2023

Childhood Maltreatment and Suicidal Ideation: The Role of Insecure Attachment, Alexithymia, and Negative Urgency.

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CHILDHOOD MALTREATMENT AND SUICIDAL IDEATION: THE ROLE OF INSECURE ATTACHMENT, ALEXITHYMIA, AND NEGATIVE URGENCY.

By

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B.S., Saint Louis University, 2018

A Thesis Submitted in Partial Fulfillment of
The Requirements for the Degree of
Master of Arts

Department of Psychology

Clinical Psychology Program
In the Graduate School
The University of South Dakota
May 2023

The members of the Committee appointed to examine
the Thesis of Surabhi Swaminath
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ABSTRACT

Suicide is a significant cause of preventable death, especially among young adults. Survivors of childhood maltreatment are at heightened risk of experiencing suicidal ideation and following through on suicide-related thoughts. Insecure attachment, alexithymia, and impulsivity (negative urgency) are known risk factors for suicidal ideation. However, the combined role of these variables in association with suicidal ideation is not fully understood. The current study tested the role of insecure attachment, alexithymia, and negative urgency in the relationship between child maltreatment and ideation via a path model in young adults between 18 and 29 ($N = 441$). We hypothesized that maltreatment would be directly associated with ideation and indirectly via three paths: one sequentially via anxious attachment and impulsivity; second via avoidant attachment and alexithymia; and through avoidant attachment, alexithymia, and impulsivity. We also predicted that negative urgency would mediate the link between alexithymia and ideation. Results indicate that child maltreatment was associated with suicidal ideation directly and indirectly via 1) alexithymia and negative urgency and 2) anxious attachment, alexithymia, and negative urgency. The effect of maltreatment on alexithymia was mediated by both anxious and avoidant attachment, and multiple paths mediated the maltreatment-urgency link. The effect of alexithymia on ideation was, indeed, indirect via negative urgency. These findings highlight the importance of maltreatment, attachment, and particularly negative urgency to prevent suicidal ideation. The results also reveal the need for interventions that target emotion regulation and impulse control deficits.

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Introduction

Suicide is a substantial public health concern; over 14,000 young adults between the ages of 15-34 died by suicide in 2018 alone (Centers for Disease Control & National Center for Health Statistics, 2018). Suicidal ideation, a robust predictor of suicide in the general population (Duarte et al., 2020; Hayes et al., 2020; Naifeh et al., 2020), has been implicated in the risk for suicide among young adults too (Anestis et al., 2011; Heffer & Willoughby, 2018; Matos Gonçalves et al., 2016). In young adults, ideation is a risk factor for a plethora of adverse outcomes including, poor sleep (Khader et al., 2020), poor academics (De Luca et al., 2016), psychological distress (Eskin et al., 2016), and unhealthy substance use (Davis et al., 2020).

Childhood maltreatment, defined as emotional abuse, physical abuse, sexual abuse, and neglect of children below the age of 18 by parents or guardians (Arias et al., 2008), has been identified as an independent risk factor funding to the pathogenesis of suicidal ideation (Bruffaerts et al., 2010; Wang et al., 2019). Different types of maltreatment often co-occur and exert an additive effect on the ideation (Nock et al., 2013), but the mechanisms underlying this association are unclear. According to Bowlby (1973) and Ainsworth's attachment theory (1979), children internalize expectations about their caregivers to form mental models for adult relationships. These bonds become disrupted in victims of maltreatment and affect emotion regulation (Oshri et al., 2015) and impulse control (Oshri et al., 2015). Research examining insecure attachment in the link between childhood maltreatment and suicidal behaviors is limited (Boroujerdi et al., 2019; Ihme et al., 2022; Restrepo et al., 2016), and the findings are mixed.

In a study by Boroujerdi and colleagues (2019), no associations existed between maltreatment, insecure attachment, and suicide attempts. However, insecure attachment and dissatisfaction with social support mediated the relationship between maltreatment and suicidal

behaviors in another study. The model accounted for 33% of the variance in suicidal behaviors (Restrepo et al., 2016), thus implicating attachment and dissatisfaction with social support.

Anxious attachment, avoidant attachment, and secure attachment are three different patterns of attachment postulated based on the attachment theory (Shaver & Hazan, 1988). Avoidantly attached individuals form negative opinions *of others and the world*, whereas anxiously attached individuals form negative views and beliefs *of themselves* (Stevens, 2014). Securely attached adults trust and rely on others with relative ease (Shaver & Hazan, 1988). Though anxious and avoidant attachment are referred to as insecure attachment, these individuals differ in many ways. Therefore, it is likely that anxious and avoidant attachment relate to suicidal ideation via different paths.

Alexithymia is characterized by impairments in emotional awareness and difficulties in identifying and communicating feelings (Shishido et al., 2013). A robust association between alexithymia and suicidal ideation was revealed even after controlling for age and depression (Hemming et al., 2019). Unsurprisingly, insecure attachment contributes to alexithymia (Besharat, 2010; Montebarocci et al., 2004). But of the two insecure attachments, avoidant attachment was most strongly associated with alexithymia (Alexandru, 2022; Carpenter & Chung, 2011; Picardi et al., 2005). This is not surprising as children with avoidant attachment make themselves emotionally inviolable (Schumann & Orehek, 2019), distance themselves from emotions, and hide their emotions from others (Sanislow et al., 2012). Research has established interrelations between maltreatment, avoidant attachment, and alexithymia (Carpenter & Chung, 2011; Kajanoja et al., 2020; Oskis & Borrill, 2019). Though there is precedent to support these associations, the path from maltreatment to suicidal ideation sequentially via avoidant attachment and alexithymia is yet to be studied.

Alexithymia is also associated with impulsive tendencies (Gaher et al., 2015; Hahn et al., 2019; Shishido et al., 2013) which augment the risk for suicidal ideation. Impulsivity is a multidimensional construct, and some facets are more strongly associated with ideation than others (Fossati et al., 2001). Of the three facets (negative urgency, lack of premeditation, and lack of perseverance) associated with ideation, negative urgency, the tendency to act rashly when negatively aroused, is the most strongly predictive of ideation (Anestis & Joiner, 2011; Gonzalez, 2019; Gonzalez & Hewell, 2012; Gonzalez & Neander, 2018). Hahn and colleagues (2016) illustrated that negative urgency mediated the link between alexithymia and alcohol problems/sexual risk-taking in a sample of college students. Another found a significant indirect effect of maltreatment on borderline personality traits (including self-harm) via alexithymia and urgency (Gaher et al., 2013). Distress from deficits in emotion identification, expression, and regulation induces rash reactions, including suicidal ideation. However, the role of negative urgency in the link between alexithymia and ideation remains to be studied; it is plausible that alexithymia relates to suicidal ideation, both directly and indirectly, via negative urgency.

Insecure attachment also predicts negative urgency; however, attachment anxiety, not avoidance is associated with negative urgency (Cyr et al., 2018). Though research on this link is limited, individuals with anxious attachment negatively appraise neutral situations and tend to react hastily without considering the consequences of their actions. Alternatively, those with anxious attachment may experience social distress relatively more than most individuals and feel the need to regulate their affect. Behaving impulsively likely increases contact with positive affect while diminishing negative affect (Cyr et al., 2018). Therefore, it is also likely that anxiously attached individuals engage in suicidal ideation when stressed or upset. This indirect effect of anxious attachment via negative urgency also is unstudied.

To summarize, previous research has supported associations between childhood maltreatment and insecure attachment (Ainsworth et al., 1979; Bowlby, 1973), avoidant attachment and alexithymia (Besharat, 2010; Besharat & Shahidi, 2014), anxious attachment and negative urgency (Cyr et al., 2018), alexithymia and negative urgency (Hahn et al., 2016; Shishido et al., 2013), and negative urgency and suicidal ideation (Gonzalez, 2019; Gonzalez & Neander, 2018). Though maltreatment induces a cascade of adverse outcomes including the variables of interest, attachment and emotion-related paths, remain unstudied as mechanisms linking maltreatment to suicidal ideation. The potentially distinct roles of avoidant vs. anxious attachment, and the mediating role of urgency in the link between alexithymia and suicidal ideation are unknown.

The purpose of this study is twofold. One, we seek to determine the mechanism of associations between child maltreatment and suicidal ideation via attachment and emotional dysregulation. Two, we aim to determine if two different attachment styles (anxious and avoidant) are associated with suicidal ideation in different ways, one via negative urgency and the other via alexithymia. We hypothesized that avoidant attachment would mediate the link between maltreatment and alexithymia. Alexithymia will significantly positively be associated with both suicidal ideation and negative urgency. The anxious attachment will mediate the association between maltreatment and negative urgency, which will significantly be associated with suicidal ideation. In sum, we test a novel path model of emotional and attachment dysregulation by which childhood maltreatment may relate to suicidal ideation (see Figure 1).

The following review converses the prevalence and associations between childhood maltreatment and suicidal ideation. Second, attachment theory and different types of attachments will be discussed. Then, the associations between insecure attachment and suicidal ideation are

outlined. In a section called attachment dysregulation, associations between maltreatment and alexithymia and insecure attachments will be discussed. Next, the effects of insecure attachment on alexithymia and negative urgency and the indirect effect of alexithymia on ideation via negative urgency will be addressed in a section called emotional dysregulation. Gender differences within study variables will be discussed, and the review will conclude with an overview of this study.

Literature Review

Suicidal Ideation: Definition and prevalence

According to the Centers for Disease Control and Prevention, suicide is the third leading cause of death in young adults between the ages of 15 and 29 (CDC; Centers for Disease Control and Prevention, 2017). An important factor predicting suicide attempts and completed suicide is suicidal ideation, defined as thoughts and plans of ending one's life or otherwise engaging in suicide (Mortier et al., 2018; Nock, Borges, Bromet, Cha, et al., 2008). The worldwide probability of making a suicide attempt in individuals with suicidal ideation is 30% (Nock, Borges, Bromet, Alonso, et al., 2008). As reported by the CDC, suicidal ideation is highest (11.3%) among young adults between the ages of 18 and 25 (Department of Health and Human Services, 2015). Young adults appear to be at higher risk for suicidal ideation due to reasons such as poor emotion regulation (alexithymia, negative urgency, low distress tolerance) and impulse control problems (Anestis et al., 2011; Heffer & Willoughby, 2018; Matos Gonçalves et al., 2016). Therefore, assessing factors that increase the risk for suicidal ideation in this population of adults is pertinent to early identification and prevention of suicidal ideation.

In addition to poor emotion regulation and impulse control deficits, maltreatment during childhood has also been associated with suicidal ideation (Wang et al., 2019). Though

disruptions in attachment sustained from child maltreatment are linked to increased suicidal ideation (Miniati et al., 2017), relatively little is known about this etiological pathway.

Childhood Maltreatment: Definition, types, and prevalence

The U.S. Administration for Children and Families, reports that 678,000 children were victims of child abuse and neglect in 2019 alone (U.S. Department of Health and Human Services, 2019). Child maltreatment is defined as emotional abuse, physical abuse, sexual abuse, and neglect of children by parents, guardians, or caregivers (Arias et al., 2008). A study by Kim and colleagues (2017), revealed that neglect (physical and emotional) is the most common form of maltreatment, followed by physical, sexual, and emotional abuse. However, the research is somewhat ambiguous in that other studies report higher prevalence rates for neglect or emotional abuse (Kim & Drake, 2019; Merrick et al., 2018). Nonetheless, different types of abuse often coexist and engender emotionally detrimental consequences (Kim & Drake, 2019; Kim et al., 2017; Nock, Borges, Bromet, Alonso, et al., 2008).

Maltreatment is also a global phenomenon; recent estimates range from 72% in India (Pandey et al., 2020), 59% in Kenya (Mbagaya et al., 2013), and 64% in Brazil (Diehl et al., 2019). This signals that maltreatment pervades beyond cultural, ethnic, gender, and socio-economic boundaries. The indelible effects of maltreatment permeate past childhood; the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) identifies childhood maltreatment as a risk factor for multiple clusters of disorders including neurodevelopmental disorders, anxiety disorders, trauma-related disorders, dissociative disorders, and personality disorders (American Psychiatric Association, 2013). Thus, exploring the mechanisms connecting child maltreatment and suicidal ideation is imperative.

Childhood Maltreatment and Suicidal Ideation

A wealth of research investigating the link between child maltreatment and suicidal ideation has found that maltreatment increases the risk for suicidal ideation (Nilsen & Conner, 2002; Restrepo et al., 2016; Richards & Molina, 2007; Singh et al., 2012; Wang et al., 2019). All types of maltreatment have been implicated in this link (Nilsen & Conner, 2002; Richards & Molina, 2007; Singh et al., 2012; Wang et al., 2019). Maltreatment has an additive effect on ideation such that the risk for ideation increases with each additional occurrence of maltreatment (Wang et al., 2019). Upwards 41% of college students with a history of maltreatment report experiencing suicidal ideation (Restrepo et al., 2016; Richards & Molina, 2007; Singh et al., 2012; Wang et al., 2019). As child maltreatment strongly influences ideation, researching intermittent factors may provide insight into malleability and offer treatment avenues.

Children raised in environments characterized by abuse or neglect are likely to develop insecure attachments (Cyr et al., 2010; Stronach et al., 2013). Cyr and colleagues (2010) found a significantly high proportion of insecure vs. secure attachment in those with a history of maltreatment. A 20% likelihood of developing secure attachments was suggested in individuals with a history of maltreatment. Individuals with a history of suicide attempts also presented with higher rates of maltreatment and insecure attachment (Boroujerdi et al., 2019). Therefore, insecure attachment is one variable that may explain the link between childhood maltreatment and suicidal ideation and deserves further discussion.

Attachment Dysregulation

Attachment Theory

Attachment theory offers a conceptual framework for understanding childhood abuse and neglect's long-lasting effects (Ainsworth et al., 1979; Bowlby, 1973). It postulates that turbulent

relationships with primary caregivers engender an insecure attachment between the child and the caregiver. A caregiver's inability to provide a nourishing and supportive environment hinders normative cognitive, affective, and interpersonal development (Aber & Allen, 1987). In contrast, a safe and stable relationship with the caregiver results in the formation of a secure attachment (Ainsworth et al., 1979; Bowlby, 1973). Although the stability of attachment styles was initially debated, subsequent literature holds that insecure attachment remains stable from infancy to adulthood (Ammaniti et al., 2000; Fish & Stifter, 1995; Waters et al., 2000).

Three different attachment patterns are postulated based on the attachment theory; anxious attachment, avoidant attachment, and secure attachment (Shaver & Hazan, 1988). Based on interactions with caregivers, avoidantly attached individuals *form negative opinions of others and the world around them*. They do not express their emotions, do not seek assurance, and prefer relying on themselves rather than others (Stevens, 2014). Individuals with anxious attachments *form negative views and beliefs of themselves*; they fear rejection, overexpress concerns, and seek constant affirmations of care and love. Anxiously attached individuals may experience difficulties parsing apart real and perceived abandonment; they are also likely to behave impulsively to subdue emotional distress (Stevens, 2014). Alternative, securely attached adults can trust and rely on others with relative ease (Shaver & Hazan, 1988). Although anxious and avoidant attachment are collectively referred to as insecure attachment, individuals with these attachment styles differ in many ways, including interaction styles, emotion regulation, and help-seeking behaviors. Due to these underlying differences, anxious and avoidant attachment may be related to suicidal ideation via different paths (Ainsworth et al., 1979; Bowlby, 1973).

Insecure attachment behaves as a risk factor for a plethora of problems, such as romantic dysfunction (Liu & Ma, 2019), emotion dysregulation (Oshri et al., 2015), interpersonal

difficulties (Miniati et al., 2017), and suicidal ideation (Miniati et al., 2017; Van Orden et al., 2010). Therefore, anxious and avoidant attachment may influence the risk for suicidal ideation and may be connected to suicidal ideation via different paths.

Attachment and suicidal ideation

The link between insecure attachment and suicidal ideation has been intensively researched; insecure attachment engenders feelings of hopelessness, low self-efficacy, and depression, which eventually precipitate suicidal ideation (Miniati et al., 2017; Stepp et al., 2008). In a primarily psychiatric sample, both anxious and avoidant attachment were positively associated with interpersonal problems (e.g., lack of sociability and need for social approval; Stepp et al., 2008). These interpersonal issues mediated the relationship between insecure attachment and suicide behaviors (including ideation). While anxious attachment was linked with all facets of ideation, avoidant attachment was only associated with one of three facets of suicide. This further supports the notion that anxious and avoidant attachment may be associated with suicidal ideation via different paths and may have different predictive abilities.

Though anxious attachment is more strongly predictive of suicidal ideation and risk than avoidant attachment (Miniati et al., 2017). Avoidant attachment is more associated with a history of suicide attempts (Boroujerdi et al., 2019). These mixed results call for future research to clarify the differential predictive capacities of anxious and avoidant attachment. Moreover, most studies have focused primarily on the mediating role of insecure attachment in the link between child maltreatment and outcomes such as personality pathology (Cohen et al., 2017), betrayal trauma (Hocking et al., 2016), and psychosis (Pearce et al., 2017). Only one study examining the moderating role of insecure attachment between child maltreatment and outcomes was found; the study assessed maltreatment and attachment as predictors of adolescent relationship violence

(Wekerle & Wolfe, 1998). Results suggest that insecure attachment moderates the link between maltreatment and male (not female) coercive relationship behaviors. Therefore, insecure attachment is likely a mediator, and not a moderator, in the link between maltreatment and suicidal ideation.

However, research investigating the associations between child maltreatment, insecure attachment, and suicidal ideation is limited (Boroujerdi et al., 2019; Restrepo et al., 2016). One study identified social maladjustment (anxious attachment and satisfaction with social support) as an important mediator of the effects of maltreatment on suicidal behaviors (Restrepo et al., 2016). Of those who reported an attempt, 75% presented with avoidant attachment. Another study found no significant associations between maltreatment, avoidant attachment, and suicidal behaviors (Boroujerdi et al., 2019). This dearth in the literature examining the mediating role of insecure attachment in the link between childhood maltreatment and suicidal ideation calls for more research. The current study addresses this need.

Emotional Dysregulation

Alexithymia

Children raised in environments characterized by neglect and abuse experience difficulties in understanding their own emotions and those of others. One facet of emotion dysregulation is alexithymia. Alexithymia translates to *no words for emotions*; it is a multi-faceted trait characterized by the inability to recognize and verbalize feelings (Shishido et al., 2013). The etiology of alexithymia is still debated; while some researchers suggest a heritability of up to 30% (Jørgensen et al., 2007; Picardi et al., 2011), others offer a strong environmental influence. Howard Berebaum (1996) was the first to empirically establish the relationship between child maltreatment and alexithymia; he found that maltreatment hinders a child's ability

to identify emotions and affects the presentation of personality pathology. Research has since established robust associations between maltreatment and alexithymia (Brown et al., 2018; Chung & Chen, 2020; Gaher et al., 2015; Hahn et al., 2016). While maltreatment directly predicts alexithymia, transitional factors (insecure attachment) also exist.

Alexithymia and Attachment dysregulation

Secure attachment and alexithymia are inversely associated, such that individuals with secure attachment do not develop alexithymic traits. These findings have been replicated in college (Besharat, 2010), clinical (Oskis & Borrill, 2019), and control samples (Besharat & Shahidi, 2014). In contrast, insecure attachment is positively associated with alexithymia in college samples (Qaisy & darwish, 2018) and controls (Oktay & Batigün, 2014). However, the extent to which anxious vs. avoidant attachment predict alexithymia remains unclear.

According to attachment theory, processes of emotion regulation differ in individuals with anxious and avoidant attachment (Bowlby, 1973; Bowlby, 1982; Bowlby & Bacciagaluppi, 2013). While individuals with avoidant attachment experience difficulties identifying their own emotions and those of others (alexithymia; Carpenter & Chung, 2011), individuals with anxious attachment show deficits in impulse control and elevations in emotional responsivity (negative urgency). Therefore, it is posited that individuals develop alexithymia in part, as a response to avoidant attachment (Aust et al., 2013; Besharat, 2010; Brown et al., 2016; Kajanoja et al., 2020; Lyvers et al., 2019; Taylor & Bagby, 2013).

In a study assessing relations between child maltreatment, insecure attachment, alexithymia, and obsessive-compulsive disorder (OCD) symptoms, Carpenter and Chung (2011) found that the link between maltreatment and OCD symptoms was positive and indirect sequentially via insecure attachment and alexithymia. In their sample, the researchers also found

that maltreatment was most associated with avoidant attachment and that alexithymia mediated the link from avoidant attachment to OCD symptoms (Carpenter & Chung, 2011). In another study by Kajanoja and colleagues (2020), researchers found similar results where emotional neglect strongly predicted avoidant attachment, which predicted alexithymia. It was suggested that those with emotional neglect internalize feelings of disregard and develop a maladaptive need for self-reliance and independence, resulting in avoidant attachment, thus ensuing alexithymia (Kajanoja et al., 2020).

Lastly, in an Italian pilot examining the predictors of non-suicidal self-injury (NSSI), researchers found higher levels of child maltreatment, avoidant attachment, and subsequent alexithymia predicting NSSI in a clinical group than controls (Oskis & Borrill, 2019). Hence, evidence from growing research support an indirect path from child maltreatment to alexithymia via avoidant attachment.

Evidence supporting the link between alexithymia and suicidal ideation is also strong (Hemming et al., 2019; Hintikka et al., 2004). Researchers have collectively established a stronger link between alexithymia and suicidal ideation than suicidal behaviors (Hemming et al., 2019). Although individuals with depression present with higher rates of alexithymia than any other form of psychopathology (Li et al., 2015), the link between alexithymia and ideation persists even in the absence of depression (Kim et al., 2016). Notably, only one study assessing alexithymia in the link between maltreatment and suicidal ideation exists (Velikis et al., 2009). In assessing health problems in college students with a history of maltreatment, researchers found that individuals with a history of family dysfunction presented with higher ideation and alexithymia (Velikis et al., 2009). It is therefore important to assess antecedents such as maltreatment and avoidant attachment in the path leading to alexithymia.

Alexithymia and Impulsivity

Individuals with alexithymia respond rashly with little or no regard for consequences (Negative urgency; Shishido et al., 2013). In a college sample, alexithymia partially mediated the relationship between child maltreatment and negative urgency (Gaher et al., 2015). Alexithymia mediates this link such that a history of maltreatment and alexithymia is associated with higher rates of urgency (Gaher et al., 2015; Hahn et al., 2016). In college samples, child maltreatment was indirectly associated with negative urgency via alexithymia (Gaher et al., 2015; Hahn et al., 2016). Therefore, maltreatment and alexithymia may be associated with negative urgency and suicidal ideation. Research investigating the mediating role of negative urgency in the path between alexithymia and suicidal ideation, however, is nonexistent. There is no published literature on these associations.

Researchers have found that negative urgency plays a mediating role between alexithymia and many impulsive behaviors such as dysregulated eating (Hasking & Claes, 2020; Pink et al., 2019), sexual risk-taking and problems (Fink et al., 2010; Hasking & Claes, 2020; Hofman et al., 2019; Shishido et al., 2013), NSSI (Hasking & Claes, 2020), and aggressive behaviors (Fink et al., 2010; Garofalo et al., 2018; Hahn et al., 2019). However, the role of negative urgency in the link between alexithymia and suicidal ideation remains to be studied.

Impulsivity

Per the Cyder and Smith's model (2008), impulsivity is a multidimensional construct encompassing five facets: sensation seeking (enjoyment in taking risks), negative urgency (tendency to act on impulses under negative affect), positive urgency (experiencing strong positive impulses under positive affect), lack of perseverance (giving up on goal-orientated tasks), and lack of premeditation (acting without careful consideration; Whiteside & Lynam,

2001). While impulsivity, as a construct, is associated with a host of mental health issues, different facets have differential predictive abilities. Therefore, certain facets of impulsivity may be more pertinent to suicidal ideation than others. Indeed, negative urgency, lack of premeditation, and lack of perseverance have been implicated in the risk for suicidal ideation (Gonzalez & Neander, 2018).

Of the three, negative urgency has been most strongly linked to suicidal ideation in the general population (Anestis & Joiner, 2011; Gonzalez, 2019; Gonzalez & Hewell, 2012; Gonzalez & Neander, 2018) and young adults (Anestis & Joiner, 2011; Gonzalez, 2019; Gonzalez & Hewell, 2012; Gonzalez & Neander, 2018). This suggests that urgency plays an important role in the path from maltreatment to suicidal ideation, and its associations with other variables (anxious/avoidant attachment, alexithymia) deserve consideration.

Childhood Maltreatment, Attachment dysregulation, and Negative Urgency

The results from research connecting childhood maltreatment and negative urgency are resolute; there is a positive association between maltreatment and urgency, such that high rates of maltreatment are associated with higher urgency. These associations have been established in college samples (Arens et al., 2012; Gaher et al., 2015; Hahn et al., 2016), healthy adults (Shin et al., 2018), and clinical samples (Price et al., 2017). Negative urgency also mediates the link between maltreatment and impulsive behaviors such as sexual-risk taking (Hahn et al., 2016), alcohol and cannabis-related problems (Wardell et al., 2016), substance use (Oshri et al., 2018), and deliberate self-harm (Arens et al., 2012; Arens et al., 2014). Moreover, of the different facets of impulsivity, negative urgency appears most pertinent to risky and impulsive behaviors; it was the only facet to mediate the relationship between childhood maltreatment and alcohol/cannabis-

related problems (Wardell et al., 2016). It was also strongly associated with deliberate self-harm in college samples (Arens et al., 2012; Arens et al., 2014).

Some research investigating the link between insecure attachment and the broader, multimodal construct of impulsivity exists (Fossati et al., 2005; Khodarahimi et al., 2011; Oshri et al., 2015). Impulsivity plays a fundamental role in the link between insecure attachment and borderline personality disorder (BPD); in comparing different paths of associations between attachment and BPD, Fossati and colleagues (2005) found that insecure attachment predicted impulsivity and sequential BPD. Another study assessing insecure attachment and emotion dysregulation in the link between maltreatment and risk behaviors (substance use and risky sex) via SEM was found. Results indicated that maltreatment was positively associated with both anxious and avoidant attachment, which were then linked to increased emotion dysregulation and subsequently predicted risky behaviors (Oshri et al., 2015). Though impulsivity showed the most substantial indirect effect of maltreatment on risky behaviors, there is a paucity of research investigating the associations between insecure attachment and urgency.

Only one study investigating the indirect effect of urgency in the link between insecure attachment and risky/impulsive behaviors was found. Cyr and colleagues (2018) found that participants with higher attachment anxiety reported higher negative urgency and subsequent use of sexual coercion. Interestingly, negative urgency only mediated the link between anxious (and not avoidant) attachment and sexual coercion. This model accounted for 27% of the variance in sexual coercion (Cyr et al., 2018). With this being the only pertinent study, our understanding of the associations between insecure attachment and negative urgency is limited, and there is little research to guide our hypotheses.

Individuals with anxious attachment are sensitive to perceived threats and more likely to appraise neutral situations as perilous (Stevens, 2014). They exhibit impulse control deficits and respond to stressful situations with intense negative reactions and engage in impulsive behaviors (e.g., substance use and suicidal ideation) to regulate emotions (Stevens, 2014). Therefore, in addition to mediating the relationship between alexithymia and suicidal ideation, negative urgency may also mediate the link between anxious attachment and suicidal ideation (see Figure 1). To our knowledge, this will be the first study to examine these associations.

Negative Urgency and suicidal ideation

Impulsivity has been implicated in the risk for suicidal ideation (Gonzalez & Neander, 2018; Rytilä-Manninen et al., 2018; Valderrama et al., 2016; Wang et al., 2015). These findings are supported in clinical samples (Anestis & Joiner, 2011; Valderrama & Miranda, 2017) and military/civilian samples (Martin et al., 2020). In emerging adults, negative urgency has been implicated as a unique risk for suicidal ideation (Anestis et al., 2011; Gonzalez, 2019; Gonzalez & Hewell, 2012; Gonzalez & Neander, 2018).

Impulsivity has been studied primarily as a mediator in links between problem-solving (Gonzalez & Neander, 2018), adverse childhood experiences (Rytilä-Manninen et al., 2018), rumination (Valderrama et al., 2016) and suicidal ideation. In assessing the role of impulsivity in the link between problem-solving and suicidal ideation, urgency was implicated as a mediator above all other facets of impulsivity (Gonzalez & Neander, 2018). A positive indirect effect of maltreatment on ideation via impulsivity was also reported in a study assessing the role of mediators (impulsivity, psychiatric symptomatology, family and social dysfunction, and alcohol use; Rytilä-Manninen et al., 2018). Contrastingly, negative urgency did not significantly mediate the link between subtypes of rumination and suicidal ideation (Valderrama et al., 2016). This

study will contribute to research by assessing the mediating role of urgency in the link between alexithymia and ideation (see Figure 1). Gender will be controlled for in the analyses because significant gender differences exist across all observed variables. These will be presented next.

Gender Differences in Suicidal Ideation, Attachment, Alexithymia, and Negative Urgency

In young adults (18 through 29), females report suicidal ideation significantly more often than males (Becker et al., 2018; Pereira & Cardoso, 2015; Stephenson et al., 2006). Different risk factors are associated with increased odds of ideation in males vs. females (Stephenson et al., 2006). While a history of sexual assault uniquely predicted ideation in males, alcohol use and non-consensual penetration in the past month predicted ideation in females (Stephenson et al., 2006).

Early attachment research proposed no significant differences in attachment security based on biological sex (Tidwell et al., 1996; West et al., 1999). Research has demonstrated consistently higher rates of anxious attachment in females and avoidant attachment in males (Gray & Dunlop, 2019; Koskina & Giovazolias, 2010). These results hold for college samples (Arpaci et al., 2017; Koskina & Giovazolias, 2010) and individuals from diverse racial-ethnic and cultural backgrounds (Arpaci et al., 2017; Koskina & Giovazolias, 2010).

Although these associations are distorted during adolescence, adult males present with higher rates of alexithymia than females (Carpenter & Addis, 2000; Marchesi et al., 2000; Qaisy & darwish, 2018; Tang et al., 2018). Normative male alexithymia theory posits that traditional expectations of masculinity yield a pattern of restrictive emotionality in males. This pattern, in clinical terms, is known as alexithymia (Levant, 1992). A meta-analytic study assessing gender differences in alexithymia found minor, yet significant, differences across genders; males steadily scored higher than their female counterparts (Levant et al., 2009).

Women present with higher rates of negative urgency in comparison to males. Most research supporting this claim comes from one of two lines of inquiry; the first examining impulsive behaviors in disordered eating (Brosof et al., 2019; Davis-Becker et al., 2014; Farstad et al., 2015) and the second investigating psychometric properties of impulsivity measures (Cyders, 2013; Navas et al., 2019; Poprawa, 2019). Elevated rates of negative urgency in females are hypothesized to play an important role in the precipitation and maintenance of eating pathology (Brosof et al., 2019; Davis-Becker et al., 2014; Farstad et al., 2015). Research examining the psychometric properties of the UPPS-P mimics these results such that females score higher on the negative urgency subscale while males score higher on the positive urgency and sensation-seeking subscales (Cyders, 2013; Navas et al., 2019; Poprawa, 2019).. These results are maintained across different cultures (Maneiro et al., 2017; Zhang et al., 2020).

Current Study: Overview

Literature examining the associations between child maltreatment, insecure attachment, alexithymia, negative urgency, and suicidal ideation is lacking. Though a history of childhood maltreatment is associated with suicidal ideation, not all victims respond and react similarly. Avoidant and anxious attachment are two forms of insecure attachment resulting from maltreatment. These two attachment styles are associated with different emotional, social, and behavioral disruptions. For instance, individuals with avoidant attachment experience more difficulties identifying and expressing their emotions (alexithymia), whereas individuals with anxious attachment experience difficulties regulating their impulses during distress (negative urgency). Alexithymia also induces impulse control deficits such as negative urgency. Therefore, maltreatment is likely associated with ideation via these three indirect paths. However, these

paths remain understudied. The current study aims to fill these gaps by testing a path model (see Figure 1) in a sample of young adults aged 18 to 29.

We hypothesized that maltreatment would be associated with suicidal ideation via three indirect paths: one sequentially via anxious attachment and negative urgency; a second from maltreatment to ideation via avoidant attachment and alexithymia; a final one from maltreatment to suicidal ideation sequentially via avoidant attachment, alexithymia, and impulsivity, and one direct path. Specifically, we hypothesized that maltreatment would be significantly positively associated with anxious and avoidant attachment. A significant positive indirect association is expected between anxious attachment and suicidal ideation via alexithymia. There will be a significant positive indirect association between alexithymia and suicidal ideation via negative urgency. Finally, avoidant attachment will be significantly positively associated with suicidal ideation via negative urgency. All these effects will occur above and beyond gender and platform (Amazon Mechanical Turk and SONA) as covariates.

Method

Power Analysis and Participants

The sample size for the current study was derived using the *N:q* rule for maximum likelihood (Jackson, 2003). Assuming the ratio of cases per parameter as 20:1, the minimum sample size required for analyses is 400 participants with a history of ideation (Kline, 2016). To account for missing data, data cleaning, and spurious errors, the size was increased by 5% to 420. Approximately 12% of participants respond to surveys inattentively (Martínez-Mesa et al., 2014). Therefore, 470 participants will be required for a final minimal sample of 420. Young adults between 18 and 29 with a history of suicidal ideation in the past year were recruited through Amazon Mechanical Turk (AMT), a data-gathering platform for individuals who

participate in intelligence tasks (Johnson & Borden, 2012) and SONA, an internal data collection system within the University of South Dakota.

Two thousand nine hundred and seventy-five participants attempted the screen; 1,153 and 747 were ineligible due to lack of suicidal ideation and age, respectively. Five did not provide consent and 33 quit the study before providing consent. Of the remaining 1,037: 157 were identified as BOTS, 109 provided incorrect completion codes/identifiers, 37 were duplicate responses, 277 failed the attention checks, and 16 participants were excluded for completing the survey in less than 10 minutes. The final sample consisted of 441 participants ages 18 to 29 (M = 26.33, SD = 2.48). Four hundred and thirty-two participants were from AMT and nine were from SONA. Females consisted of 53.5% of the sample. Seventy-four percent of the participants identified as European American, 12% African American, 6% Asian, 4% Multiracial, 3% Native American, and less than 1% identified as other/Native Hawaiian. Finally, 16% of the sample identified as Hispanic/Latinx.

Measures

Screener. Potential participants completed a one-minute screener containing four non-study and two study-related questions (maltreatment and suicidal ideation) to determine eligibility (see Appendix A).

Demographics. Participant information, including age, sex, ethnicity, race, year in school, marital status, relationship status, and time in a relationship (if applicable) were collected (see Appendix D).

Childhood Maltreatment. Maltreatment was measured using the 28-item Childhood Trauma Questionnaire Short-Form (CTQ-SF; Bernstein et al., 2003). The CTQ-SF is a self-report questionnaire developed to obtain retrospective assessments of child abuse and neglect

(see Appendix E). Items such as "When I was growing up, I believe I was sexually abused" and "I had to wear dirty clothes" are rated on a 5-point Likert scale from 1 (*Never True*) to 5 (*Very Often True*). Subscales include physical abuse, emotional, sexual abuse, and physical/emotional neglect. The sum of scores for each subscale together yields a total CTQ-SF score with higher scores indicating more frequent and severe maltreatment. The total CTQ-SF score (28-140) was used during statistical analyses. The CTQ-SF has yielded adequate internal consistency (α = 0.69-.92; Daly et al., 2017; Nanda et al., 2016) in college samples. In the current sample, Cronbach's α = .80.

Attachment Styles. Attachment was measured using the 36-item Experiences in Close Relationship Scale-Revised (ECR-R; Fraley et al., 2000). The ECR-R was developed to assess two continuous dimensions of insecure attachment in adults: anxious and avoidant. Subscales consist of 18 items such as "I want to get close to my partner, but I keep pulling back" and "I worry that romantic partners won't care about me as much as I care about them" which are rated on a 7-point Likert scale (1 = *Strongly Agree* and 7 = *Strongly Disagree*) based on *general* experiences in relationships. Two items on the anxiety scale and 12 on the avoidant scale were reverse coded; subscale averages were used as anxious and avoidant attachment scores. Scores for each subscale range from one to seven, with higher scores representing higher insecurity. Excellent internal consistencies have been reported for both anxious (α = 0.89-0.91) and avoidant (α = 0.94) subscales in college samples (Berry & Kingswell, 2012; Cummings-Robeau et al., 2009). The anxious (α = .93) and avoidant (α = .90) attachment subscales demonstrated excellent internal consistency in this sample. A copy of this scale is included in Appendix F.

Alexithymia. The 20-Item self-report Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994) was used to measure alexithymia. The inventory contains three subscales including

Difficulty Identifying Feelings (DIF), Difficulty Describing Feelings (DDF), and Externally Oriented Thinking (EOT). Items such as "I am able to describe my feelings easily" are rated on a five-point scale (1= "Strongly Disagree" to 5 = "Strongly Agree") with total scores ranging from 20-100, see Appendix H. Five items from the measure were reverse coded; the total alexithymia score was obtained by summing the total responses to items. Research has indicated adequate internal consistency (α = 0.84; Hahn et al., 2019) for the TAS-20 in college samples. This scale was adequately reliable (α = .87), in the current study.

Negative Urgency. Negative urgency was measured using the UPPS-P Impulsive Behavior Scale (UPPS-P; Whiteside & Lynam, 2001). The UPPS-P is a 59-item inventory measuring sensation seeking, positive urgency, negative urgency, lack of premeditation, and lack of perseverance. The 12-item negative urgency subscale measures an individual's penchant to act impulsively under stressful situations. It consists of items such as "When I feel bad, I will often do things I later regret in order to make myself feel better now". The items are rated on a four-point scale (0 = "*Agree Strongly*" to 3 = "*Disagree Strongly*"). Inversely worded items were recoded, and total negative urgency scores were calculated by averaging responses across items. Higher scores are indicative of greater issues with negative urgency. Further, among college students, this subscale has an adequate internal consistency (α = 0.89; Hahn et al., 2020). This scale is included in Appendix G. The urgency subscale exhibited adequate reliability (α = .87) in the present study.

Suicidal Ideation. The well-established 25-item Adult Suicidal Ideation Questionnaire (ASIQ; Reynolds, 1991) was used to measure suicidal ideation. The ASIQ was designed to assess thoughts about suicide in the past month. Items assess passive suicidal thoughts to specific thoughts and plans of attempting suicide (see Appendix I). Participants indicate how often

thoughts such as “I wish I were dead” and “I thought about having a bad accident.” have been on their minds on a range of 0 (*Almost every day*) to 6 (*I never had this thought*). A total score (0-150) is obtained by summing the individual ratings, with higher scores indicating higher ideation. The ASIQ has been used in college samples and has yielded an adequate retest reliability (Reynolds, 1991) and excellent internal consistency ($\alpha = 0.97$; Gutierrez et al., 2000; Reynolds, 1991). Cronbach’s α for the ASIQ in this sample was .97.

Procedure

Recruitment. The study protocol was implemented upon receiving approval from the Institutional Review Board. Young adults between 18 and 29 were recruited online through AMT and USD’s SONA system. Participants completed a brief screener to determine eligibility. Those who endorsed ideation within the past year were presented with the consent form enumerating study information (Appendix B and C), confidentiality, associated limits, compensation, and withdrawal procedures. Ineligible participants were redirected to an end-of-study message (see Appendix M). Enrolled participants were directed to the study battery, which took an average of 35 minutes to complete. Study materials were presented via Qualtrics Survey Software. Question blocks were presented randomly to eliminate order bias (Malhotra, 2008; Qualtrics, 2020). Five instructional manipulation checks (IMC) and instructed response items such as “I do not understand a word of English” were inserted throughout the survey to monitor careless responses (see Appendix J; Hauser & Schwarz, 2016). IMCs are not known to affect the reliability and validity of scales (Kung et al., 2018).

Participants were redirected to the end of the survey message where they were thanked for their time and participation, provided with a list of suicide prevention resources and a random code for compensation (Appendices K and L). Only those who passed 4/5 of the attention checks

were compensated $1.50 for completing the survey. Monetary assistance was received via the National Science Foundation (DGE-1633213) grant through USD's Center for Brain and Behavior Research.

Data Collection. Data was collected between April 2021 and May 2022. Deidentified data was downloaded to the University of South Dakota's internal network and stored in password-protected files ("Data confidentiality and data handling in research: a workshop report," 2008).

Data Handling and Preparation

Preliminary analyses were conducted in Stata 17 (StataCorp, 2021) to assess the range, distribution, and outliers. All variables have acceptable skewness (within |3|) and kurtosis (within |10|; Tabachnick & Fidell, 2013). As suggested by Tabachhnick and Fidell (2013), outliers with a Z score of ≥ 3.29 were identified as univariate outliers, only one outlier was identified (on the ASIQ) and was altered to one unit greater than the nearest non-outlying data. Missing data were assessed; only two data points on one study variable were missing and no pattern of missingness was observed. As mentioned, participants who completed the study in less than 10 minutes were excluded from analyses. Univariate normality was assessed using histograms and z-scores, and multicollinearity was assessed using correlation matrices and other appropriate methods (Tabachnick & Fidell, 2013). Scores for childhood maltreatment, suicidal ideation, and alexithymia were scaled down by 10 to produce a normally scaled covariance matrix.

Results

Descriptive Statistics

Descriptive statistics and correlation analyses were also conducted using Stata 17 (StataCorp, 2021). Descriptive statistics and bivariate correlations are presented in Tables 1 and

2, respectively. As hypothesized, all dependent variables were significantly positively associated with one another. On the bivariate level, male gender was only significantly associated with alexithymia. Childhood maltreatment showed small to moderate significant positive associations with avoidant attachment, anxious attachment, alexithymia, negative urgency, and suicidal ideation. Anxious attachment also had small-moderate significant positive associations with avoidant attachment, alexithymia, negative urgency, and suicidal ideation.

Similarly, avoidant attachment also had small-moderate significant positive associations with alexithymia, negative urgency, and suicidal ideation. Negative urgency had significant small and large correlations with suicidal ideation and alexithymia. Alexithymia and suicidal ideation had small and significant associations. Age showed a small positive association with childhood maltreatment and was not significantly associated with other study variables. SONA platform had significant small positive associations with avoidant attachment and a small inverse association with childhood maltreatment.

Path Model Overview

The hypothesized model was assessed using Mplus (Version 8.30) using maximum likelihood robust estimation with bias-corrected bootstrapped confidence intervals for the significance of the indirect effects (Muthén & Muthén, 1998-2017). Gender and platform were included as covariates with paths to all endogenous variables, and covariance between avoidant attachment and anxious attachment was also assessed. The hypothesized fit was assessed using guidelines proposed by Hu and Bentler (1999). Cutoff values of 0.95 for CFI/TLI and a cutoff value less than .06 for RMSEA are acceptable. SRMR<0.08 is also acceptable. Modification indices were examined to determine the need for additional paths.

Fit for the original model was not acceptable $\chi 2(6, N = 441) = 81.81, p < .001$; RMSEA = .17 90% CI [.14, .22]; CFI = .83; SRMR = .11. Modification indices suggested adding two paths: one from child maltreatment to alexithymia and another from anxious attachment to alexithymia. It is possible for survivors of maltreatment without avoidant attachment, aka, individuals with anxious or secure attachment, to develop alexithymia, so a path from child maltreatment to alexithymia was freed first, which resulted in a model with poor fit to the data. Next, the path from anxious attachment to alexithymia was freed. After freeing the two paths, the final model was markedly improved $\chi 2(4, N = 441) = 12.25, p = .02$; RMSEA = .068 90% CI [.03, 0.11]; CFI = .98; SRMR = .02. The final model is presented in Figure 2.

Direct Effects

In the final model, childhood maltreatment was significantly positively associated with suicidal ideation. Consistent with hypotheses, negative urgency was also significantly positively associated with suicidal ideation. Inconsistent with our hypothesis, alexithymia was not significantly associated with suicidal ideation. Per hypotheses, negative urgency was positively associated with both anxious attachment and alexithymia, and inversely associated with the male sex. Supporting our hypotheses, the results revealed a significant positive association between alexithymia, avoidant attachment, and sex. Per modification indices, alexithymia was also regressed onto childhood maltreatment and anxious attachment. Although these paths were not hypothesized, they were both significant and positive.

Avoidant attachment was regressed onto childhood maltreatment, sex, and platform. Results supported our hypothesis of a significant positive correlation between avoidant attachment and maltreatment. Interestingly, no significant sex differences were found. However, a significant positive association between avoidant attachment and SONA was revealed. Anxious

attachment was regressed onto childhood maltreatment, sex, and platform. The hypothesized correlations between anxious attachment and sex were insignificant. Consistent with hypotheses, anxious attachment and childhood were significantly positively associated. Anxious attachment and avoidant attachment were allowed to covary in the model; results supported a significant positive association. R^2 values for all endogenous variables were significant (Figure 2).

Indirect Effects

The significance of indirect effects was determined via bias-corrected bootstrapped confidence intervals (MacKinnon et al., 2004). Effects were estimated from each of the 10,000 drawn samples. Contrary to hypotheses, the indirect paths from maltreatment to suicidal ideation via avoidant attachment were insignificant (avoidant > alexithymia and avoidant > alexithymia > negative urgency). The third hypothesized indirect path from maltreatment to ideation, sequentially via anxious attachment and negative urgency, was also insignificant. Consistent with our hypothesis, alexithymia had a significant indirect association with suicidal ideation via negative urgency. Although the effect of maltreatment on alexithymia was indirect via both anxious and avoidant attachment, the path from maltreatment to negative urgency was also indirect via multiple paths. Two additional significant indirect effects were present based on the freed paths. First, the path from maltreatment to suicidal ideation via anxious attachment, alexithymia, and negative urgency was significant. Second, the path from maltreatment to ideation was also significant via alexithymia and urgency. Standardized coefficients for indirect paths are provided in Tables 4 and 5.

Discussion

The current study determined differential paths through which child maltreatment may be associated with suicidal ideation in a sample of young adults with a history of ideation. A path

model was tested in which insecure attachment and two facets of emotion regulation (alexithymia and negative urgency) mediated the link between maltreatment and ideation above the effects of gender and platform. Results indicated that childhood maltreatment was associated with suicidal ideation directly, as well as indirectly, via two paths: 1) anxious attachment, alexithymia, and negative urgency and 2) via alexithymia and negative urgency. In addition, maltreatment's effect on alexithymia was significantly mediated by both anxious and avoidant attachment. Child maltreatment was significantly associated with negative urgency via many indirect paths (see Table 5). These results will be discussed in turn.

Effects of Childhood Maltreatment on Suicidal Ideation

Childhood maltreatment was associated with suicidal ideation directly and indirectly via two paths: one, through anxious attachment, alexithymia, and negative urgency; and second, via alexithymia, and negative urgency. Both indirect paths involve impairments in emotion regulation and indicate that alexithymia and negative urgency may be key mechanisms in suicidal ideation for those with a history of childhood maltreatment.

Maltreatment to Ideation via Anxious Attachment, Alexithymia, and Negative Urgency

The first indirect path through anxious attachment, alexithymia, and negative urgency was not hypothesized and is based on the freed path between anxious attachment and alexithymia. However, these findings align with research wherein some children raised in turbulent households develop anxious attachments characterized by a distrust of self, negative appraisals of neutral situations, and impulsive control difficulties (Cyr et al., 2010; Stronach et al., 2013). Those with anxious attachment also experience difficulties identifying feelings, which is one of three facets of alexithymia (Externally oriented thinking, difficulty describing feelings; Ferraro & Taylor, 2021; Oskis et al., 2013; Qaisy & darwish, 2018; Stevens, 2014). The ability

to accurately identify feelings is critical to assessing, regulating, and responding appropriately to the needs of one's environment. Decision-making based on inaccurate discernment regarding one's emotional state is likely to be impulsive, resulting in interpersonal conflict, isolation, hopelessness, and precipitating suicidal ideation (Gross, 1998).

As such, alexithymia, characterized by deficits in emotion identification and communication, is a risk factor associated with negative urgency (Gaher et al., 2015; Hahn et al., 2019; Shishido et al., 2013). The link between negative urgency and suicidal ideation is also supported by research (Gonzalez & Neander, 2018; Picou et al., 2023; Preston et al., 2023). Impulsivity may compromise an individual's ability to regulate emotions, engage in problem-solving, and foster a myopic outlook making preferential choices for immediate rewards over distal outcomes. During distress, this impulsivity may appear as suicidal ideation and the inability to envision life beyond the current despair. The indirect path from maltreatment to ideation via anxious attachment, alexithymia, and negative urgency is supported by research and theory and yet, unstudied thus far. This novel finding increases our understanding of how maltreatment relates to ideation via attachment and emotion dysregulation.

Maltreatment to Ideation via Alexithymia and Negative Urgency

The association between childhood maltreatment and suicidal ideation was also significantly mediated by a second path, via alexithymia and negative urgency. This path was also not part of the hypothesized model. However, it is possible that for some, experiencing maltreatment during childhood induces emotional numbing, dissociative experiences, and difficulty identifying/describing feelings (alexithymia; Brown et al., 2018; Chung & Chen, 2020; Gaher et al., 2015; Hahn et al., 2016), even in the absence of dysregulated attachment. Alexithymia, in turn, is associated with negative urgency (Gaher et al., 2015; Hahn et al., 2019;

Shishido et al., 2013), which is linked to risk for suicidal ideation and suicide (Anestis & Joiner, 2011; Gonzalez, 2019; Gonzalez & Hewell, 2012; Gonzalez & Neander, 2018; Picou et al., 2023; Preston et al., 2023).

The path from alexithymia to suicidal ideation was indirect via negative urgency. This finding supports our hypothesis and underscores the role of urgency in the link between alexithymia and impulsive thoughts/behaviors. Alexithymia is associated with suicidal ideation (Hemming et al., 2019; Hintikka et al., 2004), but the mechanisms for this association are largely unknown. Urgency mediated previous associations between alexithymia and impulsive behaviors, i.e., dysregulated eating (Hasking & Claes, 2020; Pink et al., 2019), sexual risk-taking and problems (Fink et al., 2010; Hasking & Claes, 2020; Hofman et al., 2019; Shishido et al., 2013), and NSSI (Hasking & Claes, 2020). However, suicidal ideation has not been studied as on outcome to date. This finding indicates that individuals with alexithymia experience difficulties identifying and managing negative emotions, which leads to negative urgency. In turn, negative urgency is associated with suicidal ideation. This finding extends previous literature and asserts that the effect of alexithymia on suicidal ideation was indirect via urgency.

Interestingly, the direct effect of childhood maltreatment on suicidal ideation remained significant over and above attachment styles, alexithymia, negative urgency, and covariates. This suggests that the association between maltreatment and suicidal ideation is complex and may involve associations not captured by attachment and emotional dysregulation.

Indirect Paths from Maltreatment to Negative Urgency

Anxious Attachment, Avoidant Attachment, and Alexithymia as Mediators

The effect of maltreatment on negative urgency was indirect via four paths. First, anxious attachment and alexithymia and 2) avoidant attachment and alexithymia were significant

mediators in this link. As noted, those with anxious and avoidant attachment react differently to childhood maltreatment and yet display alexithymia, albeit different facets (Mikulincer & Shaver, 2005; Oskis et al., 2013; Simpson & Rholes, 2017; Spielmann et al., 2013). The effects of alexithymia on urgency are profound such that those who experience alexithymia respond rashly under distress due to impairments in recognizing and managing emotions (Gaher et al., 2015; Hahn et al., 2016). Therefore, this study adds to the literature by illustrating how two forms of insecure attachment depict equifinality of emotion dysregulation via different paths.

Third, alexithymia was a significant mediator in this link. This aligns with previous research indicating that alexithymia plays a mediating role in the path between childhood maltreatment and urgency (Gaher et al., 2015; Hahn et al., 2016). As noted, accurately identifying one's internal experience and emotions is key to rational decision-making. Alexithymia may lead to an inaccurate assessment of one's reality, induce distress, and therefore induce negative urgency. Next, the effect of maltreatment on urgency was indirect via anxious attachment. Victims of maltreatment respond hastily to distress, partly due to anxious attachment. This aligns with the limited research assessing the mediating role of attachment in the link between maltreatment and urgency (Estévez et al., 2018; Oshri et al., 2015; Wilke et al., 2020). Anxious attachment is characterized by a fear of abandonment and a need for frequent reassurance/validation. When these individuals experience negative emotions, they may be more likely to engage in impulsive behaviors as a way of coping (Baldwin et al., 1996; Estévez et al., 2018; Oshri et al., 2015). The current study adds to the scant literature supporting the mediating role of anxious attachment in the link between childhood maltreatment and negative urgency.

Indirect Paths from Childhood Maltreatment to Alexithymia

Anxious and Avoidant Attachment as Mediators

Interestingly, the path from childhood maltreatment to alexithymia was significantly mediated by via both anxious and avoidant attachment. These results indicate that both forms of insecure attachment are pertinent to the maltreatment-alexithymia link. Though only avoidant attachment was hypothesized to mediate this path (anxious attachment to alexithymia was freed), these findings align with previous research. Although both anxious and avoidant attachment are associated with the overall construct of alexithymia, they predicted different facets of alexithymia in previous studies. While avoidant attachment was associated with the 'Difficulties Describing Feelings' and the 'Externally Oriented Thinking' facets, anxious attachment was most strongly associated with the 'Difficulties Identifying Feelings' facet of alexithymia (Oskis et al., 2013; Stevens, 2014). While we did not use alexithymia subscales in the current study, a similar process may have occurred here, resulting in significant associations between the two attachment styles and alexithymia.

Those with avoidant attachment learn from invalidating childhood experiences that expressing needs and emotions may result in rejection or disapproval from caregivers. As a result, over time, these individuals may learn to suppress emotions to protect themselves from hurt or rejection (Mikulincer & Shaver, 2005). Alternatively, avoidantly attached individuals may have become disconnected from their own emotions as they may view emotional expression as a sign of weakness or inadequacy (Spielmann et al., 2013). Thus, they may not have the vocabulary or emotional awareness to express how they are feeling and, instead, display alexithymia traits (e.g., difficulties describing feelings and rely on externally oriented thinking).

On the other hand, individuals with anxious attachment learn that their need for love and care are inconsistently met by caregivers and develop a fear of abandonment and a heightened sensitivity to relational cues. As a result, these individuals become preoccupied with relationships and experience difficulties distinguishing their emotions from those of their partners or others (Mikulincer & Shaver, 2005). In adulthood, this can present as alexithymia due to their tendency to fixate on relationships and the emotions of others, rather than their own. Anxiously attached individuals may have also learned to think of their emotions as too intense or overwhelming due to fear of rejection or disapproval (Simpson & Rholes, 2017), which could have a suppression effect over time, thus making it harder for them to identify and articulate how they are feeling.

Therefore, the two mediating paths from childhood maltreatment to alexithymia via anxious and avoidant attachment are plausible. These two paths explain how those with a history of maltreatment may respond differently and develop different insecure attachment patterns, which eventually result in the same type of emotion dysregulation, aka alexithymia. These findings add to the literature by confirming the effects of both attachment styles on alexithymia in a sample with a history of suicidal ideation (Mikulincer & Shaver, 2005; Oskis et al., 2013; Simpson & Rholes, 2017; Spielmann et al., 2013).

Other Direct Paths

Interestingly SONA platform was inversely related to suicidal ideation, indicating that participants from this site reported lower suicidal ideation. However, the small SONA sample precludes us from drawing conclusions regarding this discrepancy. Contrary to hypothesis, the direct effect of alexithymia on suicidal ideation was insignificant. This finding is inconsistent with research and a recent meta-analysis finding a large effect size for the association between

alexithymia and suicidal ideation (r = .54, 95% CI = .40 – .65; Hemming et al., 2019). However, the effect of alexithymia on ideation may not be direct. Indeed, other researchers have found that variables such as depression mediate the link between alexithymia and ideation (Quinto et al., 2022; Yurdagül Altintas et al., 2018). Similarly, in our study, the effect of alexithymia on ideation was indirect via negative urgency.

Avoidant attachment was positively associated with childhood maltreatment and SONA, indicating higher rates of avoidant attachment in this sample. However, the small sample size of SONA participants precludes us from drawing any interferences. No significant gender differences were observed. Unexpectedly, the effect of gender on anxious attachment was insignificant. This finding is particularly surprising as females present with significantly higher rates of anxious attachment than males (Arpaci et al., 2017; Koskina & Giovazolias, 2010). Recent changes in gender norms may likely be one explanation for this spurious finding.

Insignificant Effects

Contrary to hypotheses, some paths in the final model were insignificant. Though the total indirect effect of maltreatment on suicidal ideation was significant, the paths mediated by avoidant attachment were not. These results are contrary to hypotheses and other research findings. Researchers have previously found significant associations between avoidant attachment and ideation (Boroujerdi et al., 2019; Ihme et al., 2022; Turton et al., 2022). Two of these studies used clinical samples, one diagnosed with affective disorders (Ihme et al., 2022) and the other with a history of suicide attempts (Turton et al., 2022). It is possible that these effects may be accentuated in clinical samples.

Alternatively, researchers have also found that individuals with avoidant attachment make significantly more suicide attempts than their anxiously attached counterparts (Boroujerdi

et al., 2019; Mandal & Zalewska, 2010, 2012). The research on ideation is mixed with a few studies finding more ideation in anxiously attached individuals (Lewis et al., 2023; Lizardi et al., 2011; Miniati et al., 2017) and others finding in avoidantly attached individuals (Potard et al., 2020; Shtayermman & Zhang, 2022; Turton et al., 2022). The adult suicidal ideation questionnaire (Reynolds, 1991) measures suicidal ideation in terms of thoughts and cognitions, not behaviors. Therefore, it is possible that this sample with avoidant attachment denied suicidal ideation. This partly could explain why maltreatment's effect on ideation in the current sample was indirect via anxious but not avoidant attachment.

Summary

This study investigated the different ways childhood maltreatment predicts suicidal ideation via attachment and emotion regulation in a sample of young adults with a history of ideation. The results show that childhood maltreatment was indirectly associated with suicidal ideation via two paths: 1) anxious attachment, alexithymia, and negative urgency and 2) via alexithymia and negative urgency. Maltreatment's effect on alexithymia was significantly mediated by both anxious and avoidant attachment. Multiple paths mediated the path between child maltreatment and negative urgency (see Table 5). The effect of alexithymia on suicidal ideation was indirect via negative urgency. Overall, these results highlight the importance of maltreatment, attachment, and negative urgency in the prevention of ideation. The results signify the need for interventions that target emotion regulation and negative urgency to reduce the risk of suicidal thoughts and behaviors. Implications and future directions are presented below.

Clinical Implications

These findings suggest that maltreatment, anxious attachment, alexithymia, and negative urgency are significant risk factors for suicidal ideation. Clinical interventions should focus on

identifying and treating alexithymia by helping clients develop skills to name, assess, and communicate emotions via existing treatment options (Linehan, 2015; Rostami & Bozorgi, 2019; Saedi et al., 2016). Treatments directed specifically at alexithymia can have carry-over effects on impulsivity. Increased ability to identify, understand, and communicate emotions and one's internal experience allows for mindful decision-making, improved self-regulation, and assessing the long-term consequences of impulsive behaviors.

Incorporating distress tolerance skills would benefit those with high negative urgency. Increasing distress tolerance can help individuals develop a deeper sense of awareness and control, allowing them to manage impulsive thoughts and behaviors more effectively. Such an integrated approach will help individuals resist the urge to engage in impulsive behaviors and make intentional, thought-out decisions. Additionally, investing time, effort, and resources to prevent child abuse/neglect would address the root of the issue and lead to better health outcomes. Additionally, mental health clinics may routinely assess patients for a history of childhood maltreatment using validated screening measures such as the Adverse Childhood Experiences (ACEs) questionnaire. Incorporating such assessments into routine clinical practice could help identify patients who may benefit from additional support and treatment. Finally, public reform and education attending to these societal evils could be vital.

Research Implications, Strengths, and Limitations

This study presents many strengths; it is the first research study to assess the differential pathways via attachment and emotion dysregulation from child maltreatment to suicidal ideation. Second, this is one of the first studies to illustrate the mediating role of urgency in the link between alexithymia and suicidal ideation. There are certain limitations worth noting. First, the lack of a longitudinal study design precludes us from establishing temporal precedence between

the observed variables. The non-experimental nature of this study further impedes us from making causal inferences. Third, the lack of diversity limits the generalizability of our findings. Given the nature of self-reports, memory decay, and sensitivity in responding about abuse/ideation, participants may not have been forthright, potentially obscuring true estimates. Lastly, equivalent models may account for similar variances in ideation and fit the data well. Though the current model is entrenched in psychological theory, experimental and longitudinal designs are best suited to ascertain causality.

Researchers can address the abovementioned limitations by employing longitudinal study designs to establish temporal precedence and causality. Studying the differential effects of treating these two different nodes (attachment/interpersonal vs. emotion regulation) on rates/intensity of suicidal ideation would add to the wealth of knowledge regarding the treatment of ideation and suicide. Additionally, assessing the differential effects of anxious and avoidant attachment on suicide ideation vs. attempts would be informative for treatment. The current study did not assess for previous suicide attempts and did not control for it in the model. Given the differential associations between avoidant attachment and suicide attempts vs. ideation (Boroujerdi et al., 2019; Mandal & Zalewska, 2010, 2012), researchers may assess want to assess different pathways through which childhood maltreatment and subsequent attachment and emotion dysregulation may predict suicidal ideation vs. attempts.

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Table 1

Descriptive Statistics

Variable	*N*	*M*	*SD*	Range	Skew	Kurtosis
Sex	441	-	-	M (205) F (236)	-	-
Age	441	26.33	2.48	18-29	-0.98	3.46
Childhood Maltreatment	441	62.02	21.55	25-112	-0.09	1.76
Anxious Attachment	441	4.54	1.29	1-7	-0.87	3.30
Avoidant Attachment	439	3.62	0.82	1.4-6	-0.14	3.26
Negative Urgency	441	2.78	0.62	1.08-4	-0.61	2.95
Alexithymia	441	57.90	12.94	23-82	-0.71	2.77
Suicidal Ideation	441	50.50	28.18	0-126	0.40	2.55

Note. Sex coded 1 (male) and 0 (female). *N*'s vary due to missing data.

Table 2

Correlation Matrix

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Gender	-								
2. Childhood Maltreatment	-.03	-							
3. Anxious Attachment	-.03	.37***	-						
4. Avoidant Attachment	.01	.26***	.26***	-					
5. Negative Urgency	-.08	.43***	.49***	.20***	-				
6. Alexithymia	.09*	.45***	.43***	.40***	.54***	-			
7. Suicidal Ideation	.07	.39***	.21***	.18***	.26***	.26***	-		
8. Age	.04	.12	-.07	-.04	-.06	.01	-.02	-	
9. Platform	.04*	-.10***	.05***	.10***	-.01***	.03***	-.06	-.39***	-

Note. N's = 439 – 441. Biological sex coded 0 (Female) and 1 (Male).

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 3

Standardized Indirect Effects to Suicidal Ideation.

Path	Indirect	
	β	95% CI
Maltreatment → Alexithymia	0.015	[-0.019, 0.048]
Alexithymia → Negative Urgency	**0.046**	**[0.002, 0.093]**
Avoidant Attachment → Alexithymia	0.013	[-0.015, 0.044]
Anxious Attachment → Alexithymia	0.013	[-0.015, 0.051]
Anxious Attachment → Negative Urgency	**0.034**	**[0.001, 0.078]**
Avoidant Attachment → Alexithymia → Negative Urgency	**0.011**	**[0.001, 0.027]**
Anxious Attachment → Alexithymia → Negative Urgency	**0.012**	**[0.001, 0.028]**
Maltreatment → Alexithymia → Negative Urgency	**0.013**	**[0.001, 0.030]**
Maltreatment → Avoidant Attachment → Alexithymia	0.003	[-0.004, 0.013]
Maltreatment → Anxious Attachment → Negative Urgency	0.013	[0.000, 0.032]
Maltreatment → Anxious Attachment → Alexithymia	0.005	[-0.006, 0.019]
Maltreatment → Avoidant Attachment → Alexithymia → Negative Urgency	0.003	[0.000, 0.008]
Maltreatment → Anxious Attachment → Alexithymia → Negative Urgency	**0.005**	**[0.001, 0.011]**
Path	Total Indirect	
Maltreatment	**0.057**	**[0.007 , 0.109]**
Anxious Attachment	**0.060**	**[0.016 , 0.110]**
Avoidant Attachment	0.024	[-0.001 , 0.056]
Alexithymia	**0.046**	**[0.002 , 0.093]**
Path	Total	
Maltreatment	**0.374**	**[0.286 , 0.458]**
Alexithymia	0.096	[-0.010 , 0.198]

Note. $N = 441$. 95% confidence interval (CI) are below each effect. Bias-corrected bootstrapped CI were used to determine the significance of the effects (MacKinnon et al., 2004). Bold font = significant effect based on 95% CI.

Table 4

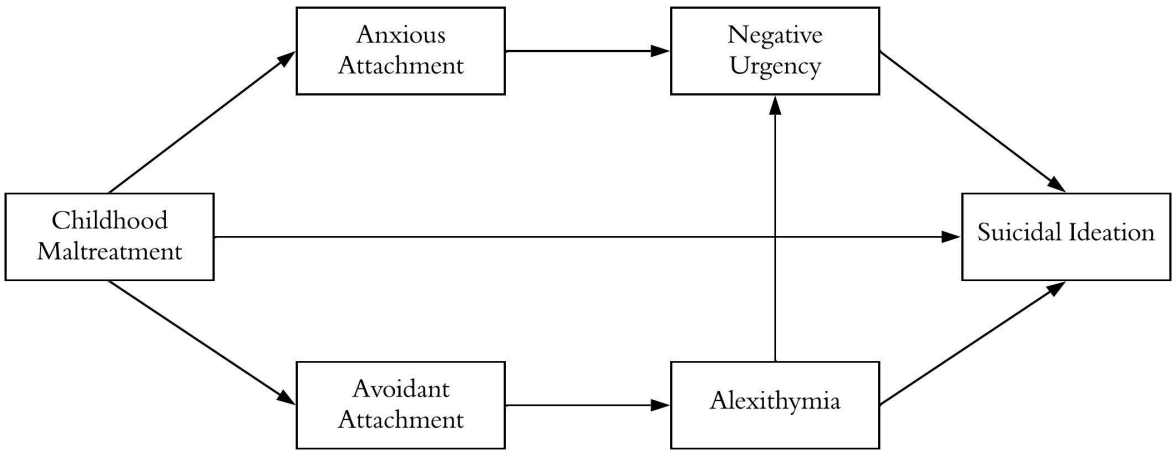
Standardized Indirect Effects.

Path from Maltreatment to Alexithymia & Negative Urgency	Indirect	
	β	95% CI
Maltreatment → Avoidant Attachment → Alexithymia	**0.068**	**[0.040, 0.104]**
Maltreatment → Anxious Attachment → Alexithymia	**0.100**	**[0.058, 0.151]**
Maltreatment → Anxious Attachment → Negative Urgency	**0.117**	**[0.071, 0.173]**
Maltreatment → Alexithymia → Negative Urgency	**0.120**	**[0.072, 0.174]**
Maltreatment → Anxious Attachment → Alexithymia → Negative Urgency	**0.041**	**[0.024, 0.066]**
Maltreatment → Avoidant Attachment → Alexithymia → Negative Urgency	**0.028**	**[0.016, 0.045]**
Path	Total Indirect	
Maltreatment → Alexithymia	**0.168**	**[0.116 , 0.230]**
Maltreatment → Negative Urgency	**0.307**	**[0.235 , 0.372]**
Path	Total	
Maltreatment → Alexithymia	**0.459**	**[0.376 , 0.534]**

Note. N = 441. 95% confidence interval (CI) are below each effect. Bias-corrected bootstrapped CI were used to determine the significance of the effects (MacKinnon et al., 2004). Bold font = significant effect based on 95% CI.

Figure 1

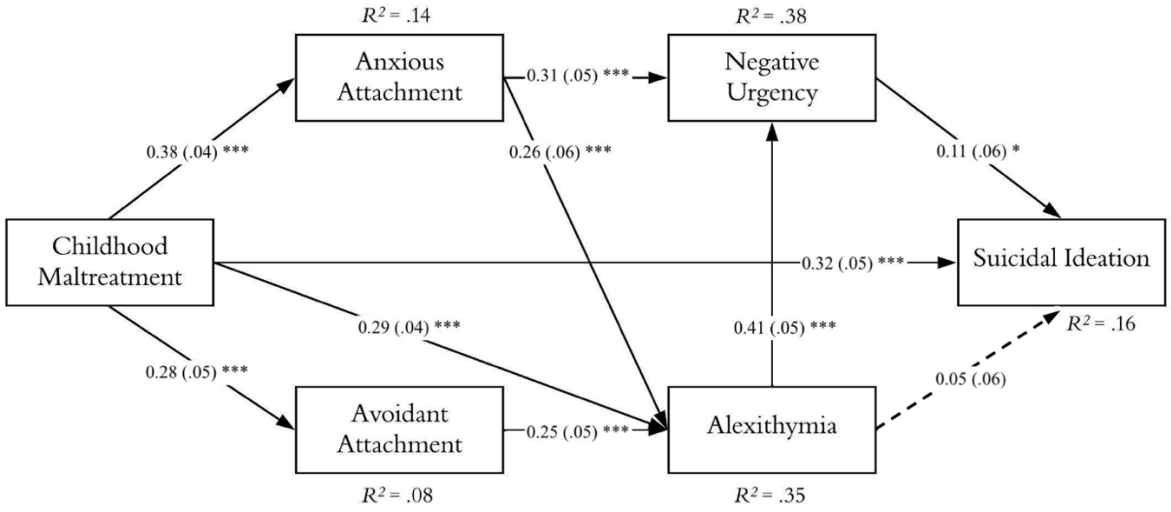
Hypothesized Model



Note. Gender and platform are included as covariates to all endogenous variables but omitted for clarity. Anxious and Avoidant attachment were allowed to covary but omitted from the figure for clarity.

Figure 2

Final Model



Note. Final Path model, $\chi 2(4, N = 441) = 18.46$, $p = .001$; RMSEA = .09 90% CI [.05, 0.13]; CFI = .98; SRMR = .02. Coefficients are standardized. Standard errors are in parentheses. Gender and platform are included as covariates to all endogenous variables but omitted for clarity. Dashed lines denote insignificant paths. Anxious and Avoidant attachment were allowed to covary but omitted from the figure for clarity.

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$.

Appendix A

Brief Screener

1) **In the past 6 months, have you had any thoughts or plans for ending your life (**e.g., I wish I were never born", "I want to die", "I am going to kill myself")**?**
    - ***a) Yes***
    - **b)** No
2) **Are you allergic to chocolate?**
    - **a)** Yes
    - **b)** No
    - **c)** Unsure
3) **Have you ever been incarcerated?**
    - **a)** Yes
    - **b)** No
4) **Have you experienced any of the following?**
    - ***a) Sexual abuse during childhood.***
    - ***b) Physical abuse/neglect during childhood.***
    - ***c) Emotional abuse/neglect during childhood.***
    - **d)** None of the above.
5) **Do you currently live with a romantic partner?**
    - **a)** Yes
    - **b)** No
6) Are you active on social media platforms (Facebook, Instagram, TikTok, twitter, etc.,)?
    - **a)** Yes
    - **b)** No

If response is either "***g***" to question six or "***d***" to question four, show end of survey message.

Appendix B
UNIVERSITY OF SOUTH DAKOTA
Institutional Review Board
Informed Consent Statement

Title of Project: Interpersonal Relationships and Suicidal Ideation

Principal Investigator: Raluca Simons, Ph.D., Union Building, USD, Room 107, Vermillion, SD 57069
(605)-658-3710, Raluca.Simons@usd.edu

Other Investigators: Surabhi Swaminath, Union USD Building, Room 404-A, Vermillion, SD 57069,
(605)-658-3710, Surabhi.Swaminath@coyotes.usd.edu

INVITATION TO BE PART OF A RESEARCH STUDY
You are invited to participate in a research study. Taking part in this research project is completely voluntary. To participate, you must be between 18 and 29 years and be willing to complete this survey in a place where you can focus well and where it is unlikely that anyone will distract you. If you decide to participate in this research study, please take time to read this entire form and reach out with questions before deciding whether to take part in this research project.

WHAT IS THE STUDY ABOUT AND WHY ARE WE DOING IT?
The purpose of the study is to investigate the associations between childhood experiences, interpersonal relationships, emotion regulation, and suicidal ideation in young adults. About 450 people will take part in this research.

WHAT WILL HAPPEN IF YOU TAKE PART IN THIS STUDY?
If you agree to take part in this study, you will be asked to answer demographic questions and questionnaires about childhood maltreatment, romantic relationships, emotion regulation, and suicidal ideation online via Qualtrics. The survey contains sensitive questions regarding suicidal thoughts and behaviors. It will take approximately 30 minutes to complete the study. You will need to enter the random survey code at the end of the survey to receive compensation.

WHAT RISKS MIGHT RESULT FROM BEING IN THIS STUDY?
There are some risks you might experience from being in this study. You may experience frustration that is often experienced when completing long surveys and some of the questions are personal and might cause discomfort to some people. If you endorse severe suicidal ideation, we will not be able to provide any direct help due to survey anonymity. If you would like to talk to someone about your feelings regarding such sensitive questions, you are encouraged to contact the National Suicide Prevention Lifeline by calling them at 1-800-273-TALK (8255) or via chat at https://suicidepreventionlifeline.org/. There are no further risks in participating in this research study.

HOW COULD YOU BENEFIT FROM THIS STUDY?

Although you will not directly benefit from being in this study, you may be helping others by contributing to our understanding of the associations between childhood maltreatment, emotion dysregulation, attachment regulation, impulsivity, and suicidal ideation. The results of this study may help us develop better interventions and prevention strategies to reduce long-term effects of childhood maltreatment and mitigate distress arising from suicidal thoughts and behaviors.

HOW WILL WE PROTECT YOUR INFORMATION?
The study does not ask for any information that would identify who the responses belong to. Therefore, your responses are recorded anonymously. If this research is published, no information that would identify you will be included, and only group data will be published. All survey responses that we receive will be treated confidentially and stored on a secure server and to protect your privacy, we will not include any information that could identify you.

However, given that the surveys can be completed from any computer (e.g., personal, work, school), we are unable to guarantee the security of the computer on which you choose to enter your responses. As a participant in our study, we want you to be aware that certain "key logging" software programs exist that can be used to track or capture data that you enter and/or websites that you visit.

HOW WILL WE COMPENSATE YOU FOR BEING PART OF THE STUDY?
If participants successfully pass 4 out of 5 of the attention checks, they will receive $2.00 for their time and efforts. Participants must enter the random code at the end on the amazon HIT page to receive compensation. Study investigators reserve the right to reject a HIT for not passing the attention checks. You may also withdraw from the study at any time without being reprimanded. If you choose not to participate or withdraw from the study mid-way, please note that you will not be compensated for your time.

YOUR PARTICIPATION IN THIS STUDY IS VOLUNTARY
It is totally up to you to decide to be in this research study. Participating in this study is voluntary. Even if you decide to be part of the study now, you may change your mind and stop at any time. You do not have to answer any questions you do not want to answer. *However*, if you decide to withdraw from the study, you will not be compensated for your time.

CONTACT INFORMATION AND QUESTIONS ABOUT RESEARCH
The researchers conducting this study are Dr. Raluca Simons and Surabhi Swaminath. If you have any questions, concerns, or complaints about the research please contact Dr. Raluca Simons at (605)-658-3710 during the day.

If you have questions regarding your rights as a research subject, you may contact The University of South Dakota- Office of Human Subjects Protection at (605) 658-3743. You may also call this number with problems, complaints, or concerns about the research. Please call this number if you cannot reach research staff, or you wish to talk with someone who is an informed individual who is independent of the research team.

YOUR CONSENT
Before agreeing to be part of the research, please be sure that you understand what the study is

about. Keep this copy of this document for your records. If you have any questions about the study later, you can contact the study team using the information provided above.

Do you wish to participate in this study?
Yes
No

If “Yes” continue survey, if “No” show end of survey message.

Appendix C

UNIVERSITY OF SOUTH DAKOTA
Institutional Review Board
Informed Consent Statement

Title of Project: Interpersonal Relationships and Suicidal Ideation

Principal Investigator: Raluca Simons, Ph.D., Union Building, USD, Room 107, Vermillion, SD 57069
(605)-658-3710, Raluca.Simons@usd.edu

Other Investigators: Surabhi Swaminath, Union USD Building, Room 404-A, Vermillion, SD 57069,
(605)-658-3710, Surabhi.Swaminath@coyotes.usd.edu

INVITATION TO BE PART OF A RESEARCH STUDY

You are invited to participate in a research study. Taking part in this research project is completely voluntary. To participate, you must be between 18 and 25 years and be willing to complete this survey in a place where you can focus well and where it is unlikely that anyone will distract you. If you decide to participate in this research study, please take time to read this entire form and reach out with questions before deciding whether to take part in this research project.

WHAT IS THE STUDY ABOUT AND WHY ARE WE DOING IT?

The purpose of the study is to investigate the associations between childhood experiences, interpersonal relationships, emotion regulation, and suicidal ideation in young adults. About 450 people will take part in this research.

WHAT WILL HAPPEN IF YOU TAKE PART IN THIS STUDY?

If you agree to take part in this study, you will be asked to answer demographic questions and questionnaires about childhood maltreatment, romantic relationships, emotion regulation, and suicidal ideation online via Qualtrics. The survey contains sensitive questions regarding suicidal thoughts and behaviors. It will take approximately 30 minutes to complete the study. Participants will need to enter the random survey code at the end of the survey onto SONA to receive compensation.

WHAT RISKS MIGHT RESULT FROM BEING IN THIS STUDY?

There are some risks you might experience from being in this study. You may experience frustration that is often experienced when completing long surveys and some of the questions are personal and might cause discomfort to some people. If you endorse severe suicidal ideation, we will not be able to provide any direct help due to survey anonymity. If you would like to talk to someone about your feelings regarding such sensitive questions, you are encouraged to speak with someone from the Student Counselling Center at USD by calling 605-658-3580 or reaching out to the National Suicide Prevention Lifeline by calling them at 1-800-273-TALK (8255) or

via chat at https://suicidepreventionlifeline.org/. There are no further risks in participating in this research study.

HOW COULD YOU BENEFIT FROM THIS STUDY?
Although you will not directly benefit from being in this study, you may be helping others by contributing to our understanding of the associations between childhood maltreatment, emotion dysregulation, attachment regulation, impulsivity, and suicidal ideation. The results of this study may help us develop better interventions and prevention strategies to reduce long-term effects of childhood maltreatment and mitigate distress arising from suicidal thoughts and behaviors.

HOW WILL WE PROTECT YOUR INFORMATION?
The study does not ask for any information that would identify who the responses belong to. Therefore, your responses are recorded anonymously. If this research is published, no information that would identify you will be included, and only group data will be published. All survey responses that we receive will be treated confidentially and stored on a secure server and to protect your privacy, we will not include any information that could identify you.

However, given that the surveys can be completed from any computer (e.g., personal, work, school), we are unable to guarantee the security of the computer on which you choose to enter your responses. As a participant in our study, we want you to be aware that certain "key logging" software programs exist that can be used to track or capture data that you enter and/or websites that you visit.

HOW WILL WE COMPENSATE YOU FOR BEING PART OF THE STUDY?
If participants complete the survey and pass 4/5 of the attention checks, they will be compensated for their time with 5 SONA credits. Participants must enter the random code at the end on the amazon HIT page to receive compensation. Study investigators reserve the right to reject a survey if participants do not adequately pass the attention checks. You may also withdraw from the study at any time without being reprimanded. This will not affect your coursework or be reported to the course instructor. If you choose not to participate or withdraw from the study mid-way, please note that you will not be compensated for your time.

YOUR PARTICIPATION IN THIS STUDY IS VOLUNTARY
It is totally up to you to decide to be in this research study. Participating in this study is voluntary. Even if you decide to be part of the study now, you may change your mind and stop at any time. You do not have to answer any questions you do not want to answer. *However*, if you decide to withdraw from the study, you will not be compensated for your time.

CONTACT INFORMATION AND QUESTIONS ABOUT RESEARCH
The researchers conducting this study are Dr. Raluca Simons and Surabhi Swaminath. If you have any questions, concerns, or complaints about the research please contact Dr. Raluca Simons at (605)-658-3710 during the day.

If you have questions regarding your rights as a research subject, you may contact The University of South Dakota- Office of Human Subjects Protection at (605) 658-3743. You may also call this number with problems, complaints, or concerns about the research. Please call this

number if you cannot reach research staff, or you wish to talk with someone who is an informed individual who is independent of the research team.

YOUR CONSENT
Before agreeing to be part of the research, please be sure that you understand what the study is about. Keep this copy of this document for your records. If you have any questions about the study later, you can contact the study team using the information provided above.

Do you wish to participate in this study?
Yes
No

If "Yes" continue survey, if "No" show the end of survey message.

Appendix D

Demographics Questionnaire

Please select the most appropriate answer.

1) **What is your age? (Please enter only numbers) ____**
2) **What was your biological sex at birth?**
   - **a)** Female
   - **b)** Male
3) **What ethnicity do you most closely identify with?**
   - **a)** Hispanic or Latinx
   - **b)** Not Hispanic or Latinx
4) **Please select one racial group that best described you**
   - **a)** Asian
   - **b)** American Indian or Alaska Native
   - **c)** Black or African American
   - **d)** Native Hawaiian or other Pacific Islander
   - **e)** Caucasian or European American or White
   - **f)** Multiracial
   - **e)** Other (Please specify) _____
5) **Please indicate your marital status**
   - **a)** Engaged
   - **b)** Never married
   - **c)** Married
   - **d)** In a civil union
   - **e)** Separated
   - **f)** Divorced
   - **g)** Widowed
6) **Please select your year in school (if applicable)**
   - a) Freshman
   - b) Sophomore
   - c) Junior
   - d) Senior
   - e) Graduate school
   - f) 2-Year College
   - g) Not currently enrolled in school.

Appendix E

Childhood Trauma Questionnaire – Short Form (CTQ-SF)

When I was growing up…

	Never True	Rarely True	Somewhat True	Often True	Very Often True
01. I didn't have enough to eat.	1	2	3	4	5
02. I knew that there was someone to take care of me and protect me.	1	2	3	4	5
03. People in my family called me things like "Stupid", "Lazy", or "Ugly".	1	2	3	4	5
04. My parents were too drunk or high to take care of the family.	1	2	3	4	5
05. There was someone in my family who helped me feel that I was important or special.	1	2	3	4	5
06. I had to wear dirty clothes.	1	2	3	4	5
07. I felt loved.	1	2	3	4	5
08. I thought that my parents wished I had never been born.	1	2	3	4	5
09. I got hit so hard by someone in my family that I had to see a doctor or go to the hospital.	1	2	3	4	5
10. There was nothing I wanted to change about my family.	1	2	3	4	5
11. People in my family hit me so hard that it left me with bruises or marks.	1	2	3	4	5
12. I was punished with a belt, a board, a cord, or some other hard object.	1	2	3	4	5
13. People in my family looked out for each other	1	2	3	4	5
14. People in my family said hurtful or insulting things to me.	1	2	3	4	5
15. I believed that I was physically abused.	1	2	3	4	5
16. I had the perfect childhood.	1	2	3	4	5

17. I got hit or beaten so badly that it was noticed by someone like a teacher, neighbor, or doctor.	1	2	3	4	5
18. I felt that someone in my family hated me.	1	2	3	4	5
19. People in my family felt close to each other.	1	2	3	4	5
20. Someone tried to touch me in a sexual way or tried to make me touch them.	1	2	3	4	5
21. Someone threatened to hurt me or tell lies about me unless I did something sexual for them.	1	2	3	4	5
22. I had the best family in the world.	1	2	3	4	5
23. Someone tried to make me do sexual things or watch sexual things.	1	2	3	4	5
24. Someone molested me.	1	2	3	4	5
25. I believed that I was emotionally abused.	1	2	3	4	5
26. There was someone to take me to the doctor if I needed it.	1	2	3	4	5
27. I believed that I was sexually abused.	1	2	3	4	5
28. My family was a source of strength and support.	1	2	3	4	5

Appendix F

Experiences in Close Relationships-Revised (ECR-R) Questionnaire

The statements below concern how you feel in emotionally intimate relationships. We are interested in how you ***generally*** experience relationships, not just in what is happening in a current relationship. Respond to each statement by clicking the circle to indicate how much you agree or disagree with the statement. **1** = Strongly Disagree, **2** = Disagree, **3** = Slightly Disagree, **4** = Neither Agree/ Disagree, **5** = Slightly Agree, **6** = Agree, **7** = 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
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
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
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 G

UPPS-P

Below are a number of statements that describe ways in which people act and think. For each statement, please indicate how much you agree or disagree with the statement. If you **Agree Strongly** select 1, if you **Agree Somewhat** select 2, if you **Disagree somewhat** select 3, and if you **Disagree Strongly** select 4. Be sure to indicate your agreement or disagreement for every statement below.

	Agree Strongly	Agree Somewhat	Disagree Somewhat	Disagree Strongly
1. I have a reserved and cautious attitude toward life.	0	1	2	3
2. I have trouble controlling my impulses.	0	1	2	3
3. I generally seek new and exciting experiences and sensations.	0	1	2	3
4. I generally like to see things through to the end.	0	1	2	3
5. When I am very happy, I can't seem to stop myself from doing things that can have bad consequences.	0	1	2	3
6. My thinking is usually careful and purposeful.	0	1	2	3
7. I have trouble resisting my cravings (for food, cigarettes, etc.).	0	1	2	3
8. I'll try anything once.	0	1	2	3
9. I tend to give up easily.	0	1	2	3
10. When I am in a great mood, I tend to get into situations that could cause me problems.	0	1	2	3
11. I am not one of those people who blurt out things without thinking.	0	1	2	3
12. I often get involved in things I later wish I could get out of.	0	1	2	3
13. I like sports and games in which you have to choose your next move very quickly.	0	1	2	3
14. Unfinished tasks really bother me.	0	1	2	3
15. When I am very happy, I tend to do things that may cause problems in my life.	0	1	2	3
16. I like to stop and think things over before I do them.	0	1	2	3
17. When I feel bad, I will often do things I later regret in order to make myself feel better now.	0	1	2	3

18. I would enjoy water skiing.	0	1	2	3
19. Once I get going on something I hate to stop.	0	1	2	3
20. I tend to lose control when I am in a great mood.	0	1	2	3
21. I don't like to start a project until I know exactly how to proceed.	0	1	2	3
22. Sometimes when I feel bad, I can't seem to stop what I am doing even though it is making me feel worse.	0	1	2	3
23. I quite enjoy taking risks.	0	1	2	3
24. I concentrate easily.	0	1	2	3
25. When I am really ecstatic, I tend to get out of control.	0	1	2	3
26. I would enjoy parachute jumping.	0	1	2	3
27. I finish what I start.	0	1	2	3
28. I tend to value and follow a rational, "sensible" approach to things.	0	1	2	3
29. When I am upset, I often act without thinking.	0	1	2	3
30. Others would say I make bad choices when I am extremely happy about something.	0	1	2	3
31. I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional.	0	1	2	3
32. I am able to pace myself so as to get things done on time.	0	1	2	3
33. I usually make up my mind through careful reasoning.	0	1	2	3
34. When I feel rejected, I will often say things that I later regret.	0	1	2	3
35. Others are shocked or worried about the things I do when I am feeling very excited.	0	1	2	3
36. I would like to learn to fly an airplane.	0	1	2	3
37. I am a person who always gets the job done.	0	1	2	3
38. I am a cautious person.	0	1	2	3
39. It is hard for me to resist acting on my feelings.	0	1	2	3
40. When I get really happy about something, I tend to do things that can have bad consequences.	0	1	2	3
41. I sometimes like doing things that are a bit frightening.	0	1	2	3

42. I almost always finish projects that I start.	0	1	2	3
43. Before I get into a new situation, I like to find out what to expect from it.	0	1	2	3
44. I often make matters worse because I act without thinking when I am upset.	0	1	2	3
45. When overjoyed, I feel like I can't stop myself from going overboard.	0	1	2	3
46. I would enjoy the sensation of skiing very fast down a high mountain slope.	0	1	2	3
47. Sometimes there are so many little things to be done that I just ignore them all.	0	1	2	3
48. I usually think carefully before doing anything.	0	1	2	3
49. Before making up my mind, I consider all the advantages and disadvantages.	0	1	2	3
50. When I am really excited, I tend not to think of the consequences of my actions.	0	1	2	3
51. In the heat of an argument, I will often say things that I later regret.	0	1	2	3
52. I would like to go scuba diving.	0	1	2	3
53. I tend to act without thinking when I am really excited.	0	1	2	3
54. I always keep my feelings under control.	0	1	2	3
55. When I am really happy, I often find myself in situations that I normally wouldn't be comfortable with.	0	1	2	3
56. I would enjoy fast driving.	0	1	2	3
57. When I am very happy, I feel like it is ok to give in to cravings or overindulge.	0	1	2	3
58. Sometimes I do impulsive things that I later regret.	0	1	2	3
59. I am surprised at the things I do while in a great mood.	0	1	2	3

Appendix H

20 Item Toronto Alexithymia Scale (TAS-20)

Using the scale provided as a guide, indicate how much you agree or disagree with each of the following statements by selecting the corresponding number. Give only one answer for each statement.

	Strongly Disagree	Moderately Disagree	Neither Disagree nor Agree	Moderately Agree	Strongly Agree
1. I am often confused about what emotion I am feeling	1	2	3	4	5
2. It is difficult for me to find the right words for my feelings.	1	2	3	4	5
3. I have physical sensations that even doctors cannot understand.	1	2	3	4	5
4. I am able to describe my feelings easily.	1	2	3	4	5
5. I prefer to analyze problems rather than just describe them.	1	2	3	4	5
6. When I am upset, I don't know if I'm sad, frightened, or angry.	1	2	3	4	5
7. I am often puzzled by sensations in my body.	1	2	3	4	5
8. I prefer to just let things happen rather than to understand why they turned out that way.	1	2	3	4	5
9. I have feelings that I cannot quite identify.	1	2	3	4	5
10. Being in touch with emotions is essential.	1	2	3	4	5
11. I find it hard to describe how I feel about people.	1	2	3	4	5
12. People tell me to describe my feelings more.	1	2	3	4	5
13. I don't know what's going on inside me.	1	2	3	4	5

14. I often don't know why I'm angry.	1	2	3	4	5
15. I prefer talking to people about their daily activities than their feelings.	1	2	3	4	5
16. I prefer to watch "light" entertainment shows rather than psychological dramas.	1	2	3	4	5
17. It is difficult for me to reveal my innermost feelings, even to close friends.	1	2	3	4	5
18. I can feel close to someone, even in moments of silence.	1	2	3	4	5
19. I find examinations of my feelings useful in solving personal problems.	1	2	3	4	5
20. Looking for hidden meanings in movies or plays distracts me from enjoyment.	1	2	3	4	5

Appendix I

Adult Suicidal Ideation Questionnaire (ASIQ)

Listed below are sentences that describe thoughts that people sometimes have. Read each sentence carefully and decide ***which of these thoughts you have had in the past month***. Pick the option that best describes your thoughts. There are no right or wrong answers so answer each sentence as openly and honestly as possible. Be sure to answer each sentence. *Do NOT* leave any sentences blank.

This thought was in my mind;

	Almost every day	Couple of times a week	About once a week	Couple of times a month	About once a month	I had this thought before, but not in the past month	I never had this thought
01. I thought it would be better if I was not alive.	0	1	2	3	4	5	6
02. I thought about killing myself.	0	1	2	3	4	5	6
03. I thought about how I would kill myself.	0	1	2	3	4	5	6
04. I thought about when I would kill myself.	0	1	2	3	4	5	6
05. I thought about what I would write in a suicide note.	0	1	2	3	4	5	6
06. I thought about telling people I plan to kill myself.	0	1	2	3	4	5	6
07. I thought that people would be happier if I was not around.	0	1	2	3	4	5	6
08. I thought about how people would feel if I killed myself.	0	1	2	3	4	5	6
09. I wished I were dead.	0	1	2	3	4	5	6

10. I thought about how easy it would be to end it all.	0	1	2	3	4	5	6
11. I thought that killing myself would solve my problems.	0	1	2	3	4	5	6
12. I thought that others would be better off if I was dead.	0	1	2	3	4	5	6
13. I wish I had the nerve to kill myself.	0	1	2	3	4	5	6
14. I wished that I had never been born.	0	1	2	3	4	5	6
15. I thought that if I had the chance, I would kill myself.	0	1	2	3	4	5	6
16. I thought about ways people kill themselves.	0	1	2	3	4	5	6
17. I thought about killing myself but would not do it.	0	1	2	3	4	5	6
18. I thought about having a bad accident.	0	1	2	3	4	5	6
19. I thought that life was not worth living.	0	1	2	3	4	5	6
20. I thought that my life was too rotten to continue.	0	1	2	3	4	5	6
21. I thought that the only way to be noticed was to kill myself.	0	1	2	3	4	5	6
22. I thought that if I killed myself, people would realize I was worth caring about.	0	1	2	3	4	5	6
23. I thought that no one cared if I lived or died.	0	1	2	3	4	5	6
24. I wondered if I had the nerve to kill myself.	0	1	2	3	4	5	6
25. I thought that if things did not get better, I would kill myself.	0	1	2	3	4	5	6

Appendix J

Instructional Manipulation Checks and Instructed-Response Items

01. I do not understand a word of English.
    - **a. Strongly Disagree**
    - b. Moderately Disagree
    - c. Neither Agree nor Disagree
    - d. Moderately Agree
    - e. Strongly Agree
02. All my friends are aliens.
    - a. Agree Strongly
    - b. Agree Somewhat
    - c. Disagree Somewhat
    - **d. Disagree Strongly**
03. To verify that the browser works properly and that we are collecting all your answers, please select the category fair from the list below?
    - a. Very Good
    - b. Good
    - **c. Fair**
    - d. Bad
    - e. Very Bad
04. Most modern theories of decision making recognize the fact that decisions do not take place in a vacuum. Individual preferences and knowledge, along with situational variables can greatly impact the decision process. To facilitate our research on decision making, we are interested in knowing certain factors about you, the decision-maker. Specifically, we are interested in whether you take the time to read the directions; if not, then some of our manipulations that rely on changes in the instructions will be ineffective. So, to demonstrate that you have read the instructions, please ignore the sports item below. Instead, write "I read the instructions" in the box marked "Other". Which of these activities do you engage in regularly?
    - a. Hiking
    - b. Cooking
    - c. Reading
    - d. Swimming
    - e. Ice-skating
    - **f. Other _____**
05. For the next question, mark the first two response options to demonstrate attention. Which political parties do you strongly affiliate with? Mark all that apply.
    - **a. Citizens party**
    - **b. Socialist Action party**
    - c. Constitution party

d. Libertarian party
e. Green party
f. Democratic party
g. Republican party
h. Independent

Appendix K

Eligible End of Survey Message, University of South Dakota

Thank you for taking the time to answer our questions attentively. To gain course credit, please enter the following code "**xxxxx"** in the SONA dialogue box. Do not share this automated survey code, sharing codes will result in zero course credit.

For information of suicide related help please contact the National Suicide Prevention Lifeline by calling them at 1-800-273-TALK (8255) or via chat at https://suicidepreventionlifeline.org/.

If you are experiencing suicide related thoughts that are potentially life threatening, please call 911 instead. These resources are available 24/7

Appendix L

Eligible End of Survey Message, Amazon Mechanical Turk

Thank you for taking the time to answer our questions attentively. Please enter code "**xxxxx"** in the Amazon Mechanical Turk Hit page dialogue box. Do not share this automated survey code, sharing codes will result in no compensation.

For information of suicide related help please contact the National Suicide Prevention Lifeline by calling them at 1-800-273-TALK (8255) or via chat at https://suicidepreventionlifeline.org/.

If you are experiencing suicide related thoughts that are potentially life threatening, please call 911 instead. These resources are available 24/7

Appendix M

Ineligible End of Survey Message, Amazon Mechanical Turk & University of South Dakota

Thank you for taking the time to answer our brief screener. Unfortunately, you are ineligible to participate in the full study survey at this time. Please close this page and return to the main study page.