More recent advancements in genetic and neuroscience research are finding that relationships between genetic vulnerability and experience, especially early experiences in childhood, are more complex than once thought (Byrd & Manuck, 2014; Willoughby, Mills-Koonce, Propper, & Waschbusch, 2013). With this in mind, research examining psychopathic traits may benefit from a developmental psychopathology (DP) perspective (Decoene & Bijttebier, 2008; Frick, Ray, Thornton, & Kahn, 2014).

The DP perspective combines aspects of developmental, child, and abnormal psychology in understanding how disruptions in stage-salient tasks (i.e., attachment, emotion regulation, identity/autonomy, and peer relations) might provide possible explanations for why some children follow developmental pathways to maladaptive and pathological behavior (Cicchetti & Toth, 2009; Davies, Manning, & Cicchetti, 2013; Sroufe, 1997; Sroufe & Rutter, 1984). For example, callous-unemotional (CU) traits, which include a lack of empathy, suppression of negative emotional experiences, and a restriction of emotional expression, are believed to be developmental precursors of psychopathic traits (Frick et al., 2014; Frick & White, 2008). While some children continue to evidence these traits through adolescence, others do not (Lynam, Caspi, Moffitt, Loeber & Stouthamer-Loeber, 2007). The current study explores the use of a DP framework to connect childhood experiences and disruptions in developmental tasks with psychopathic traits in adulthood.

Both psychopathic and CU traits are associated with violence (Coid & Yang, 2011; Kiire, 2017; Oberth, Zheng, & McMahon, 2017). While psychopathic and CU traits are related to the perpetration of violence against others, both are also associated with experiencing violence in childhood. Previous studies have linked witnessing intimate partner violence (IPV) within the home to externalizing problems, such as CU traits, aggression and oppositional behavior in childhood, and to self-reported psychopathic traits in adulthood (Dargis & Koenigs, 2017; Grasso et al., 2015; Shenk et al., 2014). Studies have also found a relationship between retrospective reports of child maltreatment and psychopathic traits in incarcerated adolescent, adult offender, and adult community populations (Dargis, Newman, & Koenigs, 2016; Ručević & Ajduković, 2016; Schraft, Kosson & McBride, 2013; Young & Widom, 2014). These data point to the pervasiveness of adverse childhood experiences in this population.

Adverse childhood experiences (ACEs) include not only maltreatment and IPV, but other types of household dysfunction, such as parental mental illness, substance use, or incarceration (Felitti et al., 1998). These ACEs tend to co-occur and an accumulation of ACEs exponentially increases the likelihood of poor social, emotional and physical well-being in adulthood (Anda et al., 2006; Dong et al., 2004; Felitti et al., 1998). While several studies have examined the relationship between psychopathic traits and single adverse experiences (i.e., child maltreatment or individual household dysfunctions; Rucevic & Ajdukovic, 2016), few studies have examined the links between an accumulation of risk factors and later psychopathic traits (Borja & Ostrosky, 2013; Flouri, Tzavidis & Kallis, 2010; Sharf, Kimonis & Howard, 2014) and no study has yet

examined Felitti and colleagues' conceptualization of ACEs specifically in this regard. Further research is needed to determine whether an accumulation of ACEs is significantly associated with an increase in psychopathic traits.

Traumatic events that occur within the child's environment can affect how their developing brain organizes itself, resulting in possible differences in how the child responds to stress, forms attachments with caregivers, and learns socio-emotional skills (Perry, 2009). Attachment to caregivers is an important developmental task that remains salient throughout the lifespan (Diamond, 2015; Sroufe, 1997; Sroufe & Rutter, 1984). Early attachment experiences help the individual to form a cognitive template, or internal working model, that provides predictable expectations for how to view themselves and their social world (Bowlby, 1969/1982, 1973; Mikulincer & Shaver, 2007). Insecure attachments are associated with difficulties in emotion regulation and social competence in childhood and adolescence (Denham, Blair, Schmidt & DeMulder, 2002). While attachment styles may change over time, similar experiences later in life may perpetuate their continuity. Adults with insecure attachments generally experience poorer relationship satisfaction, engage in more intrusive behavior in romantic relationships, and tend to be more wary of committing to a romantic partner (Mikulincer & Shaver, 2007).

ACEs may disrupt the attachment bond in childhood, via harsh or inconsistent parenting practices, and may continue to impact adult functioning, via the internal working model. While previous studies support the relationship between harsh parenting practices and children developing CU traits and aggression (Fontaine, McCrory, Boivin, Moffitt & Viding, 2011; Wagner et al., 2016; Waller et al., 2017; Willoughby et al.,

2013), fewer studies have examined attachment and psychopathy characteristics in childhood or adolescence (Bohlin, Eninger, Cecilia & Thorell, 2012; Pasalich, Dadds, Hawes & Brennan, 2012; Pardini & Loeber, 2008). Additionally, given that psychopathy in adulthood seems to be related to an inability to relate to others, it is necessary to examine adult attachment and psychopathy together (Christian, Sellbom & Wilkinson, 2016; Conradi, Boertien, Cavus & Verschuere, 2015; Craig, Gray & Snowden, 2013; Mack, Hackney & Pyle, 2011). Though research suggests that both attachment and ACEs are related to psychopathy, studies linking ACEs with attachment and psychopathic traits have primarily been limited to adolescent samples (Christian, Meltzer, Thede & Kosson, 2017; Ručević & Ajduković, 2016). Further research is needed to examine how adult attachment relates to psychopathic traits, especially within the context of ACEs.

In addition to difficulties relating to others, a hallmark of psychopathy is a lack of emotional skills, such as empathy (Karpman, 1948; Patrick et al., 2009). A less explored emotional skill is emotion regulation, the development of which is greatly impacted by attachment security (Denham et al., 2002; Diamond, 2015; Mikulincer & Shaver, 2007; Murphy Laible, Augustine & Robeson, 2015; Panfile & Laible, 2012; Thompson, 1994). Emotion regulation is the ability to modulate the experience and expression of emotions in a socially acceptable manner (Cole, Margaret, & Teti, 1994). Studies have examined difficulties with emotion regulation among children with CU traits and adults with psychopathic traits (Donahue, McClure, & Moon, 2014; Ellis, Schroeder, Patrick, & Moser, 2016; Kyranides, Fanti, Sikki, & Patrick, 2017; Long, Felton, Lilienfeld, & Lejuez, 2014; Lotze, Ravindran, & Myers, 2010); however, few studies have examined

how emotion regulation might contribute to the relationship between ACEs and CU traits (Kimonis, Fanti, Goulter, & Hall, 2016; Sharf, Kimonis & Howard, 2014). Further studies are needed to examine this possible relationship, especially as it pertains to adult psychopathic traits.

In summary, previous research supports a link between individual risks of child maltreatment and other household dysfunctions and psychopathic traits, but few studies have examined a cumulative risk model of ACEs, such as the one employed by Felitti and colleagues (1998). The current study examines whether there is a dose-response relationship between higher rates of ACEs and greater psychopathic traits in adulthood. Furthermore, a review of the literature supports the novel use of a DP framework in examining the relationship between disruptions in the stage-salient tasks of attachment and emotion regulation and psychopathic traits expressed in adulthood. These developmental tasks are impacted by ACEs; however, their conceptualization as possible mediators between ACEs and psychopathy has not been explored. The current study examines whether attachment insecurity and emotion dysregulation mediate the relationship between ACEs and psychopathic traits in adulthood.

# Literature Review

## Psychopathy

Cleckley (1941/1988) was among the first to compile clinical observations on dozens of patients and establish a set of characteristics that formed the basis of the psychopathic personality. A contemporary synthesis of Cleckley's original criteria and other theoretical understandings have led to a triarchic conceptualization of psychopathy (Patrick et al., 2009). The triarchic theory suggests that psychopathy is comprised of three distinct, but overlapping concepts, which include callousness (meanness), disinhibition, and boldness. An analysis of Cleckley's original case files suggests that psychopathic individuals are often remorseless, shallow, exploitative (i.e. meanness), manipulative, self-centered, fearless (i.e., boldness), have poor judgement, and lack the ability to consistently plan ahead (i.e., disinhibition; Crego & Widiger, 2016). Underlying Cleckley's (1941/1988) original criteria and consistent with Patrick and colleagues' (2009) concepts, is the theme that, while these individuals can appear to function well in their daily lives, they often lack genuine affiliative ties and are void of authentic emotional experience.

Previous research has suggested a strong positive relationship between violence and psychopathy in clinical and incarcerated samples (Coid & Yang, 2011; Reidy et al., 2011). Individuals with psychopathy have an increased likelihood of violent reoffending and are twice as likely to commit crimes as non-psychopathic offenders. In general,

males tend to report higher psychopathy scores than females (Christian et al., 2016; Conradi et al., 2015; Craig et al., 2013; Young & Widom, 2014); however, no differences were reported within an incarcerated sample (Stanley, Wygant, & Sellbom, 2013). Additionally, some studies have found that African American participants report higher scores on primary psychopathy (i.e., callous and manipulative) and on the lifestyle facet (i.e., irresponsible, impulsive, and lacking in goals) of the Psychopathy Checklist-Revised (PCL-R; Dargis & Koenigs, 2017; Mack et al., 2011), whereas other studies found no differences (Young & Widom, 2014). Research on racial or ethnic groups must be interpreted with caution. Many studies recruit participants from prison samples, where persons of color may be overrepresented (Fanti, Lordos, Sullivan, & Kosson, 2018). Additionally, these studies may often not account for other sociocultural variables that may explain higher psychopathy scores, such as poverty.

Though a good deal of research into psychopathic traits has focused on their manifestation in criminal justice and clinical settings, other studies point to their existence within the general population (Levenson, Kiehl & Fitzpatrick, 1995; Lilienfeld & Andrews, 1996; Patrick et al., 2009; Skeem & Cooke, 2010). Psychopathic traits are also associated with socially maladaptive behaviors found within the general population, including having multiple, short-term sexual partners, and engaging in illicit drug use (Jonason et al., 2010; Patch & Figueredo, 2017). Individuals with psychopathic traits are reported to be resistant to treatment (Shenk et al., 2014), and even utilize socio-emotional skills learned in treatment to increase their capacity to cause interpersonal harm

(Polaschek, 2015). Given the overall costs to society and the individual, examining possible risk factors for psychopathy may be useful for preventative efforts.

Current research suggests that risk factors for these traits are largely biological or inherited. For example, Raine and colleagues (2010) proposed that an open cavum septum pellucidum (CSP), a space in the brain that normally closes in the first few months of life due to development of important brain structures in the limbic system, may be a marker for psychopathy in adults. Other studies found that structural disruptions in the CSP are related to adolescent disruptive behavior disorders in general, but not specifically to psychopathic traits (White et al., 2013). While these studies may prove useful within the right context, they are correlational, which only allows for inferences regarding the relations between limbic functioning (e.g., emotional processing) and characteristics partially defined by that function (e.g., deficits in emotional processing as core contributors to psychopathy).

Research with twins suggests a genetic risk for psychopathic traits. Bezdjian and others (2011) reported that heritability estimates of psychopathy ranged from 49 percent to 64 percent for a sample of twins. Unfortunately, behavioral genetic studies infer heritability based on caregiver reports of what is considered a shared or a nonshared environment, while assessing neither an individual's genes nor their environment directly. Therefore, neither studies on biological markers nor behavioral genetics can directly point to genetic determinants in terms of the development of psychopathy. This suggests that factors contributing to development of these traits may be more complex. Indeed, brain structure and function, as well as genes, may be altered by experience

throughout the lifespan, especially during sensitive periods in childhood and adolescence (Cicchetti & Toth, 2009).

More recent research on gene-environment interactions suggests that psychopathic traits may be more susceptible to environmental experiences than previously thought. A recent meta-analysis provided strong evidence that a variation in the MAOA gene, in combination with the experience of child maltreatment, was related to later aggressive and antisocial behavior in adult males (Byrd & Manuck, 2014). Additionally, Willoughby and colleagues (2013) found that early harsh parenting, in combination with the short version of an allele that corresponds to sensitivity to punishment, was related to behaviors indicating callousness and lack of empathy in three year old children. This research suggests a relationship between early experiences in childhood and a possible progression of behaviors and traits related to psychopathy in adulthood. Given the complex relationship between environmental and biological factors, an examination of potential pathways culminating in the expression of psychopathic traits could benefit from a theoretical framework which integrates neuroscience research with aspects of child, developmental, and clinical psychology (Cicchetti & Toth, 2009). With this in mind, an examination of possible risk factors within a developmental psychopathology framework will be considered next.

**Developmental Psychopathology (DP)**

Developmental psychopathology focuses on the importance of successful resolution of certain developmental tasks that are salient to specific periods from infancy

through adolescence (Sroufe & Rutter, 1984). These tasks include a secure attachment, an ability to self-regulate, a sense of personal autonomy and identity, and an ability to relate socially to peers. In the context of these tasks, the individual's temperament and environment interact and result in an individualized pattern of adaptation. Given the bidirectionality of the individual-environment relationship, patterns of adaptation must also change in order to be successful. Disruptions at any stage might provide a foundation for maladaptation, which constitutes a pattern that, while still adaptive, might move the individual away from a typical developmental path. For example, two year old toddlers exposed to parental conflict showed more signs of distress and fear in the presence of their mothers and had more difficulty completing activities designed to show mastery of stage salient tasks (e.g., autonomy, problem-solving), which corresponded to increased child aggression and non-compliance in the later preschool years (Davies et al., 2013).

Over time, patterns of adaptation can result in competency (successful adaptation), or pathology (maladaptation), affecting various domains of human functioning (Cicchetti & Toth, 2009; Masten, 2007). Various biological, social, environmental, and psychological factors can interact probabilistically to increase the likelihood that psychopathology will manifest. For example, children who grew up in an environment where they experienced violence between parents tended to exhibit less prosocial behavior and more externalizing behavior; however, the impact of interparental violence was more strongly related to the child's maladaptive behavior when they had mothers who also were less responsive and warm toward their child (Manning, Davies, & Cicchetti, 2014). Research supports the notion that maternal warmth and responsiveness

are associated with prosocial behavioral development in typically developing children (Murphy et al., 2015; Panfile & Laible, 2012). In summary, a DP framework seeks to inform the study of pathological development by understanding how it differs from typical development, with the goal of informing prevention and intervention efforts for psychopathology (Cicchetti, 2015).

Few researchers have considered psychopathy from a DP perspective. In examining current assessments and treatments for psychopathy, Decoene and Bijttebier (2008) pointed out that the wide range of traits and behaviors attributed to psychopathy likely have multiple etiologies, a concept known as equifinality. In line with this idea, Patrick and colleagues (2009) introduced a new conceptualization of psychopathy in order to assist researchers in examining this construct from a developmental perspective. They suggest that three dimensions (meanness, boldness, and disinhibition) underlie the development of psychopathic traits. For example, meanness, which encompasses lack of empathy, a willingness to exploit others, and a lack of close relationships, may point to disruptions in the bond between caregiver and child that would typically foster a sense of morality and prosocial behavior that can typically be seen as early as the toddler years (Panfile & Labile, 2012; Patrick et al., 2009). Additionally, disinhibition (or, a lack of self-regulation and an inability to delay gratification) may be related to a coercive cycle of parent-child conflict. Finally, boldness represents aspects of increased novelty-seeking and reduced sensitivity to threat, which may point to a physiological system that is not particularly open to environmental input. This conceptualization provides an avenue to

consider factors in early child development that may relate to psychopathic behaviors and traits.

**DP and callous-unemotional (CU) Traits.** Callous-unemotional (CU) traits in children are believed to be developmental precursors of psychopathic traits and may represent the manifestation of the meanness dimension of psychopathy (Frick et al., 2014; Kyranides et al., 2017; Patrick et al., 2009). CU traits include restricted emotional expression and overregulation, as well as lack of empathy (Frick & White, 2008). In studies of adults, CU traits correlate highly with measures of psychopathy (Hall, Drislane, Patrick, Morano, Lilienfeld, & Poythress, 2014). Additionally, several studies indicate that CU traits are relatively stable and predict later antisocial behavior from early to middle childhood (Waller et al., 2017), middle childhood to adolescence (Fontaine et al., 2011) and adolescence to early adulthood (Lynam et al., 2007). CU traits have recently been added to the DSM 5 as a specifier for conduct disorder, under the label limited prosocial emotions (Frick et al., 2014). This addition was partly inspired by longitudinal research showing CU traits measured in adolescence predict juvenile delinquency, later serious criminal activity, and antisocial personality disorder diagnoses in adulthood, above and beyond measures of conduct disorder alone (McMahon, Witkiewitz, Kotler & the Conduct Problems Prevention Research Group [CPPRG], 2010).

Examining factors related to CU traits may illuminate the process by which psychopathy-related traits and behaviors persist into adulthood. For example, daSilva, Rijo and Salekin (2015) argue that experiencing chronic threat in childhood might

calibrate an individual's stress response system to be less sensitive to environmental input in an effort to adapt to the demands of a harsh environment. This pattern of adaptation, concerned only with survival, may disrupt other biobehavioral systems involved in affiliation (i.e., attachment) and drive (i.e., emotion regulation), to manifest a pattern of behavior labeled as psychopathic. Therefore, the current study examines adverse experiences in childhood, as well as disruptions to the stage-salient tasks of attachment and emotion regulation.

## Adverse Childhood Experiences

Violence is a significant global health problem, especially for children experiencing maltreatment, or witnessing intimate partner violence (IPV), both of which can result in psychological harm and negative developmental outcomes (Dahlberg & Krug, 2002). Recent statistical data suggests that approximately 15 percent of all violent crime in the U.S. occurs between intimate partners, such as spouses or significant others (Truman & Morgan, 2014). Additionally, child maltreatment, defined as abuse or neglect of a child by an adult caregiver, continues to occur at a rate of approximately 700,000 new substantiated cases each year (U.S. Department of Health & Human Services, 2017).

Adverse childhood experiences (ACEs), which include not only maltreatment and IPV, but other types of household dysfunction, such as parental mental illness, substance use, or incarceration, tend to occur together (Dong et at., 2004). In their landmark study, Felitti and others (1998) found that an accumulation of four or more ACEs greatly increased the risk of diseases associated with premature death in adults, such as heart

disease, cancer, and stroke. As ACEs increase, so do the risks of social and behavioral problems, including lack of anger control and perpetration of intimate partner violence (Anda et al., 2006). Additionally, Dong et al. (2004) found that two-thirds of the mostly middle age, white, and middle-class participants reported at least one ACE, with 85 percent of those reporting one or more additional ACE. Furthermore, Cronholm et al. (2015) found that the prevalence of ACEs was higher in their ethnically and socioeconomically diverse sample, as compared to previously reported samples, suggesting that ACEs maybe more prevalent in marginalized populations (Dong et al., 2004; Felitti et al., 1998).

**ACEs and psychopathy.** Studies examining adverse experiences in childhood have mostly concerned child maltreatment and IPV. More specifically, in an adolescent offender sample, the interpersonal (superficiality and grandiosity) and behavioral (impulsivity) features were associated with retrospective reports of emotional abuse, whereas affective features (lacking remorse and empathy) were associated with emotion neglect, and only impulsivity features were related to sexual abuse (Schraft et al., 2013).

In an adult sample, a history of physical neglect, abuse and sexual abuse increased overall characteristics of psychopathy (Young & Widom, 2014). When considering specific aspects of psychopathy, childhood physical abuse and neglect were related only to impulsivity and interpersonal features, but not the affective features of psychopathy in an adult offender sample (Dargis et al., 2016). Conversely, studies indicate that participants reporting experiences of sexual abuse and physical neglect, as well as emotional abuse and neglect report lower boldness scores (i.e., stress immunity and thrill-

seeking) in incarcerated and community samples, respectively (Cima et al., 2008; Durand & de Calheiros-Velozo, 2018). Further research is needed to examine the relationship between child maltreatment and psychopathy in non-incarcerated samples.

Research on the co-occurrence of IPV and child maltreatment illustrates that both appear to relate to early externalizing behaviors and later psychopathy. Grasso et al. (2015) found that mothers who experience IPV were more likely to be emotionally and physically abusive toward their child. In this study, witnessing interparental emotional abuse was related to reports of child aggression and callousness. Additionally, exposure to IPV may contribute to the maintenance of these behaviors across time, as children with CU traits showed little improvement one year after receiving treatment (such as parent management training, cognitive behavioral, or family therapies), compared to a control group who did not experience IPV (Shenk et al., 2014). This may partially explain why Schraft and others (2013) found that witnessing IPV was related to greater lack of goal-directed behavior, irresponsibility, and impulsivity among adolescent participants. Furthermore, Dargis and Koenigs (2017) found that witnessing IPV in childhood was associated with interpersonal and affective (but not behavioral) dimensions of psychopathy in adulthood, even after controlling for experiences of physical abuse.

Few studies have examined the ACEs construct along with psychopathy. Ručević and Ajduković (2016) utilized a portion of the ACE questionnaire and found that, in their sample of Croatian community adolescents high in psychopathic traits, 13% had an incarcerated family member, 15% had a parent with a substance abuse history, and 14% had a parent with a mental illness. Unfortunately, this study did not report rates of child

maltreatment or IPV, compare these percentages to the general population rates, or investigate the relationship between an accumulation of ACEs and psychopathy.

Overall, these studies indicate a relationship between psychopathic traits and single adverse experiences; however, few studies have examined cumulative risk factors. Flouri and others (2010) suggest that accumulation of risks appears to play an important role in predicting difficulties in early childhood. In their study, cumulative family risks were predictive of a measure of externalizing behaviors (such as impulsivity and reactivity), whereas the individual risk factors themselves were not. As regards psychopathy specifically, adolescent CU traits were found to increase in severity as the number of adverse life experiences (e.g., domestic violence, childhood physical and sexual abuse, and community violence) accumulated (Sharf et al., 2014). Finally, in a sample of incarcerated adult males, higher scores on a measure of psychopathic traits were related to experiencing a greater number of traumatic events in childhood, similar to those described in the previous study (Borja & Ostrosky, 2013).

In summary, though research has examined psychopathy and individual adverse experiences in childhood, few studies have examined them within an adult community sample. Additionally, while a few studies have looked at the relationship between an accumulation of risk factors and psychopathy characteristics, there are currently no studies utilizing Felitti and colleagues' ACEs questionnaire. Therefore, the current study seeks to understand whether a greater number of ACEs is related to higher scores on dimensions of the Triarchic Psychopathy Measure (TriPm).

Furthermore, in examining trauma exposure in a group of adolescents, Sharf and colleagues (2014) noted that CU traits were positively related to emotional numbing. Constant exposure to experiences of trauma may result in hypoarousal of the biological systems that regulate psychological stress and emotion (Perry, 2009; Sharf et al., 2014). For example, ACEs may dysregulate the hypothalamic-pituitary-adrenocortical (HPA) axis, possibly resulting in chronically increased or decreased levels of cortisol, a hormone that regulates physiological responses to stress (Anda et al., 2006; Miller et al., 2007).

In support of this idea, one study that recorded the afternoon cortisol levels of children over a 20-week found that, although a degree of variability in cortisol levels existed within a group of maltreated children, those who had higher levels of the stress hormone at the beginning of the study were more likely to show a decrease in cortisol levels over time, as compared to non-maltreated children, suggesting a blunting effect (Doom et al., 2014). Decreased or blunted levels of cortisol have also been found in adolescent boys with CU traits, as well as adult male inmates with psychopathic traits (Cima, Smeets & Jelicic, 2008; Loney, Butler, Lima, Counts, & Eckel, 2006). A chronic decrease in cortisol may indicate an overactive stress response system that is attempting to protect the developing central nervous system from further harm (Anda et al., 2006; Diamond, 2015; Doom, Cicchetti, & Rogosch, 2014; Loney et al., 2006). Inconsistent or inadequate parenting may serve as the mechanism by which ACEs impact this stress response, which has implications for potential attachment bond disruption playing a role in psychopathy (Grasso et al., 2015; Ručević & Ajduković, 2016). Given this, research on attachment and psychopathy will be considered next.

## Attachment

**Attachment theory.** One of the cornerstones of the developmental psychopathology framework, attachment theory, can be used to examine the pathways through which maladaptive personality traits develop (Bowlby, 1969/1982; Bretherton, 1994). Attachment is a theoretical construct proposed by Bowlby (1969/1982) which suggests that humans have a biological motivation to maintain close relationships in order to feel safe and secure. This evolutionarily adaptive behavioral system is evident from an early age, such as when an infant cries, clings, or smiles to keep their mother close by. Through these interactions, a child learns that their caregiver will be available in times of distress and allows for focusing on exploring the environment instead of survival (Bowlby, 1969/1982).

Over time, a child's interactions with their caregiver form a cognitive template, or internal working model, which provides the child with a basic concept of the self and a rough idea of what to expect when interacting with others (Bowlby, 1969/1982, 1973). If the caregiver was physically and emotionally available in times of need, while allowing the child room to develop an autonomous self, the child may develop an internal working model that is flexible and provides a positive view of the self and others as worthy and dependable (Bowlby, 1973). If the caregiver was physically or emotionally unavailable and did not allow the child to explore independently, the child may develop a less adaptive internal working model of the self and others as negative and unpredictable (Bowlby, 1973).

Ainsworth, Blehar, Waters and Wall (1976) further studied the parent-child relationship and found that patterns of attachment among young children could be reliably classified based on the infant-mother relationship. A secure attachment involved a warm and responsive relationship, with the child feeling free to explore an unfamiliar environment. Avoidant attachment was characterized by a mother who was more likely to evince negative emotion and be more rejecting toward the infant, while the infant actively avoided the mother upon their reunion or seemed unconcerned by her absence. Resistant attachment relationships were characterized by a lack of consistency in caregiving, with the infant demanding extreme closeness. A final category, referred to as disorganized attachment, described infants who appeared afraid or confused and would engage in a bizarre mix of approach and avoidance behaviors (Main & Solomon, 1986). The mothers of these infants also appeared to be disorganized in their behavior and were likely to have experienced trauma or psychopathology (Mikulincer & Shaver, 2007; Solomon & George, 2011).

Multiple studies have confirmed that attachment styles and behaviors continue to be relevant into adulthood (For review, see Feeney & Noller, 1996; Mikulincer & Shaver, 2007). Attachment behaviors may be transferred from parents to friends and romantic partners, starting in adolescence. A longitudinal study found that infant attachment classifications were related to intimacy and security in friendships in adolescence, which related to emotional experiences and expression in close romantic relationships in adulthood (Simpson, Collins, Tran, & Haydon, 2007). As an individual enters adulthood, a flexible internal working model should allow one to access mental representations of

attachment figures in times of stress in order to self-regulate; however, some environmental, social, or personal stressors may strongly activate the need for closeness with a friend or partner (Feeney & Noller, 1996). Those who have an internal working model that is less flexible may develop an insecure attachment that involves either preoccupation with keeping a partner close and difficulty handling rejection (hyperactivating; anxious attachment), or remaining emotionally distant and independent from partners (deactivating; avoidant attachment; Mikulincer & Shaver, 2007). Insecure attachment in either form may not necessarily be considered maladaptive on its own; however, relational strategies that promote emotional distance may contribute to the development of maladaptive patterns of behavior, such as psychopathy.

**Attachment and CU traits in childhood.** Bowlby (1973) pointed out that there may be a connection between disruptions in the mother-child relationship and psychopathic traits. This may be particularly true of children who appear to experience detachment from the caregiver after repeated physical separations, or have caregivers who are emotionally unavailable during the first few years of life. Several studies have reported a relationship between CU traits and harsh-insensitive parenting practices (Fontaine et al., 2011; Waller et al., 2017; Willoughby et al., 2013). Wagner and colleagues (2016) found that higher levels of CU behaviors in toddlerhood were related to previous observations of harsh and intrusive parenting at six months. These mother-infant dyads were observed during a still-faced task that tends to elicit high negative reactivity in typically developing infants. Wagner et al. found that low reactivity in six month olds increased the likelihood of CU behaviors in toddlerhood, but only for those

infants with low mother-directed eye gaze. A study with an early childhood sample similarly found that those with high CU traits had fewer instances of eye contact and were more likely to reject physical affection during a parent-child interaction (Dadds et al., 2014). This parallels observations made by Ainsworth and colleagues (1976), wherein many of the infants classified as avoidant appeared to avert their gaze from their caregiver while distressed and tended to have mothers who were more rejecting and less emotionally positive.

Upon further inspection of attachment classifications in childhood, Pasalich and others (2012) noted that 75 % of their sample of clinic-referred boys high in CU traits were insecurely attached. Higher levels of CU traits in this sample were related to a disorganized attachment relationship. Bohlin and colleagues (2012) examined how attachment representations captured by a story completion task at five years might predict CU traits two years later. Results suggested that story completion indicative of a disorganized attachment representation predicted CU traits above and beyond earlier externalizing behavior. This suggests that attachment representations can color social, cognitive, and emotional processes and contribute to the maintenance of CU traits over time.

**Attachment and psychopathy in adulthood.** Research suggests that exposure to inadequate or intrusive parenting practices continues to play a role in adult functioning with respect to psychopathic traits (Craig et al., 2013; Jonason et al., 2010). Dimensions of adult attachment were found to mediate the relationship between parenting characteristics and facets of psychopathy (Craig et al., 2013). More specifically, lack of

maternal care was associated with higher likelihood of using avoidance as an attachment strategy with current romantic partners among those exhibiting disinhibition. Additionally, Jonason and others (2010) found that a measure of psychopathy closely matching CU traits was negatively associated with having a close, warm, and emotionally supportive relationship with parents, partners, or friends. This finding supports the notion that attachment relationships remain important in adulthood, that individuals with psychopathic traits often have an insecure attachment style, and that they may lack a healthy level of intimacy in their relationships.

Further research examining psychopathy and insecure attachment dimensions, as measured by the Experiences in Close Relationships Scale (Fraley, Waller, & Brennan, 2000), is varied. For example, dimensions measuring impulsive and disinhibited traits are consistently positively correlated with anxious and avoidant attachment, while items related to boldness tend to be negatively correlated with both (Christian et al., 2016; Conradi et al., 2015; Craig et al., 2013). With respect to dimensions that tap into callous-unemotional traits, Mack and others (2011) found that scores related to the interpersonal/affective deficits of psychopathy were highest when both avoidant and anxious attachment scores were high. Another study found that meanness was positively associated with both types of attachment insecurity, while another found that it was only related to avoidant attachment (Christian et al., 2016; Craig et al., 2013).

Such discrepancies may exist due to the different ways in which psychopathy is measured. Since attachment is a concept stemming from developmental theory and the triarchic theory of psychopathy was designed to address the development of psychopathic

traits, the current study will add to the existing literature on the three triarchic dimensions as they relate to insecure attachment. Some authors additionally speculate that high levels of both avoidant and anxious attachment may reflect a similar style to that of disorganized attachment found in childhood (Mack et al., 2011); however, not much is understood about adult disorganized attachment. Disorganized attachment is thought to be particularly likely in situations where the individual has experienced trauma (Murphy et al., 2014). Therefore, although there appears to be an association between psychopathy, attachment, and ACEs, research is scant in this area.

**Attachment, psychopathy, and ACEs.** In a longitudinal study, Flynn, Cicchetti, and Rogosch (2014) found that experiencing multiple types of maltreatment increased externalizing symptoms and decreased parent attachment quality. These children exhibited an increased sense of alienation, as well as a lack of trust and communication with their parents, in middle and late adolescence. Furthermore, using adult attachment classifications derived from the adult attachment interview (AAI), Murphy and colleagues (2014) found that ACEs and adult attachment insecurity also form a dose-response relationship, such that the greater the number of ACEs, the greater the likelihood of having a disorganized attachment style. Though this study did not examine psychopathology related to ACEs and attachment, another study examining attachment found that as many as 57% of externalizing adults were classified as disorganized (Bakermans-Kranenburg & van IJzerndoorn, 2009). It is possible that adult attachment, via the internal working model, may be impacted by ACEs and may contribute to a maladaptive pattern of behavior that manifests as psychopathic traits.  Studies of adult

populations examining these variables are limited; however, adolescent populations have been examined.

Studies of adolescents with psychopathic traits have suggested a link between certain ACEs and attachment quality. Christian et al. (2017) examined early adverse experiences (e.g., incarcerated parent, marital separation, and parental conflict), parent attachment quality, and psychopathic traits in a sample of adolescent juvenile offenders. These authors found that high numbers of early adverse experiences interacted with high scores on the interpersonal psychopathy dimension, which in turn related to poorer parent-child attachment quality. A similar study found that higher levels of parental conflict and physical abuse were related to poorer parent attachment quality within a sample of community and referred adolescents characterized as having psychopathic traits (Ručević & Ajduković, 2016).

These studies illustrate the relationship between early adverse experiences and attachment quality among adolescents with psychopathic traits; however, neither study investigated the potential of the attachment relationship to mediate the link between early adverse experiences and psychopathic traits. Additionally, neither study specifically examined the accumulation of ACEs using the ACEs Questionnaire. Furthermore, both studies use a measure of attachment quality which does not tease out the differences between types of insecure attachment. Therefore, the current study examines both attachment anxiety and avoidance as potential mediators between cumulative ACE scores and adult psychopathic traits.

Whereas attachment insecurity may underlie difficulties with forming meaningful relationships with others, emotion regulation is an understudied contributor to the lack of empathy that often characterizes psychopathy and social relationship difficulties. Kim and Kochanska (2017) found that attachment security in infancy was related to the development of empathy in early childhood. Additionally, studies of children and adolescents indicate that emotion regulation mediates the link between attachment security and empathy (Murphy et al., 2015; Panfile & Laible, 2012). Therefore, the examination of emotion regulation within the context of psychopathic traits is warranted.

## Emotion Regulation

Emotion regulation is the ability to modulate the experience and expression of emotions (Cole et al., 1994). Emotion regulation stems from the socialization context within which an individual develops during infancy and childhood, especially the parent-child relationship. Therefore, an individual's internal working model serves to inform a person about whether caregivers, and later peers and romantic partners, will be available as a resource for coping with overwhelming emotions (Thompson, 1994).

Optimal emotion regulation requires an individual to recruit cognitive processes, such as appraisal, attention shifting, and memory recall, to flexibly express and experience emotions according to the rules of a specific environment, or culture (Cole, Hall, & Hajal, 2017). On the other hand, emotion dysregulation is evident when an individual exhibits extreme emotional lability, is not able to decrease emotional experiences effectively, or demonstrates emotions that appear to be inappropriate for the

situation. Emotion dysregulation is often associated with various externalizing disorders in childhood and adulthood (Cole et al., 2017; Kim & Cicchetti, 2010; Long et al., 2014).

**Emotion regulation and CU traits in childhood**. Pasalich, Waschbusch, Dadds, and Hawes (2014) found that children high in CU traits tend to have mothers who are less responsive to their child's expression and experience of emotion, compared with children low on CU traits. This suggests that, for a child with CU traits, the primary socialization environment may not provide the tools necessary for the development of optimal emotion regulation. FMRI research illustrating functional connectivity between the amygdala, prefrontal cortex, and caudate nucleus indicated adolescents with CU traits show atypical, excessive connectivity between these brain regions, as opposed to typically developing adolescents who show fewer connections (Aghajani et al., 2016). When researchers utilized a cognitive test of attention that included emotional stimuli as a distractor, brain areas involved in reward sensitivity, learning, and the regulation of emotion, showed excessive activation of connections in response to this task among high CU children, as compared to those low in CU traits (Hwang et al., 2016). Taken together, these studies suggest that this increased connectivity may make these regions function less productively and may explain why children with CU traits are not able to employ cognitive strategies to regulate emotions as effectively as children without them.

Kyranides and colleagues (2017) found that adolescents high in CU traits tended to use emotional suppression as a regulation strategy (widely considered to be a less effective strategy if used consistently over the long term), rather than reappraising emotional situations to experience them as less overwhelming. These same emotion

regulation strategies were found when these adolescents were tested as adults four years later. While emotion regulation strategies do provide insight into how emotions are handled, they can change depending on the context. Thus, studies of psychopathic traits in adulthood that include a more broad measurement of emotion regulation will be considered next.

**Emotion regulation and psychopathic traits in adulthood**. Few studies have considered whether emotion regulation is related to psychopathic traits in adulthood. Long and others (2014) have suggested that emotion dysregulation may contribute to the expression of impulsive aggression by those high in psychopathic traits. Within their clinical sample, traits measuring the meanness/disinhibition dimensions were positively associated with emotion dysregulation (as measured by the Difficulties in Emotion Regulation Scale; Gratz & Roemer, 2004). These results were replicated using a college student sample (Donahue et al., 2014). Interestingly, boldness was negatively associated with emotion dysregulation (Long et al., 2014). Previous research has suggested that this relationship may reflect the stress insensitivity aspect of boldness and may point to higher boldness among individuals with psychopathic traits being a protective factor (Lilienfeld, Watts, & Smith, 2015). Other research suggests that participants scoring high on boldness may be deceptive in reporting their emotion regulation skills, given that manipulativeness is one aspect of boldness (Ellis et al., 2016).

In considering the available research, it would appear that emotion regulation is related to psychopathic traits from childhood to adulthood; however, most research has focused on emotion regulation strategies, such as suppression and reappraisal of

emotions. Although broader measures that go beyond strategies of regulation and encompass other elements of emotion dysregulation (e.g., ability to continue engaging in activities despite overwhelming emotions and to pay attention to and understand feelings) have been considered, they have been examined less often within the context of the triarchic conceptualization of psychopathy. Therefore, this study explores the relationship between triarchic psychopathy dimensions and emotion dysregulation, as measured by the Difficulties in Emotion Regulation Scale. As mentioned previously, a theoretical underpinning of the development of CU traits concerns the possibility that harsh environments contribute to a numbing of emotion and hypoarousal of stress response systems (Loney et al., 2006; Sharf et al., 2014). Given this relationship, difficulties in emotion regulation will be considered within the context of ACEs.

**Emotion regulation, psychopathy, and ACEs**. Research involving children and adolescents high in externalizing behavior suggests that a link between ACEs and emotion dysregulation is likely. For example, among children with incarcerated mothers, CU traits were related to difficulties in controlling negative emotions such as frustration and anger (Lotze et al., 2010). Bennett and Kerig (2014) found that adolescents high in CU traits, as well as experiencing multiple traumatic events, tended to be more uncertain about the emotions they were experiencing, in addition to having difficulty using effective regulation strategies, compared to adolescents who did not experience trauma. As emotion dysregulation is closely tied to attachment insecurity, it is possible that emotion dysregulation may mediate the link between ACEs and externalizing behaviors, such as callousness and aggression.

There is a lack of research investigating emotion dysregulation as a mediator between ACEs and psychopathic traits. The existing research focuses on children with aggressive and antisocial behavior. Manning and others (2014) found that experiencing IPV in the early toddler years was related to increased difficulty with regulation of anger, which in turn was related to increased externalizing and decreased prosocial behavior two years later. Similarly, Siffert and Schwarz (2011) found that children's emotion regulation strategies mediated the link between the child witnessing parental conflict and demonstrating aggressive and antisocial behaviors. Finally, the experience of multiple maltreatment types in childhood (i.e., physical abuse, sexual abuse, and physical neglect) contributed to emotion dysregulation, which was related to greater teacher-reported aggressive and antisocial behavior in early adolescence (Kim & Cicchetti, 2010). Taken together, these studies suggest that emotion dysregulation may mediate the relationship between ACEs and psychopathy-related developmental precursors; however, less is known about whether this relationship exists in adults. Therefore, the current study examines whether emotion dysregulation mediates the relationship between ACEs and adult psychopathic traits.

## The Current Study

The current study examined whether there was a dose-response relationship between ACEs and psychopathic traits. Additionally, given the impact of ACEs on developmental outcomes, this study examined attachment insecurity and emotion dysregulation as potential mediators between ACEs and psychopathic traits. As discussed in the above review, researchers have theorized that a developmental psychopathology approach may better explain potential developmental pathways to the multiple facets of psychopathy, as compared to current biological, social and personality theory approaches. Therefore, by examining disruptions in stage-salient tasks of development, the current study may provide potentially useful targets for prevention and early intervention of callous-unemotional traits in children, which may thereby prevent development of psychopathy in adulthood.

Based on a review of the literature, the following hypotheses and research question were generated:

**Hypothesis 1.** Dimensions of psychopathic traits (meanness, boldness, and disinhibition) were expected to be differentially related to increased numbers of Adverse Childhood Experiences (ACEs). Specifically, it was hypothesized that meanness and disinhibition would be positively related to ACEs, while boldness would be negatively related.

**Hypothesis 2.** Dimensions of psychopathic traits (meanness, boldness, and disinhibition) were expected to be differentially associated with attachment anxiety and

avoidance. Specifically, it was hypothesized that meanness and disinhibition would be positively associated with both attachment anxiety and avoidance. Conversely, boldness would be negatively related to both attachment anxiety and avoidance.

**Hypothesis 3.** Dimensions of psychopathic traits (meanness, boldness, and disinhibition) were expected to be differentially associated with difficulties in emotion regulation (emotion dysregulation). Specifically, meanness and disinhibition would have a positive association with emotion dysregulation, while boldness would have a negative association.

**Hypothesis 4.** Attachment anxiety and avoidance, as well as emotion dysregulation, were expected to mediate the relationship between cumulative ACE scores and psychopathic trait dimensions (meanness, boldness, and disinhibition).

## Method

### Participants

A convenience sample of 359 participants was recruited from the Humboldt State University student population using the Psychology Department participant pool ($n$ = 185) and through online snowball sampling using social media ($n$ = 174). Participation was limited to United States residents 18 years and older. Participants were entered into a raffle to receive one of ten $20 Amazon gift cards. Additionally, students enrolled in psychology classes had the opportunity to earn extra credit for participation. The majority of participants were female (80.8%), between the ages of 18 and 25 (61.8%), were

Table 1
*Participant Characteristics*

| Demographic Variable | (*n* = 359) | |
|---|---|---|
| | *n* | % |
| Gender | | |
| Male | 63 | 17.5 |
| Female | 290 | 80.8 |
| Other | 6 | 1.7 |
| Age | | |
| 18-25 | 222 | 61.8 |
| 26-39 | 97 | 27.0 |
| 40-64 | 31 | 8.6 |
| 65-84 | 7 | 1.9 |
| Sexual Orientation | | |
| Predominately Heterosexual | 276 | 76.9 |
| Predominately Homosexual | 12 | 3.3 |
| Bisexual | 53 | 14.8 |
| Other | 12 | 3.3 |
| Ethnicity | | |
| White/European-American | 197 | 54.9 |
| Black/African-American | 7 | 1.9 |
| Hispanic/Latino/a | 93 | 25.9 |
| Asian-American | 4 | 1.1 |
| Native American | 6 | 1.7 |
| Mixed Ethnicity | 41 | 11.4 |
| Other | 11 | 3.1 |
| Highest Level of Education Completed | | |
| Completed Grade School | 4 | 1.1 |
| Completed Middle School | 6 | 1.7 |
| High School Diploma/GED | 6 | 1.7 |
| Completed Some College | 204 | 56.8 |
| Bachelor's Degree | 78 | 21.7 |
| Master's or Doctoral Degree | 55 | 15.3 |
| Other | 5 | 1.4 |
| Relationship Status | | |
| Married | 57 | 15.9 |
| Single | 188 | 52.4 |
| Cohabitation with Partner | 75 | 20.9 |

| Demographic Variable | (*n* = 359) | |
|---|---|---|
| Separated | 1 | 0.3 |
| Divorced | 7 | 1.9 |
| Widowed | 4 | 1.1 |
| Re-Married | 4 | 1.1 |
| Other | 22 | 6.1 |
| Employment Status | | |
| Not Employed Outside the Home | 116 | 32.3 |
| Part-time (1-34 hours) | 136 | 37.9 |
| Full-time (35 hours or more) | 92 | 25.6 |
| Other | 13 | 3.6 |

White/European-American (54.9%), and completed some college (56.8%). See Table 1 for demographic information for all participants.

**Power analysis**. Three separate a priori power analyses were conducted with each psychopathy dimension (TriPM meanness, disinhibition, and boldness) and the predictor variables. Estimated correlations were drawn from studies described in the literature review to illustrate the expected relationship between the three criterion variables and attachment (Craig et al., 2013), emotion dysregulation (Donahue et al., 2014; Long et al., 2014), and child maltreatment/IPV (Dargis & Koenigs, 2017; Dargis et al., 2016). Additional studies provided correlations between ACEs and attachment (Barnett, 2017), ACEs and emotion dysregulation (Poole, Kim, Dobson, & Hodgins, 2017), and attachment and emotion dysregulation (Nielsen et al., 2017). Using the method described in Aberson (2010), a sample size between 323 and 364 produced power of at least .80 for detecting significance (alpha = .05) on each individual coefficient.

**Procedure**

Participant responses and informed consent were collected anonymously using either Survey Monkey or SONA systems. Participants read the informed consent page and clicked *yes* or *no* to indicate whether they agreed to proceed with the study. Participants were allowed to cease participation, or refrain from answering specific questions, as they desired. In recognizing that some participants may feel uncomfortable, or experience strong emotions related to some questions, contact information for the Substance Abuse and Mental Health Services Administration (SAMHSA) was provided, before and after the administration of the online survey, to assist the participant in locating a counselor or mental health service provider in their area. Additionally, participants from Humboldt State University were provided with an online reminder that free counseling is available for students through the HSU counseling and psychological services and were provided with the appropriate contact information. The current study was approved by the HSU Institutional Review Board for the Protection of Human Subjects (IRB # 17-121).

A demographic questionnaire recorded participant age, gender identity, sexual orientation, relationship status, ethnicity, household income, employment status, and education level. See appendix A for this measure. Following the demographic questionnaire, participants were provided with four self-report measures, which took approximately 30 minutes to complete. These measures were counterbalanced to reduce test fatigue and order effects.

## Measures

**Triarchic Psychopathy Measure (TriPM).** The TriPM is a 58-item self-report measure that assesses three interrelated, but distinct dimensions of psychopathy (disinhibition, boldness, and meanness; Patrick, 2010). Disinhibition is characterized by difficulties in self-regulation, including impulse control, emotion regulation, and delay of gratification. Boldness relates to characteristics of fearlessness, social dominance, and insensitivity to stress. Meanness encompasses callous-unemotional traits, including exploitativeness, lack of empathy, and lack of close relationships. Sample items include "I often get bored quickly and lose interest" (disinhibition), "I have a knack for influencing people" (boldness), and "I don't mind if someone I dislike gets hurt" (meanness). Items are rated on a Likert scale, ranging from 1 to 4 ("True," "Somewhat True," "Somewhat False," and "False"). Higher scores on each subscale reflect higher levels of each psychopathy dimension. See Appendix B for this measure.

The TriPM shows good convergent validity with other psychopathy measures from clinical (Psychopathy Checklist-Revised; Venables, Hall & Patrick, 2013) and nonclinical samples (Psychopathic Personality Inventory-Short Form; Stanley, Wygant & Sellbom, 2013). This measure showed high internal consistency, as measured by Cronbach's alpha, with the total scale alpha of .87 in one community sample (van Dongen, Drislane, Nijman, Soe-Agnie & Marle, 2016). Internal consistency for the three subscales fell between .80 and .87 in a community sample and in a sample of college students (Blagov, Patrick, Oost, Goodman & Pugh, 2016). Test-retest reliability was also

reported, with the subscales reporting correlations between .64 and .77 over a three month span in a college student sample. In the current study, alpha was reported to be .87, .85, and .82 for meanness, disinhibition, and boldness, respectively.

**Adverse Childhood Experiences (ACEs) questionnaire.** A modified version of the ACE Study Questionnaire (Felitti et al., 1998) was used to measure ACEs. This 14-item measure asks participants to retrospectively report on child maltreatment and other household dysfunction in the first 18 years of life via dichotomous yes or no questions. More yes responses indicate a higher ACE score. Sample questions include "Did a parent or other adult in the household often push, grab, slap, or throw something at you?" and "Was a household member depressed or mentally ill or did a household member attempt suicide?"

Additional items were added to assess the experience of being a foster child, the death of a parent, prolonged separation from parent, and witnessing female-on-male IPV. Furthermore, wording of some questions was updated to include additional, less traditional caregiver types ("Was your mother/stepmother/*foster-mother or father's girlfriend/boyfriend* often pushed, grabbed, slapped, or had something thrown at her?"), to address the growing abuse of prescription drugs ("Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs *or who had a problem with prescription drugs*?"), and expanded parental criminal justice involvement ("Did a household member *commit a serious crime or* go to prison?"). See Appendix C for this measure.

The unmodified (10-item) version of the ACE questionnaire showed good test-retest reliability in a large adult sample (Dube et al., 2003). Howe et al. (2015) reported a Cronbach's alpha of .76 for this modified version, utilizing a college and community sample. The current study had a Cronbach's alpha of .80.

**Experiences in Close Relationships Scale – Revised (ECR-R).** This 36-item questionnaire measures two separate dimensions of insecure attachment on a 7-point Likert scale, from 1 ("Strongly Disagree") to 7 ("Strongly Agree"; Fraley, Waller & Brennan, 2000). Attachment anxiety relates to preoccupation with relationships and rejection sensitivity with respect to romantic adult attachment figures. It is characterized by such items as "I worry that romantic partners won't care about me as much as I care about them" (Brennan, Clark & Shaver, 1998). Attachment avoidance relates to a tendency to avoid, or detach from, an attachment figure while in distress and is captured by items such as "I get uncomfortable when a romantic partner wants to be very close." See Appendix D for this measure.

Sibley, Fischer & Liu (2005) reported acceptable convergent (e.g., positively related to a relationship questionnaire) and discriminant (not related to relationships with friends and family) validity in a sample of undergraduate students. Further tests of construct validity revealed an expected positive relationship with loneliness (UCLA Loneliness Scale) and a negative relationship with social support measures (Social Provisions Scale; Fairchild & Finney, 2006). Sibley et al. (2005) reported an internal consistency of .93 for anxiety and .94 for avoidance, with the current study reporting the

same. Additionally, test-retest correlations from a previous study were reported to be between .90 and .92 for a three week period within a college sample (Sibley et al. 2005).

**Difficulties in Emotion Regulation Scale (DERS).** The DERS is a 36-item self-report questionnaire designed to capture six aspects of emotion dysregulation (Gratz & Roemer, 2004). These aspects include inattention to feelings (awareness), the tendency to dismiss the importance of one's feelings about emotions, or to be uncertain about what emotions one is experiencing (nonacceptance and clarity), having trouble concentrating on tasks, or remaining in control when experiencing overwhelming emotions (goals and impulse), and a perception that regulatory strategies are not effective (strategies). Sample questions include "I experience my emotions as overwhelming and out of control," "When I'm upset, I have difficulty getting work done," and "When I'm upset, it takes me a long time to feel better." Items are rated on a Likert scale, ranging from 1 to 5 ("Almost never," "Sometimes," "About half the time," "Most of the time," and "Almost always"). Higher scores reflect greater difficulties with emotion regulation (i.e., emotion dysregulation). See Appendix E for this measure.

The DERS shows good convergent validity, with measures of negative mood and emotional expressivity, and predictive validity, with behaviors indicative of emotion dysregulation within a college sample (e.g., self-harm and IPV; Gratz & Roemer, 2004). Internal consistency for this scale was reported to be .94 in two nonclinical samples (Donahue et al., 2014; Ritschel, Tone, Schoemann, & Lim, 2015). Cronbach's alpha for the current study was .95. Furthermore, test-rest reliability has shown intercorrelations of .88 over a four to eight week period in a community sample (Gratz & Roemer, 2004)

# Results

## Assumptions

Pre-analysis of the data found that attachment avoidance, emotion regulation, ACEs, and the meanness and disinhibition psychopathy dimensions were positively skewed. In place of transforming potentially non-normal data, mediation analyses were conducted using bootstrapped standard errors with 5000 samples. Further examination of residual plots found no problems with normality or linearity and Breusch-Pagan tests for homoscedasticity violations were non-significant. Tolerance tests revealed no issues with multicollinearity and Mahalanobis values were not significant, indicating no problems with multivariate outliers.

In an effort to create comparison groups of similar size, ethnicity was collapsed into two categories that grouped participants according to whether or not they were people of color ($n$ = 151), which included participants self-reporting as Hispanic/Latino/a, Black/African-American, Native-American, Asian-American, or mixed ethnicity. Additionally, in analyses examining gender, six participants who marked "other" were omitted. Homogeneity of variance assumptions outlined by Tabachnick and Fidell (2001) were met for ethnicity analyses; however, sample sizes for males ($n$ = 63) and females ($n$ = 290) violated this assumption for gender analyses. To adjust for this, a Welch two-sample t-test was utilized for gender analyses.

**Sample Differences**

An examination of differences between the online and university samples using a series of *t* and chi-square tests found no differences in gender; however, differences were found with respect to ethnicity, ($\chi^2[1] = 59.20$, $p < .001$, $\phi_C = .41$), level of education completed ($\chi^2[6] = 169.57$, $p < .001$, $\phi_C = .69$), employment status ( $\chi^2[3] = 121.21$, $p < .001$, $\phi_C = .58$), annual income ($t[276] = 8.04$, $p < .001$, $d = 0.97$), and age ($t[355] = 12.11$, $p < .001$, $d = 1.28$). In general, online participants were less likely to be a person of color, more likely to be older, have completed college, be working full-time, and have a higher annual income.

Furthermore, t-tests indicated that online and university samples did not differ significantly on ACE scores ($t[335] = 0.02$, $p = .986$, $d = 0.01$), attachment avoidance ($t[334] = -0.39$, $p = .699$, $d = 0.04$), attachment anxiety ($t[339] = -1.40$, $p = .163$, $d = 0.15$), or boldness ($t[322] = 0.06$, $p = .955$, $d = 0.01$). However, university students were higher than online participants on emotion dysregulation ($t[336] = -3.25$, $p = .001$, $d = 0.35$), meanness ($t[338] = -2.28$, $p = .023$, $d = 0.25$), and disinhibition ($t[338] = -2.50$, $p = .013$, $d = 0.27$).

Previous research has posited a negative linear relationship between age and emotion dysregulation (Donahue et al., 2014; Giromini, Ales, Campora, Zennaro, & Pignolo, 2017; Orgeta, 2009). Additionally, though psychopathic traits show stability over time, some of these behavioral traits (e.g., risk-taking behaviors and self-centeredness) are considered to be developmentally age-appropriate through adolescence

and into emerging adulthood, suggesting that scores on these measures may decrease with age (Arnett, 2005; Cauffman, Skeem, Dmitrieva, & Cavanaugh, 2016). An ANCOVA revealed that emotion dysregulation, meanness and disinhibition were no longer significantly related to sample type when age was entered as a covariate. Therefore, to increased statistical power and improve generalizability, the online and university samples were combined to examine hypotheses, with age of participants used as a covariate in the final mediation analyses.

**Descriptive Results**

Seventy-five percent of participants reported experiencing at least one ACE, with over one-third of the sample reporting four or more ACEs. Additionally, of those reporting at least one ACE, 83% reported experiencing at least one more ACE. Parental mental illness was the most commonly reported ACE (48.2%), followed by parental substance abuse (40.7%), and emotional neglect (38.4%). Though ACE scores did not differ significantly by gender, age, or annual household income, significant differences were found for ethnicity, $t(326) = 3.34$, $p < .001$, $d = 0.37$, with European Americans reporting fewer ACEs than people of color. See Table 2 for frequency of individual ACEs by ethnicity.

In addition to differences in ACE scores, ethnic and gender differences were found with regard to psychopathy, attachment, and emotion regulation. As shown in Table 3, people of color reported higher levels of attachment avoidance, emotion dysregulation, and higher scores on both the meanness and disinhibition dimensions of

Table 2
*Chi-Square Analyses Examining Ethnic Differences in ACE Scores*

| Type of ACE | Total ($n$ = 359) | | PoC ($n$ = 151) | | White ($n$ = 197) | | $\chi^2$ |
|---|---|---|---|---|---|---|---|
| | *n* | *(%)* | *n* | *(%)* | *n* | *(%)* | |
| Emotional Abuse | 138 | (38.4) | 65 | (43.0) | 71 | (36.0) | 2.12 |
| Physical Abuse | 88 | (24.5) | 46 | (30.5) | 41 | (20.2) | 4.29* |
| Sexual Abuse | 93 | (25.9) | 46 | (30.5) | 45 | (23.3) | 2.44 |
| Emotional Neglect | 140 | (39.0) | 65 | (43.0) | 69 | (35.0) | 2.55 |
| Physical Neglect | 48 | (13.4) | 25 | (16.6) | 22 | (11.2) | 1.86 |
| Parents Divorced | 112 | (31.2) | 57 | (37.7) | 53 | (26.9) | 5.12* |
| Death of a Parent† | 22 | (6.1) | 10 | (6.8) | 12 | (6.1) | 0 |
| Witnessing Intimate Partner Violence (Male Perpetrator-Female Victim) | 70 | (19.5) | 39 | (25.8) | 30 | (15.2) | 6.12* |
| Witnessing Intimate Partner Violence† (Female Perpetrator- Male Victim) | 30 | (8.4) | 23 | (15.2) | 7 | (3.6) | 13.80*** |
| Parental Substance Abuse | 146 | (40.7) | 62 | (41.1) | 80 | (40.6) | 0 |
| Parental Mental Illness/Suicide | 173 | (48.2) | 73 | (48.3) | 97 | (49.2) | 0 |
| Parental Criminal Involvement/ Incarceration | 68 | (18.9) | 43 | (28.5) | 22 | (11.2) | 16.43*** |
| Foster Child† | 15 | (4.2) | 9 | (6.0) | 5 | (2.5) | 1.87 |
| Long-term Separation from Parent† | 64 | (17.8) | 39 | (25.8) | 23 | (11.8) | 11.14*** |

*Note*: PoC = Persons of color. †Indicates additional item added to the original ACE Questionnaire (Felitti et al., 1998).
*$p < .05$, **$p < .01$, ***$p < .001$

psychopathy. With respect to gender differences, males scored significantly higher than females on the meanness and disinhibition dimensions of psychopathy (see Table 4). Additional preliminary analyses revealed that as the age of the participant increased,

Table 3
*Independent Samples t-tests and Effect Sizes For All Variables by Ethnicity*

| | PoC | | White | | | | |
|---|---|---|---|---|---|---|---|
| | *M* | *(SD)* | *M* | *(SD)* | *t* | *df* | *d* |
| ACEs | 4.1 | (3.2) | 3.0 | (2.9) | 3.34*** | 1, 326 | 0.37 |
| Attachment Avoidance | 3.1 | (1.3) | 2.8 | (1.2) | 2.38* | 1, 326 | 0.27 |
| Attachment Anxiety | 3.5 | (1.4) | 3.3 | (1.3) | 1.49 | 1, 330 | 0.17 |
| Emotion Dysregulation | 90.0 | (28.3) | 83.2 | (25.9) | 2.27* | 1, 327 | 0.25 |
| Meanness | 31.1 | (8.8) | 26.4 | (6.0) | 5.80*** | 1, 328 | 0.65 |
| Boldness | 49.6 | (9.4) | 48.3 | (9.0) | 1.23 | 1, 314 | 0.14 |
| Disinhibition | 39.4 | (10.1) | 36.2 | (9.9) | 2.83** | 1, 328 | 0.31 |

*Note:* PoC = persons of color.

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

Table 4
*Independent Samples t-tests and Effect Sizes For All Variables by Gender*

| Variable | Gender | | | | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | Male | | Female | | | | | | |
| | *M* | *(SD)* | *M* | *(SD)* | *t* | *df* | *d* | *M* | *(SD)* |
| ACEs | 3.2 | (3.3) | 3.5 | (3.0) | -0.68 | 1, 86 | 0.10 | 3.4 | (3.1) |
| Attachment Avoidance | 3.0 | (1.2) | 2.9 | (1.2) | 0.56 | 1, 87 | 0.08 | 3.4 | (1.3) |
| Attachment Anxiety | 3.4 | (1.3) | 3.4 | (1.4) | -0.29 | 1, 84 | 0.04 | 2.9 | (1.2) |
| Emotion Dysregulation | 81.8 | (25.5) | 87.0 | (27.4) | -1.40 | 1, 89 | 0.19 | 85.7 | (27.1) |
| Meanness | 33.2 | (8.9) | 27.3 | (6.9) | 4.80*** | 1, 75 | 0.80 | 28.3 | (7.6) |
| Boldness | 50.5 | (9.3) | 48.3 | (8.9) | 1.61 | 1, 82 | 0.24 | 48.9 | (9.1) |
| Disinhibition | 42.0 | (10.9) | 36.6 | (9.6) | 3.58*** | 1, 82 | 0.55 | 37.5 | (10.1) |

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

attachment anxiety ($r$[337] = -0.20, $p$ < .001), emotion dysregulation ($r$[334] = -0.34, $p$ < .001), and the meanness ($r$[336] = -0.16, $p$ = .003) and disinhibition ($r$[336] = -0.19, $p$ < .001) dimensions of psychopathy decreased; however, the opposite relationship was found between boldness and age, $r$[320] = 0.12 , $p$ = .040. Finally, as income increased, attachment anxiety ($r$[263] = -0.16, $p$ = .009), emotion dysregulation ($r$[262] = -0.21, $p$ < .001), meanness ($r$[263] = -0.17, $p$ = .005), and disinhibition ($r$[265] = -0.15, $p$ = .012) decreased. Due to these findings, ethnicity, gender, and income were included as covariates, in addition to age, in the final mediation models.

**Correlational Analyses**

Zero-order correlations for all variables of interest are included in Table 5. Higher meanness and disinhibition scores were related to higher levels of attachment anxiety, attachment avoidance, and emotion dysregulation. Conversely, boldness scores were negatively correlated with both attachment dimensions and with emotion dysregulation. Additionally, ACE scores were found to be significantly and positively related to the meanness and disinhibition aspects of psychopathy, but not significantly related to boldness, providing partial support for the current study's hypotheses.

**Hierarchical Regression Analyses**

In order to assess whether the addition of the ACEs categories improve prediction of psychopathic traits beyond previously established adverse experiences (i.e., child maltreatment and witnessing IPV), a two-step, post-hoc hierarchical regression was

Table 5

*Zero-order Correlations Between ACEs, Attachment, Emotion Dysregulation, and Psychopathic Traits*

| Variable | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| (1) ACE Score | -- | | | | | | |
| (2) Attachment Anxiety | 0.27*** | -- | | | | | |
| (3) Attachment Avoidance | 0.24*** | 0.48*** | -- | | | | |
| (4) Emotion Dysregulation | 0.22*** | 0.50*** | 0.33*** | -- | | | |
| (5) Meanness | 0.17** | 0.24*** | 0.28*** | 0.34*** | -- | | |
| (6) Boldness | -0.05 | -0.36*** | -0.15* | -0.43*** | 0.07 | -- | |
| (7) Disinhibition | 0.35*** | 0.41*** | 0.24*** | 0.52*** | 0.54*** | -0.15* | -- |

*Note:* $n = 273$. *$p < .05$, **$p < .01$, ***$p < .001$

conducted, with child maltreatment and IPV entered in step one and the remaining household dysfunction categories entered in step two (See Table 6 for standardized regression coefficients and $R^2$). Due to possible violations of homoscedasticity, White's test was utilized to test significance for this analysis. Childhood maltreatment and IPV predicted meanness ($F$[6, 316] = 4.37, $p$ < .001) and disinhibition ($F$[6, 315] = 5.17, $p$ < .001). Experience of physical abuse and witnessing IPV uniquely predicted meanness, while there were no unique predictors of disinhibition. Interestingly, though child maltreatment and IPV's prediction of boldness did not reach statistical significance ($F$[6, 300] = 1.87, $p$ = .086), the experience of emotional neglect was negatively and significantly related to boldness.

The addition of the remaining household dysfunction categories improved prediction for meanness ($F$[13, 309] = 3.22, $p$ < .001) and disinhibition ($F$[13, 308] = 4.71, $p$ < .001). With this addition, the individual ACEs of physical abuse and witnessing IPV were no longer significant; however, having an incarcerated parent was significantly related to higher meanness scores, while experiencing physical neglect was related to lower meanness scores. The additional household dysfunction categories did not improve prediction for boldness ($F$[13, 293] = 1.12, $p$ = .344); however, the experience of emotional neglect remained significantly related to lower boldness scores. These patterns suggest that measuring an accumulation of ACEs, as opposed to singular risk factors, improves prediction of the impulsive and callous aspects of psychopathic traits. Thus, total ACE scores were used in mediation analyses.

Table 6
*Standardized Regression Coefficients (b*) From Hierarchical Regression Analysis Predicting Psychopathic Traits from ACEs Categories*

| Predictor | Meanness[a] | | Boldness[b] | | Disinhibition[c] | |
|---|---|---|---|---|---|---|
| | Step 1 | Step 2 | Step 1 | Step 2 | Step 1 | Step 2 |
| Child Maltreatment and IPV | | | | | | |
| Emotional Abuse | -.08 | -.01 | -.05 | -.04 | .09 | .08 |
| Physical Abuse | .14* | .12 | .11 | .12 | .06 | .08 |
| Sexual Abuse | .06 | .04 | -.03 | -.03 | .10 | .08 |
| Emotional Neglect | .05 | .05 | -.20** | -.20** | .08 | .04 |
| Physical Neglect | -.10 | -.18* | .04 | .01 | .07 | -.07 |
| Witnessing IPV† | .20** | .14 | .02 | -.01 | .04 | -.02 |
| Other Household Dysfunction | | | | | | |
| Parents Divorced | | .05 | | -.03 | | .04 |
| Death of a Parent | | -.04 | | -.04 | | .01 |
| Parental Substance Abuse | | .03 | | .04 | | .12 |
| Parental Mental Illness/Suicide | | -.14 | | -.02 | | .02 |
| Parental Criminal Involvement/ Incarceration | | .17* | | .02 | | .20** |
| Foster Child† | | -.01 | | -.03 | | .14* |
| Long-term Separation from Parent | | .08 | | .11 | | -.04 |
| $R^2$ model | .08*** | .12*** | .04 | .05 | .09*** | .17*** |
| $R^2$change | | .04* | | .01 | | .08*** |
| *F* change | | 2.14* | | 0.49 | | 4.02*** |

*Note:* [a]Model 1 df(6, 316); Model 2 df(13, 309). [b]Model 1 df(6, 300); Model 2 df(13, 293). [c]Model 1 df(6, 315); Model 2 df(13, 308). †Composite of both IPV questions.
*$p < .05$, **$p < .01$, ***$p < .001$.

**Mediation Analyses**

The lavaan package for RStudio was utilized to test the indirect effects of attachment insecurity and emotion dysregulation simultaneously on the relationship between ACEs and psychopathic traits, in order examine both the unique and shared variance accounted for by each variable. Maximum likelihood estimation was used to handle missing data. A test of homogeneity of covariance indicated that gender, ethnicity, age, and annual household income variables were related to, but did not significantly interact with, predictor variables and were therefore included as covariates in each analyses. Patrick et al. (2009) suggested that each psychopathic trait included in the triarchic theory represents an overlapping, but distinct dimension of psychopathy. Given this, separate mediation models were explored, as opposed creating a combined latent variable to represent psychopathic traits as a whole. As boldness was not related to ACEs, only the models with meanness and disinhibition were examined (See Figure 1 for the significant pathways, using standardized beta coefficients, for both models).

**Meanness.** As shown in Figure 1, higher ACE scores were related to greater attachment avoidance, attachment anxiety, and emotion dysregulation. Additionally, participants with higher levels of attachment avoidance and emotion dysregulation had higher levels of meanness; however, attachment anxiety was not significantly related to meanness in this model. ACE scores appear to indirectly affect meanness through attachment avoidance (95% CI [0.02, 0.23]) and emotion dysregulation (95% CI [0.05,

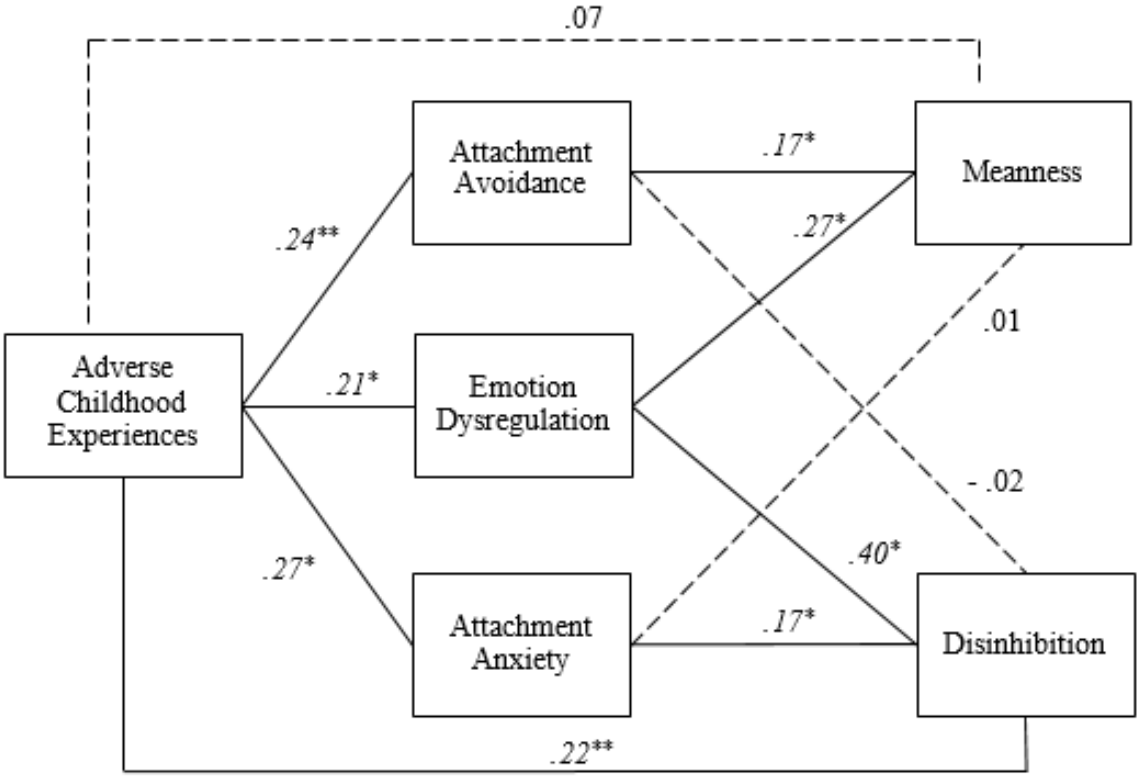


*Figure 1.* Mediation of the relationship between ACEs and psychopathic trait dimensions (meanness and disinhibition) through emotion dysregulation, attachment anxiety, and attachment avoidance (controlling for participant gender, minority status, age, and income). *Note:* Non-significant pathways are noted by dashed lines. Significant pathways are noted by solid lines. $^{**}p < .01$

0.27]). In the presence of the three mediator variables, ACE scores were no longer significant predictors of meanness ($b^* = .07$, $p = .176$), suggesting that attachment and emotion dysregulation fully mediate the relationship between ACEs and meanness. This relationship held true whether or not covariates were included. These data suggest that adverse childhood experiences are connected to difficulties in experiencing and expressing emotions, and maintaining meaningful adult relationships, which in turn relate to adult callousness and manipulativeness.

**Disinhibition.** As with meanness, higher ACE scores were related to greater attachment avoidance, attachment anxiety, emotion dysregulation, and disinhibition. Emotion dysregulation and attachment anxiety, but not avoidance, were related to higher scores on disinhibition. In this model, ACE scores indirectly affected disinhibition through attachment anxiety (95% CI [0.04, 0.27]) and emotion dysregulation (95% CI [0.13, 0.45]). ACEs remained a significant predictor of disinhibition, even when accounting for the influence of the three mediators ($b = 0.22$, $p < .001$), providing support for partial mediation. This relationship held true with and without the covariates entered into the model. ACE scores are related to the self-regulation difficulties characteristic of the disinhibited behaviors of psychopathy, both directly and indirectly, through disruptions in attachment and emotion regulation.

# Discussion

The current study investigated the relationships between adverse childhood experiences, attachment insecurity, emotion dysregulation, and psychopathic traits in adulthood. To our knowledge, this is the first study to examine whether higher ACE scores are related to higher scores on the three dimensions of psychopathy. This study adds to the scant literature on the relationship between childhood trauma, markers of developmental task disruption, and psychopathy in adulthood. Results support the use of a developmental psychopathology framework in understanding psychopathic traits and suggest potential avenues for prevention and treatment in children exhibiting CU traits.

## ACEs and Psychopathy

**ACEs, psychopathy, and cumulative risk.** The current study supports past work showing that child maltreatment and IPV are predictors of psychopathic traits (Schraft et al., 2013; Young & Widom, 2014). Higher meanness scores were uniquely related to experiences of physical abuse and witnessing IPV. This finding supports previous work which found that different maltreatment types and being a witness to IPV often co-occur and are particularly related to CU traits in adult, non-incarcerated participants (Dargis and Koenig, 2017; Grasso et al., 2015).

Most importantly, however, the addition of the remaining household dysfunction variables on the ACE measure significantly improved the prediction of meanness and disinhibition scores, suggesting that an accumulation of ACEs is the most robust

predictor of psychopathy. This is supported by the finding that meanness and disinhibition scores increased as ACE scores increased. These results support previous research findings on the frequency of different traumatic experiences in childhood predicting psychopathy more broadly (Borja & Ostrosky, 2013), and CU traits (Sharf et al., 2014) and self-regulation difficulties (Flouri et al., 2010) in particular. In line with previous research (Anda et al, 2006; Cronholm et al., 2015; Dong et al., 2004), three-quarters of participants in the current, non-clinical sample, reported at least one ACE, with the majority of those reporting at least one additional ACE, highlighting the prevalence of co-occurring adverse experiences. Taken together, the current study lends support for a cumulative risk model, versus using single risk factors to predict psychopathology (Barnett, 2017; Flouri et al., 2010; MacKenzie, Kotch, & Lee, 2011).

Though physical abuse was no longer uniquely related to meanness after the addition of the other household dysfunction variables, both meanness and disinhibition were related to parental criminal involvement/incarceration. A recent meta-analysis investigating the relationship between parental criminal involvement and reports of child abuse/neglect suggested that parent stress related to having a partner in jail may facilitate an increase in child-directed aggression and neglect (Austin, 2016). This could suggest that child maltreatment experiences impact psychopathy dimensions indirectly through experiences of caregiver unavailability, whether from physical separation or emotional unavailability (Bowlby, 1973). Overall, these results suggest that adding the remaining ACEs, such as parental criminal involvement, to already established predictors, such as

child maltreatment and witnessing IPV, significantly add to the prediction of psychopathic traits and support a cumulative risk perspective.

**ACEs, psychopathy, and ethnicity.** In addition to experiencing more ACEs overall, more participants of color experienced instances of parental divorce, witnessing IPV (male and female perpetration), parental criminal involvement/incarceration, and long-term separation from a parent, as compared to white participants. These findings provide further support for research showing persons of color experiencing a greater number of ACEs (Cronholm et al., 2015). In addition to higher ACE scores, participants of color scored higher on the disinhibition and meanness psychopathy dimensions than white participants. While some studies have found differences in psychopathy scores among ethnic groups (Dargis & Koenigs, 2017; Mack et al., 2011), Fanti and others (2018) point out that studies often do not account for sociocultural variables such as poverty.

According to Bruner (2017), poverty may play a role in the disproportionate experiencing of ACEs by people of color. In neighborhoods where more than half the families live in poverty, over 80 percent contain children of color. In a longitudinal study, an accumulation of adverse experiences by the early teen years mediated the link between childhood poverty and an array of physiological indicators of stress that have an impact on physical and mental health (e.g., HPA Axis and cardiovascular system responses) in adulthood (Evans & Kim, 2012). Additionally, the greater the degree of childhood poverty, the higher the reported levels of externalizing symptoms, such as aggression, in emerging adulthood (Evans, 2016). Emerging adult women exposed to childhood poverty

registered more annoyance and avoidance at the sound of an infant crying, in addition to activity in brain regions suggesting preoccupation with one's own emotional pain (Kim, Ho, Evans, Liberzon, & Swain, 2015).

This research suggests that childhood poverty and ACEs are linked to poor physical and mental health outcomes, including aggression. Additionally, poverty may perpetuate intergenerational transmission of ACEs, via mothers who previously experienced poverty exhibiting maternal insensitivity, a well-known correlate of child maltreatment, toward their children. Finally, it is likely that families of color living in neighborhoods experiencing high rates of poverty, in combination with discrimination and community violence, may lack access to social, educational, and economic resources that might prevent ACEs and their associated outcomes (Bruner, 2017; Chronholm, et al., 2015).

## Direct and Indirect Effects of Developmental Task Disruption Markers

**Meanness and disinhibition**. As hypothesized, meanness and disinhibition were related to increased use of both anxious and avoidant internal working models regarding adult romantic partners, supporting previous work (Christian et al., 2016; Conradi et al., 2015). Also, in line with previous research (Christian et al., 2016), the relationship between meanness and anxious attachment did not hold when other factors were considered in the mediation model. Whereas ACEs indirectly related to meanness through attachment avoidance, attachment anxiety was found to indirectly relate to disinhibition. Individuals scoring higher on the meanness dimension are more likely to

avoid intimacy and be emotionally shallow in close relationships (Mikulincer & Shaver, 2007).

Conversely, individuals scoring higher on disinhibition are more likely to fear rejection from their significant other and may behave aggressively as a way of keeping an attachment figure in close proximity (Christian et al., 2016). Studies examining parent-child attachment in adolescence found a relationship between experiencing an array of adverse life events and poor parental attachment in those participants high in psychopathic traits (Christian et al., 2017; Ručević & Ajduković, 2016). As there is a wealth of research suggesting that adult romantic attachment is rooted in early experiences with caregivers (Craig et al., 2013; Mikulincer & Shaver, 2007; Simpson et al., 2007), findings from the current study provide some evidence that early experiences of chronic stress continue to predict both types of insecure attachment strategies in adulthood, which in turn relate to differing dimensions of psychopathic traits.

Given that the TriPM is a continuous measure of separate, but overlapping dimension of psychopathy, an individual scoring high on both meanness and disinhibition may exhibit both anxious and avoidant strategies. This may partially explain why Mack and colleagues (2011) found that psychopathy scores increased when both anxious and avoidant attachment were stronger. As previously discussed, adults classified as high in both anxious and avoidant attachment (also referred to as fearful or disorganized attachment) are more likely to have experienced trauma and to evidence psychopathology (Bakermans-Kranenburg & van IJzerndoorn, 2009; Murphy et al., 2014).

Results additionally supported the hypothesized relationship between emotion dysregulation and the meanness and disinhibition dimensions of psychopathy. In accordance with findings from Long et al. (2014) and Donahue et al. (2014), meanness and disinhibition were found to be positively correlated with emotion dysregulation. Furthermore, ACEs were indirectly linked to both meanness and disinhibition through the mediated pathway of emotion dysregulation. Thus, the current study supports previous research on the role of emotion regulation as a mediator between experiences of child maltreatment or witnessing IPV and child and adolescent antisocial behaviors and broadens these findings to an adult population (Kim & Cicchetti, 2010; Siffert & Schwarz, 2011).

Emotion regulation has been implicated as a mechanism by which early attachment experiences shape empathy and previous research suggests that emotion regulation strategies are relatively stable between adolescence and adulthood (Kim & Kochanska, 2017; Kyranides et al., 2017; Murphy et al., 2015; Panfile & Laible, 2012). Thus, adults with more ACEs are likely to have developed poor regulation strategies and may be easily overwhelmed by negative emotions. They may distort or suppress emotional experience and expression (avoidant attachment-related strategies), or may ruminate over and catastrophize emotion-eliciting events (anxious attachment-related strategies), which may in turn relate to increased displays of callousness, manipulativeness, impulsivity, and aggression (Hwang et al., 2016; Mikulincer & Shaver, 2007).

Additionally, the current study's examination of the indirect effects of attachment strategies, as well as a multidimensional assessment of dysregulated emotions, allowed for a more nuanced understanding of the possible mechanisms linking ACEs to psychopathic traits. This is especially true with regard to the meanness dimension, which encompasses callousness, lack of empathy, and manipulativeness, as this dimension's relationship to ACEs was fully mediated by attachment and emotion dysregulation. In contrast to meanness, ACEs continued to directly impact disinhibition, suggesting that there are additional mechanisms through which ACEs may exert their influence on impulsivity, reactivity, and difficulties with delayed gratification. These findings provide avenues for further exploration into how attachment and emotion regulation may be used as possible targets in prevention and treatment of the developmental precursors of psychopathy, such as callous-unemotional traits and other conduct disorder-related problems (CPPRG, 2010; Frick et al., 2014; Frick & White, 2008).

**Boldness**. Boldness was not linked to cumulative ACE scores, but was negatively related to the individual ACE of emotional neglect. This corroborates some evidence from previous studies regarding samples recruited from community and university settings (Durand & de Calheiros-Velozo, 2018). Boldness encompasses such traits as threat insensitivity, novelty-seeking, and manipulativeness, and previous studies have indicated that the boldness dimension may be especially prone to deception in self-reports. For example, self-reported emotional responding and regulating strategies may be contradictory to recorded physiological data (Ellis et al., 2016). Thus, it may be possible that those participants with higher boldness scores are less likely to report

experiences of ACEs, or they may feel that these experiences did not affect them (Durand & de Calheiros-Velozo, 2018).

Boldness may represent what Checkley (1941/1988) called the "Mask of Sanity," or the trait that allows a psychopath to appear well-adjusted. In an effort to empirically research Checkley's "well-adjusted psychopath," some research has compared individuals with high psychopathy scores who were either incarcerated (i.e., "unsuccessful psychopaths") or never incarcerated, but admitted to antisocial behaviors (i.e., "successful psychopaths"). Gao, Raine, and Schug (2011) found that unsuccessful psychopaths were more likely to experience childhood physical abuse prior to adolescence, when compared to individuals scoring low in psychopathy and without any recorded history of antisocial behavior. Successful and unsuccessful psychopaths did not differ in their level of reported physical abuse; however, successful psychopaths were more likely to have brainwave profiles indicating faster information processing and decision making abilities than their less successful counterparts. This could suggest that individuals displaying traits associated with psychopathy may appear to be more well-adjusted if they exhibit fewer traits from the disinhibition dimension, and more traits associated with the boldness dimension.

In this view, a higher propensity toward boldness may moderate the expression of psychopathic traits. Certain protective factors (i.e., those factors that lessen or mitigate risks), such as the aforementioned executive functioning skills, or parenting that fosters a secure attachment, have the potential to promote boldness, which may limit the expression of other more socially undesirable psychopathic traits, such as callousness and

poor self-regulation (Lilienfeld et al., 2015; Patrick et al., 2009). Previous research, as well as the current study, found that greater boldness was associated with lower attachment anxiety and avoidance, as well as fewer difficulties with emotion regulation (Christian et al., 2016; Craig et al., 2013; Donahue et al., 2014). Low anxiety and avoidance scores reflect a more secure attachment style, suggesting that people with high boldness may be more comfortable with intimacy, less likely to fear abandonment, and be more likely to employ effective emotion regulation strategies when upset (Christian et al., 2016; Donahue et al., 2014; Mikulincer & Shaver, 2007).

In summary, though the hypothesized relationship between boldness and cumulative ACE scores was not supported, the current study suggests that the boldness dimension of psychopathy is related to markers of successful developmental task completion (e.g., attachment security and emotion regulation). Therefore, it is possible that early interventions fostering a secure and sensitive caregiving environment may probabilistically decrease the likelihood of psychopathy and its associated antisocial outcomes. Past research considering early intervention avenues for promoting improvement of executive function skills (e.g., providing young children with proper nutrition, physical exercise, and mentally enriching environments) has raised the question of whether or not such efforts would simply make more impulsive individuals high in psychopathic traits less impulsive and better able to commit antisocial acts without detection (Gao et al., 2011). Other research has indicated that the early caregiving environment may facilitate or hinder successful mastery of problem-solving tasks in toddlerhood, thereby influencing later aggression and non-compliance (Davies et al.,

2013). As psychopathy is characterized by a lack genuine affiliative ties, an early intervention providing a nurturing caregiving environment may be important for promoting more typical development.

**Implications**

This study supports the use of a DP framework in understanding psychopathic traits and their developmental precursor, CU traits. In utilizing a DP framework, Cicchetti (2015) points to the necessity for basic research to inform applied science by suggesting targets for prevention and intervention efforts. The Substance Abuse and Mental Health Services Administration (SAMHSA) and the Centers for Disease Control and Prevention (CDC) currently recognize the usefulness of the ACEs questionnaire as a tool for identifying and preventing violence and other risky behavior (CDC, 2016; SAMHSA, 2018). However, less is known about the potential interventions that may impact the sequelae of ACEs, with some suggesting more research is needed to understand the processes that may be interrupted by ACEs and contribute to health-related problems and psychopathology (Finkelhor, 2017). Therefore, the current study provides evidence to suggest that the identification of ACEs and implementation of interventions to address disruptions in developmental tasks may assist in preventing outcomes that are associated with the development of psychopathic traits.

Though there is a paucity of research regarding evidenced-based, early intervention methods for CU traits, interventions such as parent-child interaction therapy (PCIT) are well-researched regarding the prevention of conduct disorder, a precursor to

antisocial personality disorder. Borrowing from social learning and attachment theories, PCIT was designed to help parents foster a warm and responsive relationship with their child, while also decreasing child problem behaviors (Chase & Eyberg, 2008; Lenze, Pautsch, & Luby, 2011; Ward, Theule, & Cheung, 2016). Numerous pre-post (Eyberg & Matarazzo, 1980; Phillips, Morgan, Cawthorne, & Barnett, 2008), randomized controlled trials (RCTs; Abrahamse et al., 2012; Ward et al., 2016), and follow-up studies have examined the efficacy of PCIT (McCabe, Yeh, Lau, & Argote, 2012; Hood & Eyberg, 2003; Schuhmann, Foote, Eyberg, & Boggs, 1998). These studies indicate a reduction in aggressive and defiant behaviors among two to seven-year-olds. These reductions were maintained for two to six years post-treatment and were found across laboratory and community settings. Additionally, parents receive immediate feedback from a therapist and show significant increases in positive parenting behaviors, as well as reporting more positive attitudes toward their child. Finally, PCIT has been researched within special populations that may have a history of ACEs, including domestic violence and child maltreatment (Herschell, Scudder, Schaffner, & Slagel, 2017; Timmer, Urquiza, Zebell, & McGrath, 2005; Timmer, Ware, Urquiza, & Zebell, 2010).

Unfortunately, few studies have examined the efficacy of PCIT for CU traits. A recent study does indicate that PCIT was effective in reducing levels of conduct disorder-related problems, such as aggression, and CU traits in four-year-olds, though these positive effects were less evident with higher levels of CU traits (Kimonis, Bagner, Linares, Blake, & Rodríguez, 2014). More recently, a modified versions of PCIT found that an added emotion regulation module (CARES) may be beneficial in increasing

empathy and emotion recognition in the case of a five-year-old boy with CU traits (Datyner, Kimonis, Hunt, & Armstrong, 2016).

Though this evidence-based treatment has a theoretical foundation in attachment theory, changes in the attachment relationship were not reported in any of the available published studies. In general, studies follow a medical model approach to treatment (Sroufe, 1997). That is, measures of treatment efficacy focus on reductions in child behaviors and symptoms and do not consider how treatment might be promoting further development. Based on the results of the current study, future investigations of the efficacy of PCIT for CU traits might benefit from the inclusion of measures designed to test the intervention's impact on attachment security and emotion regulation.

**Limitations and Future Directions**

Though the current study preliminarily tested the utility of applying a DP framework to understanding the development of psychopathic traits, there were several limitations. The current study sought to discover possible mechanisms by which childhood trauma may relate to psychopathic traits; however, future studies should implement a longitudinal design in order to further investigate possible causal relationships between these variables. Furthermore, this study was limited in that only environmental variables were examined. Given the existing literature on the bidirectional relationship between environmental and biological processes, future research should incorporate measurements on multiple levels of analysis, including relevant genes and hormones discussed in the literature review.

Moreover, this study relied on self-report measures, which may have a particular impact on reports of ACEs and psychopathic traits. Participants may be hesitant to report, or may not recall adverse events. Similarly, individuals scoring high on certain psychopathic traits may evidence more deceptive self-reporting. Therefore, future studies may want to incorporate official records for corroborating ACEs reports of child maltreatment and intimate partner violence.

Finally, approximately 80% of the sample was female, so results should be interpreted with caution, as psychopathy is known to be much more prevalent in males. This also prohibited analysis of gender differences. Future studies should investigate whether the relationships found in this sample generalize to a more representative sample.

## Conclusion

To our knowledge, this is the first study to address the relationship between ACEs and psychopathic traits, adding to the body of research linking ACEs to various negative physical and mental health-related outcomes. Results suggest that cumulative, versus specific ACEs, are better predictors of psychopathic traits in adulthood. Furthermore, this study highlights potential mechanisms by which adverse experiences in childhood may relate to the development of later psychopathic traits in adulthood. Overall, results suggest that attachment insecurity and emotion dysregulation mediate the link between childhood trauma and the callous and disinhibited aspects of psychopathy. Conversely, the boldness aspect of psychopathy may be more prevalent for participants who have a secure attachment relationship and may represent Cleckley's “Mask of Sanity,” or successful psychopathy. Further research is needed to elucidate how of experience-dependent changes in genes, brain structure and function, and physiological responses result in a pattern of survival behavior that is often labeled as psychopathic.

The current study can inform intervention efforts for children who have been screened for ACEs and may be at particular risk for developing CU traits and aggression. Though parent management training interventions, such as PCIT, are designed to address disruptions in the attachment relationship and scaffold emotion regulation, further evaluations of such programs are needed to determine whether they are truly successful in this endeavor.

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# Appendix A

Demographic Questionnaire

Please answer to the best of your ability. If you do not know the answer, provide your best guess. Give a **single answer** (not a range) for each question.

1. **Age: _____**
2. **Gender:** M ____ F____ Other _____
3. **Ethnicity:**
   - ____**1.** European-American
   - ____**2.** African-American
   - ____**3.** Asian-American
   - ____**4.** Latino(a)-Hispanic
   - ____**5.** Native-American
   - ____**6.** Mixed Ethnicity
   - ____**7.** Other (*please specify*): _____
4. **Predominant Sexual Orientation:**
   - ____**1.** Predominantly heterosexual
   - ____**2.** Predominantly homosexual
   - ____**3.** Bisexual
   - ____**4.** Other (*please specify*): _____
5. **Education Level:**
   - ____**1.** No Formal Education
   - ____**2.** Finished Grade School
   - ____**3.** Finished Middle School or Junior High
   - ____**4.** Finished High School

____**5.** Some College

____**6.** Finished College

____**7.** Finished Grad School

____**8.** Other (*please specify*): _____

6. **Relationship Status:**

____**1.** Married

____**2.** Single

____**3.** Cohabitation with Partner

____**4.** Separated

____**5.** Divorced

____**6.** Widowed

____**7.** Re-Married

____**8.** Other (*please specify*): _____

7. **Employment Status:**

____**1.** Not employed outside the home_____

____**2.** Part-time (1-34 hours) _____

____**3.** Full-time (35 hours or more) _____

____**4.** Other (*please specify*): _____

8. **When you were growing up as a child, what was your family's financial situation? (Choose the answer that most accurately describes the majority of your childhood).**

____**1.** My family often lacked adequate employment and funds for food, shelter and/or utilities.

____**2.** My family's basic needs were met most of the time, but there were times where we were without funds for food, shelter and/or utilities.

____**3.** My family mostly had funds for basic needs, but we rarely had money for extras or emergencies.

____**4.** My family had all major needs met and occasionally some money for extras and emergencies.

**____5.** My family always had all major needs met and we often had plenty of money for extras and emergencies.

9. **What is your personal annual income, in thousands (not counting the income of others in your household)? _____**

## Appendix B

### Triarchic Psychopathy Measure (TriPM)

Instructions:

This questionnaire contains statements that different people might use to describe themselves. Each statement is followed by four options:

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

For each statement, mark an "X" next to the option that describes you best. There are no right or wrong answers; just choose the option that best describes you.

1. I'm optimistic more often than not.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

2. How other people feel is important to me.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

3. I often act on immediate needs.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

4. I have no strong desire to parachute out of an airplane.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

5. I've often missed things I promised to attend.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

6. I would enjoy being in a high-speed chase.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

7. I am well-equipped to deal with stress.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

8. I don't mind if someone I dislike gets hurt.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

9. My impulsive decisions have caused problems with loved ones.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

10. I get scared easily.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

11. I sympathize with others' problems.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

12. I have missed work without bothering to call in.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

13. I'm a born leader.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

14. I enjoy a good physical fight.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

15. I jump into things without thinking.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

16. I have a hard time making things turn out the way I want.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

17. I return insults.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

18. I've gotten in trouble because I missed too much school.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

19. I have a knack for influencing people.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

20. It doesn't bother me to see someone else in pain.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

21. I have good control over myself.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

22. I function well in new situations, even when unprepared.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

23. I enjoy pushing people around sometimes.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

24. I have taken money from someone's purse or wallet without asking.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

25. I don't think of myself as talented.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

26. I taunt people just to stir things up.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

27. People often abuse my trust.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

28. I'm afraid of far fewer things than most people.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

29. I don’t see any point in worrying if what I do hurts someone else.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

30. I keep appointments I make.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

31. I often get bored quickly and lose interest.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

32. I can get over things that would traumatize others.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

33. I am sensitive to the feelings of others.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

34. I have conned people to get money from them.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

35. It worries me to go into an unfamiliar situation without knowing all the details.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

36. I don’t have much sympathy for people.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

37. I get in trouble for not considering the consequences of my actions.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

38. I can convince people to do what I want.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

39. For me, honesty really is the best policy. [F]

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

40. I've injured people to see them in pain.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

41. I don't like to take the lead in groups.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

42. I sometimes insult people on purpose to get a reaction from them.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

43. I have taken items from a store without paying for them.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

44. It's easy to embarrass me.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

45. Things are more fun if a little danger is involved.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

46. I have a hard time waiting patiently for things I want.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

47. I stay away from physical danger as much as I can.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

48. I don’t care much if what I do hurts others.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

49. I have lost a friend because of irresponsible things I’ve done.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

50. I don’t stack up well against most others.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

51. Others have told me they are concerned about my lack of self-control.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

52. It’s easy for me to relate to other people’s emotions.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

53. I have robbed someone.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

54. I never worry about making a fool of myself with others.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

55. It doesn't bother me when people around me are hurting.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

56. I have had problems at work because I was irresponsible.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

57. I'm not very good at influencing people.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

58. I have stolen something out of a vehicle.

[ ] True [ ] Somewhat true [ ] Somewhat false [ ] False

## Appendix C

Adverse Childhood Experiences

While you were growing up, during your first 18 years of life:

1. Did a parent or other adult in the household **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?

   _____ Yes

   _____ No

2. Did a parent or other adult in the household **often** ...
   Push, grab, slap, or throw something at you?

   **or**

   **Ever** hit you so hard that you had marks or were injured?

   _____ Yes

   _____ No

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**

Try to or actually have oral, anal, or vaginal sex with you?

_____ Yes

_____ No

4. Did you **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?

   _____ Yes

   _____ No

5. Did you **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?

   _____ Yes

   _____ No

6. Did you grow up with two parents in the home?
   _____ Yes

   _____ No

7. Did either of your parents die before you were age 17?

_____ Yes

_____ No

8. Was your mother/stepmother/foster-mother or father's girlfriend/boyfriend:
   **Often** pushed, grabbed, slapped, or had something thrown at her?

   **or**

   **Sometimes or 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?

   _____ Yes

   _____ No

9. Was your father/stepfather/foster-father or mother's boyfriend/:
   **Often** pushed, grabbed, slapped, or had something thrown at him?

   **or**

   **Sometimes or 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?

   _____ Yes

_____ No

10. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs or who had a problem with prescription drugs?

_____ Yes

_____ No

11. Was a household member depressed or mentally ill or did a household member attempt suicide?

_____ Yes

_____ No

12. Did a household member commit a serious crime or go to prison?

_____ Yes

_____ No

13. Were you ever a foster child?

_____ Yes

_____ No

14. Were you separated from your parents for one year or more before the age of 17?

_____ Yes

_____ No

# Appendix D

Experiences in Close Relationships Scale

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.

| | Strongly Disagree | Mostly Disagree | Somewhat Disagree | Neither Agree nor Disagree | Some what Agree | Mostly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 1. I'm afraid that I will lose my partner's love. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I often worry that my partner will not want to stay with me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. I often worry that my partner doesn't really love me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I worry that romantic partners won’t care about me as much as I care about them. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I often wish that my partner's feelings for me were as strong as my feelings for him or her. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. I worry a lot about my relationships. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. When my partner is out of sight, I worry that he or she might become interested in someone else. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | Strongly Disagree | Mostly Disagree | Somewhat Disagree | Neither Agree nor Disagree | Some what Agree | Mostly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 8. When I show my feelings for romantic partners, I'm afraid they will not feel the same about me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. I rarely worry about my partner leaving me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. My romantic partner makes me doubt myself. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. I do not often worry about being abandoned. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. I find that my partner(s) don't want to get as close as I would like. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. Sometimes romantic partners change their feelings about me for no apparent reason. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 14. My desire to be very close sometimes scares people away. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. I'm afraid that once a romantic partner gets to know me, he or she won't like who I really am. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. It makes me mad that I don't get the affection and support I need from my partner. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | Strongly Disagree | Mostly Disagree | Somewhat Disagree | Neither Agree nor Disagree | Some what Agree | Mostly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 17. I worry that I won't measure up to other people. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. My partner only seems to notice me when I'm angry. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 19. I prefer not to show a partner how I feel deep down. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 20. I feel comfortable sharing my private thoughts and feelings with my partner. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 21. I find it difficult to allow myself to depend on romantic partners. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 22. I am very comfortable being close to romantic partners. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 23. I don't feel comfortable opening up to romantic partners. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 24. I prefer not to be too close to romantic partners. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 25. I get uncomfortable when a romantic partner wants to be very close. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. I find it relatively easy to get close to my partner. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

| | Strongly Disagree | Mostly Disagree | Somewhat Disagree | Neither Agree nor Disagree | Some what Agree | Mostly Agree | Strongly Agree |
|---|---|---|---|---|---|---|---|
| 27. It's not difficult for me to get close to my partner. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. I usually discuss my problems and concerns with my partner. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. It helps to turn to my romantic partner in times of need. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. I tell my partner just about everything. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 31. I talk things over with my partner. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 32. I am nervous when partners get too close to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 33. I feel comfortable depending on romantic partners. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 34. I find it easy to depend on romantic partners. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 35. It's easy for me to be affectionate with my partner. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 36. My partner really understands me and my needs. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

## Appendix E

Difficulties in Emotion Regulation Scale (DERS)

Please indicate how often the following 36 statements apply to you by circling a number on the scale provided next to each item.

| | Almost never | Sometimes | About half the time | Most of the time | Almost always |
|---|---|---|---|---|---|
| 1. I am clear about my feelings. | 1 | 2 | 3 | 4 | 5 |
| 2. I pay attention to how I feel. | 1 | 2 | 3 | 4 | 5 |
| 3. I experience my emotions as overwhelming and out of control. | 1 | 2 | 3 | 4 | 5 |
| 4. I have no idea how I am feeling. | 1 | 2 | 3 | 4 | 5 |
| 5. I have difficulty making sense out of my feelings. | 1 | 2 | 3 | 4 | 5 |
| 6. I am attentive to my feelings. | 1 | 2 | 3 | 4 | 5 |
| 7. I know exactly how I am feeling. | 1 | 2 | 3 | 4 | 5 |
| 8. I care about what I am feeling. | 1 | 2 | 3 | 4 | 5 |
| 9. I am confused about how I feel. | 1 | 2 | 3 | 4 | 5 |
| 10. When I'm upset, I acknowledge my emotions. | 1 | 2 | 3 | 4 | 5 |
| 11. When I'm upset, I become angry with myself for feeling that way. | 1 | 2 | 3 | 4 | 5 |
| 12. When I'm upset, I become embarrassed for feeling that way. | 1 | 2 | 3 | 4 | 5 |
| 13. When I'm upset, I have difficulty getting work done. | 1 | 2 | 3 | 4 | 5 |
| 14. When I'm upset, I become out of control. | 1 | 2 | 3 | 4 | 5 |
| 15. When I'm upset, I believe that I will remain that way for a long time. | 1 | 2 | 3 | 4 | 5 |

| | Almost never | Sometimes | About half the time | Most of the time | Almost always |
|---|---|---|---|---|---|
| 16. When I'm upset, I believe that I'll end up feeling very depressed. | 1 | 2 | 3 | 4 | 5 |
| 17. When I'm upset, I believe that my feelings are valid and important. | 1 | 2 | 3 | 4 | 5 |
| 18. When I'm upset, I have difficulty focusing on other things. | 1 | 2 | 3 | 4 | 5 |
| 19. When I'm upset, I feel out of control. | 1 | 2 | 3 | 4 | 5 |
| 20. When I'm upset, I can still get things done. | 1 | 2 | 3 | 4 | 5 |
| 21. When I'm upset, I feel ashamed with myself for feeling that way. | 1 | 2 | 3 | 4 | 5 |
| 22. When I'm upset, I know that I can find a way to eventually feel better. | 1 | 2 | 3 | 4 | 5 |
| 23. When I'm upset, I feel like I am weak. | 1 | 2 | 3 | 4 | 5 |
| 24. When I'm upset, I feel like I can remain in control of my behaviours. | 1 | 2 | 3 | 4 | 5 |
| 25. When I'm upset, I feel guilty for feeling that way. | 1 | 2 | 3 | 4 | 5 |
| 26. When I'm upset, I have difficulty concentrating. | 1 | 2 | 3 | 4 | 5 |
| 27. When I'm upset, I have difficulty controlling my behaviours. | 1 | 2 | 3 | 4 | 5 |
| 28. When I'm upset, I believe that there is nothing I can do to make myself feel better. | 1 | 2 | 3 | 4 | 5 |
| 29. When I'm upset, I become irritated with myself for feeling that way. | 1 | 2 | 3 | 4 | 5 |
| 30. When I'm upset, I start to feel very bad about myself. | 1 | 2 | 3 | 4 | 5 |

| | Almost never | Sometimes | About half the time | Most of the time | Almost always |
|---|---|---|---|---|---|
| 31. When I'm upset, I believe that wallowing in it is all I can do. | 1 | 2 | 3 | 4 | 5 |
| 32. When I'm upset, I lose control over my behaviours. | 1 | 2 | 3 | 4 | 5 |
| 33. When I'm upset, I have difficulty thinking about anything else. | 1 | 2 | 3 | 4 | 5 |
| 34. When I'm upset, I take time to figure out what I'm really feeling. | 1 | 2 | 3 | 4 | 5 |
| 35. When I'm upset, it takes me a long time to feel better. | 1 | 2 | 3 | 4 | 5 |
| 36. When I'm upset, my emotions feel overwhelming. | 1 | 2 | 3 | 4 | 5 |