## A Dissertation

entitled

Predictors of the Acquired Capability for Suicide among Childhood Trauma Survivors

by

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Submitted to the Graduate Faculty as partial fulfillment of the requirements for the

Doctor of Philosophy Degree in Clinical Psychology

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## An Abstract of

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Research has linked childhood trauma to suicide risk, where certain forms of trauma, greater severity, and repeated exposure increase risk for suicide; however, the mechanisms underlying these relationships have not been systematically explored. The Interpersonal Theory of Suicide (IPT), which has three main components, including the better-researched thwarted belongingness and perceived burdensomeness, and a less-well studied component known as the acquired capability for suicide, has improved the understanding of suicide risk. Factors related to childhood trauma (e.g., complexity and forms of trauma, disrupted attachment, emotional and behavioral dysregulation) have not been directly assessed using the IPT. This study aimed to identify the mechanisms of childhood trauma that lead to suicide risk via the acquired capability for suicide. One hundred and thirty-nine college students enrolled in Introductory Psychology courses who endorsed prior trauma exposure, indicated being between the ages of 18 and 22 years old, and whose first language is English were recruited from Sona Systems to participate in a two part online survey of questionnaires. Bootstrapping techniques revealed that disrupted attachment, dual emotionally and physically painful trauma exposure, and emotion dysregulation are associated with acquired capability for suicide. There was a trend toward significance of the role of interpersonal trauma exposure being associated with an acquired capability for suicide.

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Results found no support for the role of behavioral dysregulation, physically painful forms of trauma, or emotionally painful forms of trauma being associated with acquired capability for suicide. Additionally, partial support was found for the interpersonal theory of suicide, specifically the role of perceived burdensomeness and an acquired capability for suicide were important predictors of suicide ideation and past attempts, while thwarted belongingness was not found to be a predictor. Findings also support the role of non-suicidal self-injury on predicting suicide risk. The results have implications for the incorporation of screening for childhood trauma exposure and disrupted attachment in the assessment of suicide risk. Additionally, suicide prevention could target emotion dysregulation in order to reduce suicide risk.

This dissertation is dedicated to my family. Dad, you have always been the quiet voice whispering to me that I can do anything I put my mind to. Your words of encouragement, reminders of how proud I make you and how much you love me have carried me through this journey. Mom, your faith in my ability and reminder that "you always succeed" when I would express doubt reminded me that no matter whether I counted something a success, I would always be a success in your eyes because of your unconditional love. To my in-laws, Rex & Carol: I am so grateful to you for opening your home to me so that I could finish my Bachelor's degree. I literally would not be where I am today without you. Your continued love and support and enthusiasm continue to shape me. To my sister and brother-in-law, from middle school onward, you have helped me find and grow my intellectual curiosity. My tenacity for learning is largely due to watching both of you model that for me. To my brother and sister-in-law, my world would not be complete without you in it. Our times spent talking about life and love, and all the delicious food and openness you have provided me over the years have reminded me that there is no ordinary. To my brother-in-laws, Kyle & Cory, you inspire me to pursue my passion. To my extended family, including my Aunts and Uncles in-laws, and especially Aunt Glad (in heaven) & Uncle Billy, Aunt A, Aunt Bonnie & Uncle Kenny, Aunt Goldie & Uncle Bob, Uncle Bob & Aunt Vic, cousins Shelby, Jess, & Ericka: simply put, I would not be the person I am today without you. True to our Appalachian roots, it took an entire community to raise me, and I feel very fortunate to have grown up with the extended network of social support to guide me. To Taylor, Jarod, & Silas: I love you very much; remember that you can do anything you put your mind to because you are awesome and 'enough'.

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List of Abbreviations

ACSS	. Acquired Capability for Suicide Scale
ALSPAC	Avon Longitudinal Study of Parents and Children Study Team
BAM	Brief Agitation Measure
BSS	Beck Scale for Suicide Ideation
CES-D	Center for Epidemiology Studies – Depression Scale
DERS	Difficulties in Emotion Regulation Scale
eg	Example Given
FASM	Functional Assessment of Self Mutilation
GSR	Galvanic Skin Response
i.e	Id Est
INQ	Interpersonal Needs Questionnaire
INQ-LB	Interpersonal Needs Questionnaire – Lack of Belongingness subscale
INQ-PB	Interpersonal Needs Questionnaire – Perceived Burdensomeness subscale
IPT	Interpersonal Theory of Suicide
MA	Master of Arts Degree [Note: Abbreviations are listed alphabetically; not
enume	erated, single spaced in groupings, double spaced between]
NCTSN	National Child Traumatic Stress Network
n.d	No Date [not common]
NSSI	. Non-Suicidal Self-Injury
PTSD	Posttraumatic Stress Disorder
SAMHSA	Substance Abuse and Mental Health Services Administration
SBQ	Suicide Behaviors Questionnaire
SCID-I/NP	. Structured Clinical Interview for DSM-IV-TR Axis I Disorders – PTSD
Screen	ner Item
UCLA-PTSD	UCLA PTSD Reaction Index for DSM-5

# List of Symbols

% Percent
\$ Dollars
= Equal to
< Less than
^Denotes significance at <.10
*Denotes significance at <.05
**Denotes significance at <.01
***Denotes significance at <.0001
αAlpha
ßBeta
CFI Comparative Fit Index
CI Confidence Interval
df Degrees of freedom
I One
n Number of participants within a subsample of the larger sample
N Number of participants in the whole sample
p Statistical significance value
r Correlation statistic that tells how much two variables are related to one another
$R^2$ Statistical measure of the amount of variability explained by the test statistic
RMSEA Root Mean Square Error of Approximation fit statistic
S-B $\chi^2$ Satorra-Bentler Chi-square test statistic
SD Standard Deviation
SE Standard Error
SMSR Standardized Root Mean Square Residual
t The t-test statistic is the value of difference represented in standard error units
TLI Tucker Lewis Index fit statistic
v Version
YB $\chi^2$ Mean-adjusted Chi-square test statistic robust to non-normality

## Chapter 1

## Introduction

Suicide is the third leading cause of death among adolescents aged 12-18 and young adults aged 19-34, and tenth leading cause of death for all ages (Centers for Disease Control and Prevention [CDC], n.d.). Attention to and changes in suicide prevention in the past decade have not effectively decreased the rate of suicide (Insel, 2014). A number of frameworks have been developed to understand the factors that lead to suicide risk. The Interpersonal Theory of Suicide (IPT) purports that those most likely to die by suicide have a high perceived burdensomeness, strong thwarted belongingness, and an acquired capability to die by suicide (Joiner, 2005; Figure 1). Acquired capability is established via a habituation to pain and fear of death and has two components: desensitization to one's own death and tolerance to pain (Van Orden et al., 2010). Thwarted belongingness is theorized to be a dynamic cognitive-affective state composed of feelings of loneliness and perceived lack of reciprocally caring relationships (Van Orden et al., 2010). Perceived burdensomeness is composed of two interpersonal components, including the individual's belief that he/she is a liability for others due to his/her deficiencies and the individual's loathing cognitions about him/herself (Van Orden et al., 2010). Given that trauma is characterized by a physically or emotionally painful, shocking, stressful, and sometimes life threatening experience (Substance Abuse and Mental Health Services Administration [SAMHSA], 2012), exposure to trauma could increase suicide risk via the development of an acquired capability for suicide. That is, the desensitization to pain, both emotionally and physically, which can occur as a result of traumatic experience may be an integral component to increased risk of suicide.

Research has linked childhood trauma to suicide risk (e.g., Brent, Perper, Moritz, Baugher, Schweers, & Roth, 1994; Joiner, Sachs-Ericsson, Wingate, Brown, Anestis, & Selby, 2007), but the mechanisms underlying this relationship have not been systematically explored.



(van Orden et al., 2010, p. 588, Figure 5).

Copyright © 2010 by the American Psychological Association. Adapted with permission. The official citation that should be used in referencing this material is Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., & Joiner, T. E. (2010). The interpersonal theory of suicide. *Psychological Review*, *117*(2), 575-600. doi: 10.1037/a0018697. The use of APA information does not imply endorsement by APA.

Figure 1. Model of the Interpersonal Theory of Suicide.

## The Interpersonal Theory of Suicide

The Interpersonal theory of suicide (IPT) asserts that those most likely to die by suicide have a high perceived burdensomeness, strong thwarted belongingness, and an acquired capability to die by suicide (Refer to Figure 1; Joiner et al., 2005). While suicide risk is dynamic in that all the risks align to lead to a suicide attempt, if conceptualized sequentially, thwarted belongingness and perceived burdensomeness typically occurs earlier and precludes acquired capability for suicide (Van Orden et al., 2010). Having higher perceived burdensomeness and thwarted belongingness is theorized to lead to increased passive suicide ideation and hopelessness, two strong predictors of suicide risk (Van Orden et al., 2010). According to the IPT, suicide risk is highest when all three components align with access to lethal means and a window of opportunity to attempt suicide.

According to the theory, an individual becomes desensitized to death via repeated exposure to provocative and painful experiences that also leads to a habituation to pain (Smith & Cukrowicz, 2010). The IPT proposes that the acquired capability is the final, and potentially most crucial, predictor of those who die by suicide because individuals can have a desire for suicide, passive suicide ideation, and hopelessness, but without a lowered fear of death, they will be less likely to develop an intent to die by suicide (Refer to Figure 2; Van Orden et al., 2010). Further, those who have the previously mentioned risks and intent to die by suicide will be less likely to make a lethal suicide attempt if they have not attained an increased pain tolerance as making an attempt is painful (Van Orden et al., 2010). While research has focused on adult risk and extensively studied perceived burden and lack of belongingness, less is known about acquired capability and little published research to date has assessed the mechanism that childhood trauma exposure



may play in the development of an acquired capability for suicide.

Figure 2. Model of Acquired Capability's Theorized Role in Predicting Death by Suicide.

## Acquired Capability for Suicide and Childhood Trauma Exposure

A review of the literature assessing the role of pain in suicide risk as well as the role of trauma in predicting future habituation to pain and fear of death indicates that the acquired capability for suicide and childhood trauma exposure are linked by pain. Smith (2013) created a model for the role of trauma on suicide risk, wherein he proposes that trauma exposure leads to increased pain tolerance and the development of PTSD via a psychosocial disruption. The psychosocial disruption leads to increased thwarted belongingness and perceived burdensomeness, which then culminate to put someone at risk for suicide, so there is an indirect relationship between trauma exposure and risk to die by suicide via thwarted belongingness and perceived burdensomeness. Additionally, the trauma exposure itself increases pain tolerance and theoretically leads to an acquired capability for suicide.

In support of Smith's (2013) theory, a multiple mediation model with young

adults where pain threshold, pain tolerance, intensity of pain threshold, and intensity of pain tolerance were assessed; only pain tolerance accounted for a statistically significant portion of variance between painful and provocative events (i.e., potentially traumatic events) and acquired capability for suicide (Franklin, Hessel, & Prinstein, 2011). This signifies that it is not the level of pain felt, or the intensity of the tolerance built that connects painful and provocative events with acquired capability for suicide. Instead, what connects the two is whether habituation to pain is established from experiencing painful and provocative events. In another study, perceived emotional neglect was predictive of adolescent suicide attempts and future sexual abuse (Lipschitz et al., 1999). This evidence lends support for the role of emotional pain in suicide risk, as well as sets the stage for the role of complex trauma (i.e., the experience of multiple trauma types) in suicide, which will be explored in greater detail later in the paper. Further auxiliary support of this connection is that individuals with a history of NSSI, a manifestation of difficulty in regulating behaviors, have been found to have a greater suicidal capability and lower perception of pain than individuals without a history of NSSI (Franklin, Hessel, & Prinstein, 2011). A more thorough understanding of NSSI via behavioral dysregulation and suicide risk will be discussed later in this paper (See Behavioral Dysregulation and Suicide Risk).

There is evidence to suggest that trauma exposure leads to a fearlessness of death. For example, in a sample of female college students, childhood sexual abuse (defined by being abused before age 15) and "adult" sexual abuse (defined by being abused after age 15) accounted for a statistically significant proportion of the variance in fearlessness of death (Thakkar, Gutierrez, Kuczen, & McCanne, 2000). In another study, suicide

ideation and suicide attempt risks were similar regardless of whether abuse was singularly perpetrated by a family member or non-family member (Eisenberg et al., 2007). Consistent with Joiner's theory (2005), whereby exposure to stimuli that are more painful compared to stimuli that are not as painful should increase risk for suicide, Eisenberg et al. (2007) found that adolescents who experienced sexual abuse by both a family member and non-family member were at greater risk for suicide ideation and attempts than those who had only experienced sexual abuse by either a family member or a non-family member.

Additionally, repeated exposure to injury/pain, that is, repeated exposure to painful and provocative events, has been found to be associated with suicidality (Dhossche, Snell, & Larder, 2000; Menninger, 1936; Phillips, McElroy, Keck, & Pope, 1993; Rosenthal, Rinzler, Wallsh, & Klausner, 1972; Veale, Boocock, Gournay, & Dryden, 1996). Twenty-five to fifty percent of suicide attempters report a previous attempt (Briere & Runtz, 1990; Roy, 1982), which may suggest that making a suicide attempt is, in and of itself, a painful and provocative experience. Retrospective research has found that 1% of suicide attempters die by suicide each year following a hospitalization for suicide attempt (Garzotto, Buglass, Holding, & Kreitman, 1977) and repeat suicide attempts were associated with other self-harm behavior (Mandelli, Carli, Roy, Serretti, & Sarchiapone, 2011). Taken together, exposure to traumatic events, which are painful and provocative, is associated with perceived pain tolerance, fearlessness of death, acquired capability, and suicide risk.

## **Childhood Trauma and Suicide Risk**

As has been alluded to, there is much research associating childhood trauma with

later suicide risk. Researchers have found an association between childhood abuse and both adolescent (Brent et al., 1994; Evans et al., 2005; Glowinski et al., 2001) and adult (Joiner et al., 2007; Roy, 2003; Brodsky & Stanley, 2008) suicide risk. Much of the available research has focused on types of trauma and their relative associations with suicide risk. For example, childhood sexual abuse and physical abuse as well as being bullied as a child have all been found to be risk factors for suicidality, which encompasses all facets of suicide risk (e.g., suicide ideation, attempts, lethality of attempts; Bridge, Goldstein, & Brent, 2006; Brodsky & Stanley, 2008). The research has been mixed with regard to which types of trauma are associated with greater suicide risk. One limitation of prior research is that most studies have assessed childhood sexual abuse and less attention has been paid to other forms of abuse. Another limitation is that most of the studies assessing a specific type of abuse have neglected to consider or control for other forms of abuse when completing their analyses. Despite these limitations, there is a relationship between childhood trauma and suicide risk. The following sections will synthesize previously established evidence in order to illustrate key areas of further study to better understand the mechanisms that underlie suicide risk stemming from childhood trauma.

#### **Emotionally Painful Trauma and Suicide Risk**

Researchers found that psychological maltreatment, defined as physical neglect, emotional abuse, and emotional neglect, was found to be significantly associated with suicidality (Spinazzola et al., 2014). Additionally, those who had been psychologically maltreated were found to report higher incidences of depression symptoms and selfinjurious behaviors compared to children and adolescents who had been sexually abused

only and were at greater odds of having depression and self-injurious behaviors than those who were physically abused only (Spinazzola et al., 2014). Further, the authors found when compared to individuals with dual physical and sexual abuse, those with psychological maltreatment only had similar odds ratios with regard to self-injurious behaviors and suicidality as well as higher odds of depression (Spinazzola et al., 2014). In another study examining types of trauma, emotional abuse was associated with a lifetime risk for suicidal behavior, regardless of the severity and chronicity of the emotional abuse (Bifulco, Moran, Baines, Bunn, & Stanford, 2002). In addition to the more recent evidence that emotional abuse alone contributes to suicide risk, research has found co-occurring emotional and sexual abuse to be predictive of adult suicide risk (Brodsky & Stanley, 2008) and repeated victimization to emotional and physical abuse (Briere & Runtz, 1988). Psychological maltreatment has clear deleterious effects, often above the effects of individuals with dual physical and sexual abuse, and the mechanisms that link maltreatment to suicide risk deserve further exploration.

## **Physically Painful Trauma and Adolescent Suicide Risk**

Physically painful traumas include physical abuse, medical illnesses and painful medical procedures, and accidents (e.g., car accidents). Research on physically painful traumas has mostly focused on childhood physical abuse. Some researchers have found childhood physical abuse as a risk for suicide as well as a risk for self-destructive behavior in general (Green, 1978). For example, in a sample of 4,490 adolescents, a history of childhood physical abuse was found to predict suicide risk (both suicidal ideation and suicide attempts; Southwick Bensley, Van Eenwyk, Spieker, and Schoder, 1999). Adolescents who completed suicide have been found to have higher rates of

childhood physical abuse (Brent et al., 1994; Brent et al., 1996), and among female suicide attempters, a correlation between childhood physical abuse and suicide attempt was demonstrated (Glowinski et al., 2001). In contrast to studies that found an association between childhood physical abuse and adolescent suicide risk, among middleclass Caucasian adolescents who were living in the suburbs, childhood physical abuse was not associated with suicide history (Kaplan, Pelcovitz, Salzinger, Mandel, and Weiner, 1997). Childhood physical abuse has also been linked to college student suicide risk (Thakkar, Gutierrez, Kuczen, & McCanne, 2000).

Research on suicide risk and multiple kinds of trauma exposure (e.g., childhood physical abuse and neglect) with adults has been mixed, where some research has found an association between childhood abuse and suicide (Briere, Evans, Runtz, & Wall, 1988; Sedney & Brooks, 1984), while other research has not found an association (Briere & Runtz, 1986; Bryer, Nelson, Miller, & Krol, 1987). Research has demonstrated that the presence of childhood physical abuse in combination with other types of childhood abuse (e.g., sexual abuse, emotional abuse) predicts suicide risk (Enns et al., 2006), and in particular, multiple trauma exposures is additive rather than multiplicative (Bryant & Range, 1997). Different forms of childhood abuse among adults with a current alcohol use disorder had similar impacts on suicide behaviors, though the authors did not control for other abuse (Roy, 2003). Adults with bipolar disorder who had a family history of suicidality and a history of childhood abuse had an earlier age of onset of suicide behaviors and had a higher number of attempts than adults with bipolar disorder who did not have a family history of suicidality or a history of childhood abuse (Carballo et al., 2008).

While the research on physically painful traumas has focused on the between childhood physical abuse and suicide risk, a study examining the relationship between physical pain stemming from motor vehicle accidents and posttraumatic stress disorder (PTSD), found that individuals who experienced physical injury from a motor vehicle accident were more likely to also have PTSD; individuals who had higher subjective ratings of pain and health problems were also more likely to have PTSD (Koch, 2002). Findings support the idea that physical pain can cause distress and dysregulation. Set within the framework of the IPT, physical abuse and other physically painful traumas may increase risk for an acquired capability for suicide by creating more dysregulation, and increased pain experience may habituate one's perceived pain tolerance. Overall, research on physically painful forms of trauma support further investigation to better understand the relationship between physically painful forms of trauma and suicide risk.

## Both Physically and Emotionally Painful Traumas and Adolescent Suicide Risk

Traumas that have both a physically painful and emotionally painful component (i.e., sexual abuse victimization) have been assessed with regard to suicide risk. Sexual abuse was found to be a stronger predictor of greater suicide risk than nonsexual abuse and molestation alone (Southwick Bensley et al., 1999). In a community sample of victims of childhood sexual abuse were 10.7 to 13.0 times more likely than non-victims to die by suicide (Plunkett et al., 2001). Adolescents with a history of childhood sexual abuse were eight times more likely to have multiple suicide attempts as compared to adolescents with no history of childhood sexual abuse and adolescents with other types of childhood abuse (Brown, Cohen, Johnson, & Smailes, 1999). Childhood sexual abuse among boys was strongly associated with suicide ideation, plans, threats, NSSI, and

attempts even after controlling for depression, hopelessness, and family dysfunction (Martin, Bergen, Richardson, Roeger, & Allison, 2004). Childhood sexual abuse accounted for the largest amount of variance in impact on future suicidality risk in a retrospective study (Brown et al., 1999).

#### **Both Physically and Emotionally Painful Traumas and Adult Suicide Risk**

Researchers have more extensively studied the association between childhood sexual abuse and adult suicide risk. Briere and Runtz (1986) found that women presenting for treatment at a community mental health center with a history of sexual abuse were more likely to have made a past attempt of suicide than those who had no history of sexual abuse. In a meta-analysis of childhood sexual abuse and outcomes of adult female survivors, childhood sexual abuse had a medium effect on suicidality as an outcome (d = .34, 95% CI = .24 - .44; p. 11; Neumann, Houskamp, Pollock, & Briere, 1996). Pregnant adults with a history of childhood sexual abuse or both physical and sexual abuse were more likely to have had a prior suicide attempt (before their current pregnancy; Farber, Herbert, & Reviere, 1996) and more likely to use a lethal mean to attempt suicide (Briere, 1988). Among adults (65% female, mean age of 36 years old) admitted to a hospital for a suicide attempt, it was found that after controlling for other childhood adversity, childhood physical and sexual abuse were predictive of chronic suicidal behavior (Ystgaard, Hestetun, Loeb, & Melhum, 2004). This indicates that while all forms of abuse can create a risk for suicide, physical and sexual abuse are potentially more provocative and painful than other forms of abuse (Ystgaard et al., 2004).

Mullen et al. (1988) found that just one violent sexual assault resulted in greater psychopathology in a community sample of adults. Thus, risk for suicide may not

necessarily have to do with long-term sexual abuse, but rather more to do with the painful and provocative nature of the abuse. Victims of childhood sexual abuse are more likely to be revictimized throughout their lives (Beitchman et al., 1992). Revictimization increases risk for anxiety disorders and depression, which have been found to be risks for suicide. Childhood sexual abuse and early onset of suicidal behavior were associated with repeated suicide attempts among a sample of adult prisoners (Mandelli et al., 2011). Stated through the lens of the IPT, childhood sexual abuse, a painful and provocative childhood trauma, is associated with self-harm behaviors. Further, earlier onset of selfharm behaviors suggests that the painful experience of exposure to sexual abuse makes one more susceptible to experiencing other painful things, and seems to lower one's fear for death. Bagley and Ramsay (1986) found that compared to non-abused participants, victims of childhood sexual abuse reported having had more suicide plans, making a suicide attempt, or engaging in self-harm behaviors. Soloff, Lynch, and Kelly (2002) found childhood sexual abuse was associated with suicide attempts among women with borderline personality disorder. However, there was no association found between physical abuse and suicide attempts (Soloff et al., 2002). Childhood sexual abuse had the greatest association with adult suicidal behavior in a community sample, while other forms of abuse were associated, just less strongly (Brown et al., 1999). Further, Ferguson, Horwood, and Lynskey (1996) found that childhood sexual abuse was found in 16.5%-19.5% of young adult suicide attempters. Akyuz, Sar, Kugu, and Dogan (2005) found that those who reported a previous suicide attempt had more physical, emotional, sexual abuse, and neglect that those who did not have a prior suicide attempt.

## **Interpersonal Trauma and Suicide Risk**

Another way of conceptualizing trauma exposure has been to classify trauma exposures into interpersonal trauma (e.g., physical abuse and sexual abuse) versus noninterpersonal trauma (e.g., natural disasters, medical illness). The research examining trauma exposure in this way has found interpersonal trauma to be associated with suicide risk more consistently than trauma that is not interpersonal in nature, which is likely due to the compromised trust within the relationship, and the underlying attachment relationship being damaged. When the attachment relationship is damaged, children have a more difficult time learning regulation skills that seem to be important in resiliency through stressful situations (Cooper, Shaver, Collins, 1998; Waters, Virmani, Thompson, Meyer, Raikes, & Jochem, 2010). Toward this extent, treatment of childhood trauma exposure has begun to focus on the facet of interpersonal trauma as it relates to a newer area of complex trauma. Complex trauma has been defined as trauma that is multiple, chronic, and interpersonal in nature and that has detrimental short and long term effects on normative development affecting seven key areas including, attachment, biology, affect regulation, dissociation, behavioral regulation, cognition, and self-concept (Cook, Blaustein, Spinazzola, & van der Kolk, 2003). Given that researchers have found that interpersonal trauma that is chronic and multiple is related to detrimental outcomes in attachment, affect regulation, and behavioral regulation, all of which will be discussed in their own right in regard to suicide risk later in this paper, an initial review of interpersonal trauma exposure and suicide risk is warranted.

Results of a study of trauma exposure among adult women found that interpersonal trauma, but not non-interpersonal trauma, exposure was correlated with

suicidality (r = .25, p < .01; Briere, Hodges, & Godbout, p. 770, 2010). Among pregnant women, those who reported prior childhood physical or sexual abuse or both were more likely than those without a reported history of childhood abuse to have suicidal ideation during their pregnancy (Farber et al., 1996). Among low-income African American women, childhood abuse of any kind had an effect on suicide risk (Anderson et al., 2002). Afifi, Boman, Fleisher, and Sareen (2009) found that parental divorce and childhood abuse together significantly increased the odds for lifetime suicide attempts [AOR = 2.74; 95% CI = 1.84-4.08] compared to child abuse alone [AOR = 1.54; 95% CI= 1.02 - 2.31]. Joiner et al. (2007), who found that physical abuse, rape, verbal abuse, and molestation were all significantly associated with suicide risk, argued that controlling for demographic variables, and familial and personal psychiatric history, allowed for a stringent examination of the unique impact of various forms of abuse. However, it was unclear whether participants had only experienced one of those four kinds of abuse or whether the participants were included in multiple categories. These findings, given that all traumas assessed were interpersonal in nature, and led to increased suicide risk regardless of which trauma exposure was the precursor, provides some preliminary evidence for the relationship between interpersonal trauma and suicide risk.

## **Complex Trauma and Suicide Risk**

As previously mentioned, interpersonal trauma has been conceptualized to fit within the framework of complex trauma. Complex trauma consists of exposure to multiple traumatic events of an interpersonal nature and can include physical and sexual abuse, neglect, abandonment, and disrupted attachment (e.g., frequently shifting foster homes or caregivers). Children in foster care have worse outcomes (e.g.,

disproportionately represented in the criminal justice system and group homes, homeless) than children who have traumas that do not result in removal from their home (Harden, 2004; Pecora et al., 2006; Troutman, Ryan, & Cardi, 2000). Children with multiple foster home placements disproportionately make up more of the population who end up in the juvenile justice system or in residential treatment settings (McGrath, Abbott Nilsen, & Kerley, 2011). Thus, complex trauma may put an individual at greater risk for suicide compared to non-complex trauma. Briere and Runtz (1986) found that current suicide ideation and intent were associated with increased number of perpetrators (i.e., repeat sexual abuse by different people) and when victims were both physically and sexually abused. Greater frequency of childhood abuse predicted greater suicide ideation (Thakkar et al., 2000). This provides some evidence for the impact of complex trauma on suicide risk.

Additionally, one study examined the separate and combined relationship of childhood sexual abuse and childhood physical abuse as risk factors for adult sexual/physical abuse and PTSD among female college students and found that combined childhood physical and sexual abuse led to more adult victimization as well as PTSD symptoms (Schaaf & McCanne, 1998). More severe childhood trauma was associated with increasing risk for suicide attempt even after controlling for other variables (Hadland, Marshall, Kerr, Qi, Montaner, & Wood, 2012). Maternal warmth accounted for 25% of the variance in adult psychopathology of childhood abuse victims (Harden, 2004), suggesting that a broader definition of trauma, where emotional abandonment is also considered in the definition of interpersonal trauma, might actually help explain why some individuals are more at risk for suicide than others.

When placed in sociocultural context, childhood abuse is often associated with other adversities including parental psychopathology (Afifi et al., 2009), familial conflict, low SES, parental loss/abandonment (Felitti et al., 1998; Fleming et al., 1997; Kenny & McEachern, 2000; Molnar et al., 2001; Romans et al., 1995; Sidebotham, Golding, & Avon Longitudinal Study of Parents and Children Study Team [ALSPAC], 2001; Zuravin & Fontanella, 1999), and parental divorce (Afifi et al., 2009). Thus, childhood abuse is seemingly less likely to occur in isolation of other adversity, and given the complex nature of adversity and trauma, complex trauma itself may be associated with greater suicide risk.

Among female prisoners with roughly equal levels of childhood abuse (emotional, physical, sexual) and neglect (emotional and physical), those individuals who experienced more childhood trauma, had a lower distress tolerance, and who had been incarcerated longer were at greater risk for having a past suicide attempt (Clements-Nolle, Wolden, & Bargmann-Losche, 2009). Among male sexual abuse victims, risk for a suicide attempt in the past year was found to be associated with a longer duration of childhood abuse, the use of force during abuse, conformity to masculine norms, higher depressive symptoms, and suicidal ideation (Easton, Renner, & O'Leary, 2013). Male adolescents who had been sexually abused by a family member and non-family member were 21.8 times more likely to have suicidal ideation and make an attempt compared to male adolescents who had been only sexually abused by a non-family member (Eisenberg, Ackard, & Resnick, 2007). This may be because of the disrupted attachment that likely occurred after abuse by a family member compared to a non-family member.

Taken together, while prior research linking childhood trauma and suicide risk has

only examined singular forms of interpersonal trauma, generally in isolation, without controlling for other forms of trauma, considerable associations between interpersonal trauma and suicide risk have still been demonstrated. Thus, examining some of the identified adverse outcomes of interpersonal trauma exposure defined within the construct of complex trauma may shed light on suicide risk. In particular, disrupted attachment, emotion dysregulation, and behavioral dysregulation stand out as being associated with suicide risk, and thus, further exploration of how these constructs may serve a role as mechanisms that predict suicide risk is of utmost importance.

## Attachment, Childhood Trauma, and Suicide

Bowlby (1969; 1973; 1980) described an internal working model of attachment, which indicated that attachment to a caregiver provides a sense of safety (i.e., security) from an early age. Four kinds of attachment styles have been well established in the literature including secure, avoidant, resistant-ambivalent, and disorganized (Main, 1996; Shapiro & Levendosky, 1999), where secure attachment has been associated with good mental health and healthy relationships in adulthood. Attachment styles have been linked to behavior, cognition, and affect in childhood, adolescence, and adulthood (Cicchetti, Rogosch, Toth, & Spagnola, 1997; Shapiro & Levendosky, 1999).

Given the important role that attachment plays in development, it makes sense that disruptions in secure attachment have been found to be associated with adverse outcomes. When attachment is disrupted, children develop an internal working model that other people are unsafe (Shapiro & Levendosky, 1999). Studies have found that history of childhood trauma is associated with maladaptive attachment styles later in life (Alexander, 1992; Rosenstein & Horowitz, 1996). For example, history of childhood

sexual abuse was associated with higher levels of trauma symptoms and lower levels of secure attachment among female college students (Aspelmeier, Elliott, & Smith, 2007). Additionally, childhood neglect and emotional abandonment as well as physical abuse have been associated with maladaptive attachment styles (Bowlby, 1988; Higgins & McCabe, 2003; Solomon & Siegel, 2003; Briere & Jordan, 2009). Further evidence for the important role of attachment was established when attachment style was found to mediate the relationship between childhood sexual abuse and psychopathology (Alexander, 1992).

Factors associated with insecure attachment, including adverse family life environment and parental personality characteristics, have been found to increase the risk for suicide attempts and major depression (Brown et al., 1999). Another research study found that early life parental bonding style of affectionless control, indicative of maladaptive attachment styles, was associated with higher suicidal ideation in college students who had mothers who used affectionless control (Singh, Manjula, & Philip, 2012). The authors also found that parental use of affectionless control and neglect was associated with early exposure to trauma exposure (i.e., physical, sexual, and emotional abuse) compared to parental use of affectionate constraint and optimal parenting bonding styles (Singh et al., 2012). Other research has implicated the important role of providing a secure attachment figure in children's lives after a trauma to protect against later adverse events. For example, supportive adult figures in children's lives mediated the relationship between childhood abuse and reduced risk for later self-harm in both clinical and community samples (Brodsky, Oquendo, Ellis, Haas, Malone, & Mann, 2001; Brodsky & Stanley, 2001; Collishaw et al., 2007; Egeland, Carlson, & Sroufe, 1993;

Romans, Martin, Anderson, O'Shea, & Mullen, 1995; Spaccarelli & Kim, 1995; van der Kolk, Perry, & Herman, 1991). Further, emotional support during times of childhood abuse has been found to lead to increased use of more effective coping skills during adulthood (Collishaw et al., 2007; Heller, Larrieu, D'Imperio & Boris, 1999). Thus, attachment style can predict likelihood of trauma exposure in childhood, determine how well children and adolescents are able to heal post-trauma exposure, as well as predict suicide risk during college years.

Given that disrupted attachment lends itself to unhealthy attachment styles that then lead to adverse outcomes, regardless of the unhealthy attachment style (i.e., avoidant, resistant-ambivalent, and disorganized), it follows that disrupted attachment in and of itself may be an important risk factor for adolescent suicide. One potential explanation is that feeling unsafe, the consequence of a disrupted attachment, has been found to lead to poor emotion and behavioral regulation (Kliewer et al., 2004; Shipman & Zeman, 2001).

In summary, secure attachment is at the base of healthy psychological well-being. Children with secure attachments fare better in the face of distress and hardship compared to children who do not have secure attachments formed with caregivers. Given that attachment is at the base of healthy psychological well-being, it makes sense that examining the role that disruptions in attachment play in suicide risk.

#### **Attachment and Regulation**

As previously stated, research has shown that unhealthy attachment styles (e.g., disorganized attachment) lead to adverse outcomes. While the mechanisms underlying this relationship have been relatively unexplored, there is some evidence to point to the

role of regulation difficulties as stemming from unhealthy attachment styles and, subsequently leading to the adverse outcomes. For example, in a study of adolescent survivors of childhood sexual abuse, unhealthy attachment style mediated the relationship between childhood sexual abuse and childhood abuse and neglect on coping and emotion dysregulation (Shapiro & Levendosky, 1999). More specifically, the indirect effects of childhood sexual abuse and other abuse through attachment accounted for most of the effects on coping and psychological distress (Shapiro & Levendosky, 1999). Stated differently, those adolescents who did not form secure attachments with their caregivers were less able to cope and dealt with more distress when faced with childhood abuse, including sexual abuse and neglect. This finding suggests that the mechanistic role of attachment to suicide risk is that disrupted attachment leads to ineffective coping associated with dysregulated emotions and behaviors, and greater psychological distress in the face of childhood traumatic events, subsequently increasing suicide risk. In support of this, abused children who have positive and adaptive parents post-abuse tend to have better executive functioning abilities, including the ability to plan and selfregulate, better peer relationships, higher self-esteem, greater sense of agency, and a better overall stress response (Caspi et al., 2002; Collishaw et al., 2007; Masten et al., 1999; Quinton, Rutter, & Liddle, 1984; Rutter, 2006; Werner & Smith, 2001).

Suicidal behaviors have been found to develop because of dysregulation and emotional vulnerability that results in distress that is then associated with suicidality (Linehan, 1993). Despite resiliency, which protected against low self-esteem, distress was found to predict suicide ideation in a sample of homeless adolescents (Cleverley & Kidd, 2011). Stated differently, resiliency was not found to protect against suicide

ideation in the face of distress. This could be because resiliency levels among participants in this study were lower than the resiliency levels reported in healthy samples. It could also be that the dispositional resiliency assessed may not be as strong of a predictor of lower suicide ideation over situational factors like distress level. Emotion regulation skills have been found to help children bounce back after abuse (Caspi et al., 2002; Collishaw et al., 2007; Masten et al., 1999; Quinton, Rutter, & Liddle, 1984; Rutter, 2006; Werner & Smith, 2001). Children who lack emotion regulation skills and have dysregulated emotions, for example, adolescents who have been sexually abused in childhood who are emotionally unexpressive with low self-esteem, are at higher risk for non-suicidal self-harm behaviors (Filiege, Lee, Grimm, & Klapp, 2009). Thus, emotion dysregulation stemming from disrupted attachment might be an important underlying mechanism for adolescent suicide risk.

#### **Emotion Dysregulation, Pain, and Suicide Risk**

It can be argued that emotional pain stems from an inability to cope effectively with stress. While there are several biological systems that have been identified as potentially related to suicide risk, the satiety/desire less system response is particularly important in regard to dysregulation and emotional pain. The physiological components in this system response, including the Galvanic Skin Response (GSR) positive evoked potential (stemming from the medial hypothalamus and amygdala activation) is elicited by noradrenergic and serotonergic neurochemical processes (Plutchik & Van Praag, 1989). In this system, which is perpetuated by the body's physiological response (e.g., sweating, rapid heart rate) to temporally present negative emotions (e.g., fear, sadness,
rejection), the individual desires fewer negative emotional experiences, and may find solace in suicide. Toward this end, hyperarousal symptoms that occurred post-trauma, which have been related to frontal brain regions not diminishing the symptoms of arousal and distress, were mediated by the trauma (Braquehais, Oquendo, Baca-García, & Sher, 2010; Nutt & Malizia, 2004). This suggests that symptoms of hyperarousal make it difficult to effectively reduce distress, thereby increasing emotional pain, and potentially making an individual vulnerable for suicide risk. Pain can have both emotional and physical components (Apkarian, Bushnell, Treede, & Zubieta, 2005; Eisenberger, Lieberman, & Williams, 2003; Peyron, Laurent, & Garcia-Larrea, 2000; Rainville, Duncan, Price, Carrier, & Bushnell, 1997). In support of this conceptualization, a study examining the effects of acetaminophen (a pharmacological medication that has been effective in reducing pain, most commonly physical pain) on reducing emotional pain stemming from social rejection found that acetaminophen was effective in reducing the emotional pain (DeWall et al., 2010). Given that emotion dysregulation is indicative of emotional pain (Filiege et al., 2009), emotion dysregulation may help explain suicide risk via the acquired capability for suicide as trauma exposure could increase one's tolerance for emotional pain. Researchers have found that there is an affective component to physical pain, and in particular, the dorsal anterior cingulate cortex and anterior insula have been implicated as the neural pathway that connects the affective and physical experiences of pain (Apkarian et al., 2005; Eisenberger et al., 2003; Peyron et al., 2000; Rainville et al., 1997).

Although the relationship between childhood trauma exposure, emotional pain, and suicide needs to be more systematically studied and clarified, there is currently some

evidence for their association. One common consequence of prolonged trauma exposure is a disruption to the fear response system (Moroz, 2005). Thus, it is possible that prolonged trauma exposure leads to suicide risk via the fear response system, which is disrupted in children with emotion dysregulation difficulties (Schuengel, Oosterman, & Sterkenburg, 2009). In this system response, an individual is habituated to fear on a physiological level. Children with this response system appear calm and collected in dangerous situations, but may be easily dysregulated in anticipation of scary situations and in safe environments.

There is prior research linking childhood trauma exposure and emotion dysregulation to suicide risk. Researchers found that girls who reported current high levels of distress (i.e., more emotion dysregulation) regarding their sexual abuse history were three times more likely to be at risk for suicide ideation and plans compared to girls with no sexual abuse history (Martin et al., 2004). Depression was not found to mediate the relationship between childhood abuse and adult pain perception (Sachs-Ericsson, Kendall-Tackett, & Hernandez, 2007). Their findings suggest that childhood abuse impacts the pain tolerance experience directly, although depression has been found in other studies to be correlated with reporting more pain, and is a commonly found disorder among victims of childhood abuse (Sachs-Ericsson et al., 2007).

A plausible theoretical link between these components is that due to the overt experience of being abused, there is an increased risk for emotional dysregulation, physical pain, and interpersonal difficulty via the early boundary violations and the development of maladaptive schemas of violence and the intimacy of close others (Herman, Russel, & Trocki, 1986; Noll, Trickett, & Putnam, 2003; Stevens-Simon &

Reichert, 1994). Said differently, childhood abuse that leads to disrupted attachment and emotion dysregulation puts individuals at risk for adverse mental health outcomes (Noll, 2008). In support of this notion, Brown et al. (1999) found that adolescents and adults who were abused as children were three times as likely to be depressed and suicidal compared to adolescents and adults who had no history of abuse. It is possible that different forms of childhood trauma (e.g., physical abuse versus emotional abuse) lead to different kinds of pain, and regardless, trauma may build pain tolerance. This may help explain why individuals engaging in non-suicidal self-injury (NSSI) often report that they engage in physical pain to relieve emotional pain (Franklin, Aaron, Arthur, Shorkey, & Prinstein, 2012; Lloyd-Richardson, Perrine, Dierker, & Kelly, 2007).

#### **Behavioral Dysregulation and Suicide Risk**

Behavioral dysregulation has been defined as a maladaptive coping strategy to alleviate emotional pain associated with emotion dysregulation (Selby, Anestis, & Joiner, 2008). Generally, behavioral dysregulation is observable and forms of behavioral dysregulation have been labeled as "impulsive" (Selby et al., 2008; Tuna & Bozo, 2014). Researchers have labeled non-suicidal self-injury (NSSI) as a behavioral dysregulation strategy, as well as other activities such as binge-eating, reassurance seeking, and substance abuse (Selby et al., 2008). The emotional cascade theory posits that behavioral dysregulation emerges when maladaptive cognitive coping strategies (e.g., rumination), do not relieve, and instead intensify emotion dysregulation/ emotional pain (Anestis, Selby, & Joiner, 2007; Joiner Jr et al., 2007; Selby et al., 2008). The characterization of hyperarousal in motor movements that is accompanied by an internal anguish or turmoil has been termed agitation (Ribeiro, Bender, Selby, Hames, & Joiner, 2011). Agitation can lead to violence (Rossi, Swan, & Isaacs, 2010), and seems to explain the mechanism that leads an individual who has emotional pain to engage in behavioral dysregulation strategies. Agitation, especially acute agitation (Busch & Fawcett, 2004; Busch, Fawcett, & Jacobs, 2003) has been found to be a risk factor for suicide (Fawcett et al., 1990; Kovasznay, Miraglia, Beer, & Way, 2004). Agitation may increase one's tolerance for physical pain given the pain associated with feeling agitated, as well as the fact that behavioral dysregulation strategies have been shown to be related to increased suicide risk (Hawton & Harriss, 2007; Nock, Joiner, Gordon, Lloyd-Richardson, & Prinstein, 2006). Agitation is an associate of behavioral dysregulation and has been studied in dementia patients who are unable to report their pain levels as a proxy for pain experience (Ahn & Horgas, 2013; Burgio, Park, Hardin, & Sun, 2007; Cohen-Mansfield & Libin, 2005).

There is also evidence linking behavioral dysregulation strategies to childhood trauma. For example, current suicidal and self-harming individuals were more likely to have a history of childhood trauma than individuals who were not currently suicidal or self-harming (Bebbington et al., 2009; Talbot, Duberstein, Cox, Denning, & Conwell, 2004). Glassman et al., (2007) found that emotional and sexual abuse history had the strongest relationship to NSSI. Associated features of suicide attempters included an earlier age of onset of NSSI, more methods of NSSI, and the absence of perceived physical pain during NSSI (Nock et al., 2006). These findings suggest that pain tolerance is built with more exposure to painful and provocative experiences. While there are several common behavioral dysregulation strategies, non-suicidal self-injury (NSSI) has the most evidence for its relationship with suicide risk.

Non-Suicidal Self-Injury and Suicide Risk. Research in the area of NSSI has been instrumental in identifying the role of emotional pain in physical injury and subsequent suicidality. Specifically, history of NSSI was associated with more negative emotions more often, including anxiety, depression, and aggression (Filiege et al., 2009). Thus, individuals with more intense emotional pain who also physically injure themselves have emotional pain that rises to a diagnosable level. Self-criticism, a maintenance factor of emotional pain suffering that operates on a meta-cognitive level, was found to mediate the relationship between emotional abuse and NSSI (Glassman et al., 2007) as well as mediate the relationship between childhood abuse (i.e., parental verbal abuse) and adult internalizing disorders (Sachs-Ericsson, Verona, Joiner, & Preacher, 2006). Thus, is it possible that the strong association between depression and suicide risk (e.g., 66% of individuals who die by suicide were depressed at the time of their death; American Association for Suicidology, 2009), and NSSI and suicide risk (e.g., teens with prior NSSI are 2.8 times more likely to be at risk for suicide in young adulthood, Whitlock et al., 2012; 70% of teens with history of NSSI report having attempted suicide, Nock et al., 2006) have a shared mechanistic risk factor of emotional and physical pain. Stated more explicitly, the underlying agitation inherent in behavioral dysregulation and emotion dysregulation may drive the effect of the behavioral dysregulation strategies on increasing suicide risk.

Selby, Anestasis, and Joiner (2008) proposed that emotional dysregulation and behavioral dysregulation (i.e., NSSI) were linked using the emotional cascade model, wherein behavioral dysregulation results from escaping/ temporarily relieving emotional pain associated with negative affect and rumination. Prior self-harm is a strong predictor

of eventual suicide in adolescents who complete suicide (Hawton & Harriss, 2007), but self-harm behaviors taper off into young adulthood, which seems to lower the risk that prior self-harm has for adults at risk for suicide (Harrington et al., 2006). Another study examining NSSI as a mediating factor between emotion dysregulation, in particular, low distress tolerance and suicide risk among substance abusing adults found that NSSI did mediate the relationship (Anestis, Pennings, Lavender, Tull, & Gratz, 2013). Taken together, this suggests that behavioral dysregulation strategies are more salient suicide risks when emotion dysregulation and associated perceived pain accompany behavioral dysregulation.

In summary, both emotion and behavioral dysregulation could facilitate the acquired capability for suicide; specifically, behavioral dysregulation could increase physical pain tolerance while emotion dysregulation could habituate an individual to fearlessness of death. Research has shown that some forms of trauma lead to worse outcomes than others, and that repeated exposure to trauma as well as greater severity of the trauma seems to put individuals at greater risk for suicide. However, as previously mentioned, the underlying mechanisms involved have not been systematically explored in relation to suicide risk.

#### Timing of Traumatic Events, Dysregulation, and Suicide Risk

While there is evidence to suggest that childhood abuse has deleterious effects throughout the life course, there is some evidence to support that abuse has a strong impact on suicide risk soon after the abuse occurs. For example, a large percentage of females make a suicide attempt on the same day they are abused, and suicide attempt risk lessens over the course of a year following an abuse event (Stark & Flitcraft, 1995). In

one study, seventy-five percent of individuals who died by suicide had experienced an adverse life event, wherein personal conflict was most commonly reported, in the year preceding death, however, history of childhood trauma was not directly assessed (Sankey, 2003). This still begs the question of what underlies trauma and adverse life events. In a large community sample of adolescents, those individuals with both suicidal and nonsuicidal self-harm had statistically significantly more adverse life events and trauma symptoms than adolescents with less frequent non-suicidal self-harm (Zetterqvist, Lundh, & Svedin, 2013). Findings from this study suggest that there is a cumulative impact of pain exposure from trauma and adversity that can lead to greater exposure to pain and subsequent suicidal behavior. In support of a recency effect of trauma as an important predictor of the acquired capability for suicide, a study of adults at risk for suicide demonstrated that childhood sexual abuse was not predictive of suicide risk (Smith, 2013). However, childhood sexual abuse, adult sexual abuse, witnessing family violence, and having a higher acquired capability for suicide were distinguishing factors of suicide attempters (Smith, 2013). This means that although childhood sexual abuse could not be used to predict who would later be at risk for suicide, once those at risk for suicide were identified, they disproportionately had more childhood trauma exposure than adults who were not at risk for suicide. A recent study of suicide ideation predictors, Selby, Yen, and Spirito (2013) found affect sensitivity and behavioral dysregulation in preceding week was associated with increased suicide ideation in the next week among adolescents who had been hospitalized within the past six months for suicide attempts. This suggests that timing of emotion and behavioral dysregulation may also play an important part in predicting suicide risk.

#### Gender Differences in Childhood Trauma and Suicide Risk

Research on gender differences among suicidal victims of childhood abuse have been mixed. For example, 50% of adult males with a history of childhood sexual abuse attempted suicide compared to 29% of adult females with a history of childhood sexual abuse (Martin et al., 2004). Males with childhood sexual abuse were ten times more likely to be at risk for suicide plans and threats, and fifteen times more likely to make a suicide attempt than males without a history of childhood sexual abuse (Martin et al., 2004). In contrast, adult females with a history of childhood trauma were found to be more likely than males to die by suicide, and were more likely than males to attempt suicide (24% compared to 9%; Plunkett et al., 2001). Forty-three percent of the female sample reported suicide ideation after the sexual abuse occurred (Plunkett et al., 2001). Among adolescent suicide completers, 71% were male, 75% were older adolescents (16 -19 years old), and 44% had prior suicidal ideation, NSSI, or a previous attempt (Sankey, 2003).

The impact of gender on suicide risk has been explored with consideration of the acquired capability for suicide. Male prisoners were asked whether they had experienced a number of life events thought to be associated with potential risk for suicide and it was found that physical abuse, self-harm/prior suicide attempts, harm to animals, and familiarity with guns were all statistically significant predictors of higher acquired capability scores (Smith, 2013). Military combat experience, self-harm/prior suicide attempts, cruelty to animals, reading/thinking about death/suicide, physical abuse, and sexual abuse were all statistically significant predictors of suicide attempter status (Smith, 2013). In a similar vein, among a sample of male criminal offenders, aggression

mediated the relationship between childhood physical abuse and suicide attempts (Swogger, You, Cashman-Brown, & Conner, 2011). Male vulnerability to die by suicide has been explored and research has found men to have a higher pain tolerance than women (Berkley, 1997) and men reported higher acquired capability scores than women (Van Orden, Witte, Gordon, Bender, & Joiner, 2008). This suggests that men may be more likely to pick a lethal mean to die by suicide, even if their intent to die is not high.

Women suffer from chronic pain conditions more than men (Andersson, Ejlertsson, Leden, Rosenberg, & Bromolla Health Center, 1993; Rustøen, Wahl, Hanestad, Lerdal, Paul, Miaskowski, 2004), and make more suicide attempts than men (Witte, Gordon, Smith, & Van Orden, 2012). Women who were seeking asylum from a domestically violent partner were assessed to determine what aspects of their trauma experience were predictors of acquired capability. Researchers found that the frequency of childhood physical abuse and adulthood rape were predictors of physical pain tolerance, while stalking by the perpetrator was a predictor of emotional pain tolerance among female victims (Smith, 2013). This suggests that women may tolerate the psychological pain more than men, and that the physiological pain tolerance is a better predictor of choice of means, while the psychological pain tolerance is a better predictor of intent to die and persistence to die by suicide.

#### Summary

In summary, research to date supports the role of childhood trauma exposure leading to unhealthy attachment styles developing between caregiver and child. Research also supports the link between childhood trauma exposure and emotion and behavioral dysregulation. However, no research exists assessing whether disrupted attachment

mediates the relationship between trauma exposure and emotion and behavioral dysregulation (See Figure 3). Further, there are no studies assessing the mechanistic role of interpersonal trauma in suicide risk (See Figure 4). Research also has associated childhood trauma with suicide risk; however, no mechanistic studies have been conducted to better understand this relationship (See Figure 5). Prior research also has found a strong association between the development of a pain tolerance and greater suicide risk. However, to this researcher's knowledge, no prior studies have directly assessed the relationship between childhood trauma exposure and the development of a pain tolerance and fearlessness of death, the two components that make up the acquired capability for suicide (See Figure 2). Finally, it will be important to assess whether the acquired capability for suicide is predictive of suicide risk among childhood trauma survivors.



*Note*. DERS is Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004). BAM is Brief Agitation Measure (Ribeiro et al., 2011). CES-D is the Center for Epidemiology Studies – Depression Scale (Radloff, 1977). FASM is the Functional Assessment of Self

Mutilation (Lloyd, Kelley, & Hope, 1997). INQ-PB is the Interpersonal Needs Questionnaire – Perceived Burdensomeness subscale (Van Orden et al., 2012). INQ-LB is the Interpersonal Needs Questionnaire – Lack of Belongingness subscale (Van Orden et al., 2012).

Figure 3. Model of Hypothesis 1.

#### Chapter 2

#### **Goals of the Present Study**

The following study was proposed in order to help clarify the relationship between childhood trauma and suicide risk. Specifically, the following hypotheses were developed based on the state of the current research evidence and the theoretical considerations of the IPT.

#### **Hypothesis 1**

More disrupted attachments (as in, the number of disrupted attachments an individual has had) will lead to worse emotion and behavior regulation, and worse emotion and behavioral regulation will more strongly predict suicide risk. See Figure 3 (Model of Hypothesis 1) below for a description.



*Note*. DERS is Difficulties in Emotion Regulation Scale (Gratz & Roemer, 2004). BAM is Brief Agitation Measure (Ribeiro et al., 2011). CES-D is the Center for Epidemiology Studies – Depression Scale (Radloff, 1977). FASM is the Functional Assessment of Self Mutilation (Lloyd, Kelley, & Hope, 1997). INQ-PB is the Interpersonal Needs Questionnaire – Perceived Burdensomeness subscale (Van Orden et al., 2012). INQ-LB

is the Interpersonal Needs Questionnaire – Lack of Belongingness subscale (Van Orden et al., 2012).

#### Hypothesis 2

Emotion dysregulation at Time 1 will mediate the relationship between interpersonal trauma exposure and acquired capability for suicide at Time 1, and, in turn, acquired capability at Time 1 will mediate the relationship between emotion dysregulation at Time 1 and suicidal ideation at Time 2. Additionally, behavioral dysregulation at Time 1 will mediate the relationship between interpersonal trauma and acquired capability for suicide at Time 1, and acquired capability for suicide at Time 1 then will mediate the relationship between behavioral dysregulation at Time 1 and suicidal ideation at Time 2. Finally, the interaction between emotional and behavioral dysregulation at Time 1 will mediate the relationship between interpersonal trauma and acquired capability at Time 1, and acquired capability at Time 1 will mediate the relationship between the interaction of emotional and behavioral dysregulation at Time 1 and suicidal ideation at Time 2. See Figure 4 (Model of Hypothesis 2) for details.



Figure 4. Model of Hypothesis 2.

## Hypothesis 3a

Exposure to physically painful forms of trauma (e.g., physical abuse, accidents, intensive medical procedures) will be associated with more behavioral dysregulation, and greater behavioral dysregulation will be associated with higher acquired capability for suicide. In contrast, more emotionally painful forms of trauma (e.g., abandonment, verbal abuse, neglect) will result in more emotional dysregulation, and emotional dysregulation and emotionally painful trauma will be associated with acquired capability. In the presence of exposure to both physically painful and emotionally painful forms of trauma (i.e., rape), both behavioral and emotional dysregulation will occur, and the interaction between the two will predict greater acquired capability. See Figure 5 (Model of Hypothesis 3a) for a detailed representation.



Figure 5. Model of Hypothesis 3a.

## Hypothesis 3b

There will be a direct effect of acquired capability for suicide on current suicide ideation.

## Chapter 3

## Method

# Participants

One hundred and twenty one introductory to psychology students aged 18 to 22

with a history of childhood trauma participated in one 45-minute online session (Time 1)

and one 25-minute follow-up online session (Time 2; n = 56) one month after

participation in Time 1. The demographic characteristics of the final sample of 121

participants as well as the demographic characteristics of the 56 participants who

completed Part 2 are presented in Table 1.

Table 1

	Participated in	Participated in Both		
	Time 1 Only	Time 1 & 2		
	(N = 121)	(N = 56)		
Average Age (SD)	18.73 (.98)	19.65 (.40)		
Gender				
Male N (%)	27 (22%)	43 (77%)		
Female N (%)	94 (78%)	13 (23%)		
Household Income				
Less than \$24,999	30 (25%)	14 (25%)		
\$25,000 to \$34,999	15 (13%)	9 (16%)		
\$35,000 to \$44,999	15 (13%)	6 (11%)		
\$45,000 to \$59,999	16 (13%)	8 (16%)		
\$60,000 to \$79,999	13 (11%)	5 (9%)		
\$80,000 and Greater	30 (25%)	14 (25%)		
Ethnicity/Race				
African /African American	24 (20%)	10 (18%)		
American Indian	2 (2%)	1 (1%)		
Asian/Asian American	1 (1%)	0 (0%)		
Caucasian	81 (67%)	38 (68%)		
Latino	5 (4%)	4 (7%)		
Multiracial/Multiethnic	8 (7%)	3 (1%)		
Year in School				
Freshman	85 (70%)	33 (59%)		
Sophomore	30 (25%)	19 (34%)		

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Junior	3 (2.5%)	1 (2%)
Senior	3 (2.5%)	3 (5%)
Religious Affiliation		
Catholic	29 (24%)	16 (29%)
Jewish	2 (2%)	2 (4%)
Atheist	8 (7%)	2 (4%)
Agnostic	5 (4%)	4 (7%)
Christian	61 (50%)	27 (48%)
Other	14 (12%)	4 (7%)
Refused to say	2 (2%)	1 (1%)

With regard to trauma exposure, the range of childhood traumas exposed to was between 1 (n = 13; 11%) and 18 (n = 1; 1%) different traumas and the modal number of trauma was 3 exposures. Of the possible childhood traumas endorsed, 30% of the sample indicated that the trauma currently causing the most distress was childhood bereavement (n = 36) followed by 14% indicating childhood sexual abuse (n = 17) and 14% indicating childhood emotional abuse (n = 17).

An assessment of trauma between the ages of 13 and 22 years old was also included in order to control for trauma after childhood. Toward this end, only 3 participants did not have trauma after age 12. Characteristics of the types of trauma exposures experienced during this age range is included in Table 2. The number of traumas experienced during this time frame ranged from 1 (n = 3; 3%) to 19 (n = 1; 1%) and the modal number of traumas experienced was 8. The number of years on average since last trauma varied for each trauma type. On average, it has been less than a year since any trauma exposure. Accordingly, in this sample, trauma exposure did not end in childhood. Physical abuse, sexual abuse, exposure to domestic violence, exposure to kidnapping, neglect, and unavailability of a parent/caregiver were less common after childhood (Refer to Table 3). Few participants reported exposure to terrorism and war. The more commonly occurring traumas after childhood included loss of loved one or close other, physical assault, natural disaster, exposure to school violence, serious accidents and medical illnesses, emotional abuse, and exposure to community violence (Refer to Table 3).

Table 2

Characteristics of Childhood Trauma Exposures.

	Trauma Exposure	
	12 years and younger	
	(N = 121)	
Disrupted Attachment	63 (52%)	
1 disruption	52 (43%)	
2 disruptions	6 (5%)	
3 disruptions	3 (3%)	
4 disruptions	1 (1%)	
8 disruptions	1 (1%)	
Interpersonal Trauma	57 (47%)	
1 exposure	20 (17%)	
2 exposures	23 (19%)	
3 exposures	10 (8%)	
4 to 6 exposures	1 (3%)	
Physically Painful Trauma	45 (37%)	
1 exposure	15 (12%)	
2 exposures	22 (18%)	
3 exposures	7 (6%)	
4 exposures	1 (1%)	
Both Physically & Emotionally	21 (17%)	
Painful Traumas		
1 exposure	21 (100%)	
Emotionally Painful Trauma	98 (81%)	
1 exposure	35 (29%)	
2 exposures	25 (21%)	
3 exposures	18 (15%)	
4 exposures	1 (1%)	
5 exposures	4 (3%)	
6 exposures	3 (3%)	
9 exposures	1 (1%)	

## Table 3

Means and Standard Deviations of Years Since Last Trauma.

	М	SD		
Infrequently reported after age 12				
Unavailable Parent/Caregiver	15.20 years	6.67		
Exposure to Kidnapping	16.64 years	5.16		
Domestic Violence	12.41 years	7.16		
Physical Abuse	12.34 years	6.93		
Sexual Abuse	14.81 years	6.19		
Community Violence Exposure	9.90 years	8.45		
Neglect	14.64 years	6.94		
More frequently reported after age 12				
Emotional Abuse	6.69 years	7.57		
Serious Medical Illness	8.64 years	7.77		
Serious Accident	8.02 years	7.78		
Exposure to School Violence	5.25 years	6.38		
Exposure to Natural Disasters	6.26 years	6.27		
Physical Assault	7.51 years	7.57		
Loss of loved one/ close other	5.15 years	6.47		

Among those who endorsed symptoms of PTSD on the UCLA based on the scoring system derived by developers of the revised scale, 24% have a probable diagnosis of PTSD (n = 27). The criteria include the presence of at least one symptom under categories B and C, and two symptoms under categories D, and E. Presence was determined if the symptom score was a "3" or "4" for all but three items, and those items presence of symptom was indicated if the symptom score was a "2" or greater (Elhai et

al., 2013; Pynoos & Steinberg, 2013; Steinberg et al., 2013). Further, symptoms had to be present for longer than one month and causing clinically significant distress/impairment (Elhai et al., 2013; Pynoos & Steinberg, 2013).

Additionally, 83% (n = 99) reported moderate to high levels of depression symptoms. Regarding suicide risk, in the past year, 9% (n = 11) reported thinking about killing themselves very often (5 or more times a month), 4% (n = 5) reported thinking about it often (3-4 times a month), 14% (n = 17) reported thinking about killing themselves sometimes (2 times a month), 30% (n = 36) reported thinking about it rarely (1 time a month), and 42% (n = 52) reported never thinking about killing themselves in the past year. Further, 9% of the sample indicated having made a previous suicide attempt (n = 11). Of those who have made a prior attempt, 82% stated that during their last attempt their intent to die was low (n = 9), the others declined to answer this question. When asked about most lethal suicide attempt, 82% indicated that their intent to die was moderate (n = 9), and again, two individuals chose not to answer.

#### **Recruitment and Selection**

**Inclusion/Exclusion Criteria.** Inclusionary criteria for the study included being between the ages of 18 and 22 and being exposed to trauma (defined as a physically or emotionally painful, shocking, stressful, and sometimes life-threatening experience, including, but not limited to, being the victim of physical, sexual, or emotional abuse, neglect, experiencing abandonment or loss due to death or removal, having been in a serious accident or having a life-threatening illness, witnessing domestic violence, being exposed to or witnessing substance abuse, or inappropriate sexual activity [e.g., witnessing prostitution], or being the victim of a crime) prior to age 12. Potential

participants were allowed to participate in the study if they indicated during the Prescreening in Sona Systems that English was their first language, that they were between the ages of 18 and 22 years of age, and that they had been exposed to a prior traumatic event. After individuals participated in the study, their data were screened to make sure that they in fact met study inclusionary criteria.

Eighteen people were excluded from analyses due to indicating that they had not had a trauma prior to age 12 years old (n = 13) or were older than 22 years old (n = 5). Participants who were excluded differed from those who were included on the following important factors. Those excluded from analyses had a fewer number of childhood traumas (t (137) = -3.56, p < .001). There were more females on average ( $\chi^2$  (20.83) = 2.67, p = .014). On key variables being assessed in this study, behavioral dysregulation scores were lower among the excluded sample (t(137) = -2.30, p = .023); the excluded sample also reported lower suicide ideation (t (88.63) = -3.37, p = .001) and depression (t(121) = -2.60, p = .011). Among the excluded sample also reported lower levels of reasons for non-suicidal self-injury on all four subscales including anticipatory negative reinforcement (t (36.84) = -3.59, p = .001); anticipatory positive reinforcement (t (29.01) = -2.80, p = .009; social negative reinforcement (t (59.02) = -3.07, p = .003); and social positive reinforcement (t (37.76) = -2.80, p = .008). Finally, the excluded sample reported less engagement in three subscales of emotion dysregulation including use of non-acceptance of emotional responses (t(137) = -2.62, p = .010), limited access to emotion regulation strategies (t (31.70) = -3.08, p = .004), and lack of emotional clarity (t (137) = -2.27, p = .025). It is also important to note that those excluded reported more

acquired capability for suicide, however this was only marginally statistically significant (t (121) = 1.92, p = .057).

**Participation.** A targeted recruitment convenience sample of participants from introductory to psychology courses at the University of Toledo who endorsed prior trauma exposure during the pre-screen survey when signing up for Sona Systems were recruited to participate in the two-part online survey. Individuals who answered "yes" to "have you had a previous traumatic experience" were then able to see this study in their list of studies that they could choose to participate in. Those who signed up on Sona Systems for this study were provided a web link to Psychdata (Locke & Keiser-Clark, 2001), an online data collection software package. Within Psychdata (Locke & Keiser-Clark, 2001), individuals were provided an informed consent and were allowed to e-mail the researcher to ask questions. When ready, they electronically signed the consent form. Once consent was given, a new window opened with a composite survey of the questionnaires being included in Time 1 of the study. The Time 1 survey took approximately forty-five minutes to complete and included all of the measures listed in the measures section. On the last screen of the questionnaires, participants were able to download an educational handout with information on depression, anxiety, and suicide risk that included contact information for the campus Counseling Center, the Psychology Clinic, and Rescue Crisis/911. Participants who completed Time 1 of the study were given one research credit and asked to participate in Time 2 of the study one month after completing Time 1. Participants were given the link to Time 2 via an e-mail prompt. Those who clicked on the link in their e-mail participated in a Psychdata composite survey that took approximately 20 minutes to complete and included a measure of current

suicide ideation as well as past attempts and intent of those past attempts (BSS), a measure of future suicidal ideation (SBQ), a measure of perceived burdensomeness and thwarted belongingness (INQ), a measure of non-suicidal self-injury (FASM), and a measure of acquired capability (ACSS). Participants who completed Time 2 were granted half of a research credit.

**Power Analysis.** The researcher over-sampled participants in order to obtain at least 120 participants in the final sample of Time 1 because this sample size provided the researcher with moderate power to detect the effects of interest (i.e., a medium effect) and a small Type I error rate. The rationale for the power analysis stemmed from two simulation studies wherein a sample size of at least 100 participants was needed in order to detect a medium effect when utilizing a mediation analysis using bootstrapping techniques (Koopman, Howe, Hollenbeck, & Sin, 2014; Fritz & MacKinnon, 2007). Thus sample size was based on the estimated power achieved when using bias-corrected bootstrapping (Preacher & Hayes, 2008), which was used in this study. The retention rate was 46% and analyses involving Time 2 data were at .21 Type I error rate and had enough power to detect medium effects of a simple linear regression.

#### Measures

**Demographic Form.** The demographic form asked for participants' ethnicity and race, age, year in school, monthly and yearly family income, mother and father's type of work, and religious affiliation.

# Structured Clinical Interview for DSM-IV-TR Axis I Disorders - PTSD Screener Item (SCID-I/NP; First, Spitzer, Gibbon, & Williams, 2002). One item from the SCID-I/NP was asked during the pre-screen in order to determine eligibility of

potential participation in this study. The one item assessed for lifetime history of trauma exposure.

Trauma Types. Part 1 of the UCLA PTSD Reaction Index for DSM-5 (UCLA-PTSD), was used to assess trauma type, age(s) of participant at time of exposure, role in each event (e.g., witness or victim), and worst-trauma type (if multiple traumas were endorsed). The first part of the UCLA-PTSD is the Trauma History Profile, which was modified from its original design as a clinician-administered survey, to a self-report of prior traumas for the purposes of the current study. Given that lay populations do not have a working knowledge of traumatic event definitions, and to control for what individuals consider to be a traumatic event, a brief description of each trauma type (see Appendix B for these descriptions) was provided prior to each set of questions pertaining to a particular trauma type. The descriptions of each trauma type were taken from the National Child Traumatic Stress Network's definitions of trauma types (UCLA & University, n.d.). In addition to including all of the trauma types listed on the UCLA-PTSD, additional trauma types were added using the same format as the Trauma History Profile, and again the descriptions of the trauma types came from NCTSN's definitions of traumas. Questions that were added assessed exposure to community violence, medical trauma, domestic violence, traumatic grief, and natural disasters. These additional traumas covered traumas that are more frequently experienced by urban youth, and likely relevant for the college students participating in this study.

Trauma types were then classified into meta trauma types by a doctoral-level clinical psychology graduate student as outlined in Appendix A. Essentially, participants reported in PsychData whether they had endorsed the trauma types (listed in Appendix

A) and then a new variable was created in SPSS during the database screening and cleaning process based on the definitions in Appendix A. Meta trauma types that were assessed were as follows: a) interpersonal trauma defined as events including only physical and emotional neglect (including unavailable parent), physical abuse, sexual abuse, and exposure to domestic violence (UCLA & University, n.d.), b) emotionally painful trauma was defined as exposure to traumas that elicit an emotionally painful response without a physically painful experience (e.g., witnessing domestic violence, emotional abuse victimization; Refer to Appendix A for complete list of included trauma types), c) physically painful trauma was defined as exposure to traumas that have a distinct physically painful experience (e.g., physical abuse victimization, and serious accident; Refer to Appendix A for complete list of included trauma types), d) both emotionally and physically painful trauma was defined as traumas that elicit a physical pain as well as emotional pain experience (e.g., sexual abuse victimization; Refer to Appendix A for list of these traumas).

Additional criteria that were used to classify trauma types include trauma exposure at age 12 and younger. Chronicity of traumas was calculated in two ways, first whether multiple kinds of traumatic events were endorsed. Additionally, for each of the trauma types assessed above, the number of traumatic events endorsed was recorded based on the age(s) that participants provided for when the trauma(s) occurred. Overall, chronicity was defined as exposure to either simultaneous or sequential traumatic events wherein the trauma occurred more than 2 times. This was calculated by totaling the number of years a trauma type was endorsed for each of the trauma types.

UCLA PTSD Reaction Index for DSM-5 (UCLA-PTSD). The UCLA-PTSD was also used to assess PTSD and dissociative subtype symptoms (Part 2), and frequency of symptoms (Part 3). Part 2 consisted of a 27-item self-report measure with a 5-point response scale ranging from 0 = "None" to 4 = "Most", was used to assess PTSD symptoms. Additionally, a 4-item self-report measure using the same response scale assessed dissociative subtypes. Part 2 of the UCLA-PTSD was unaltered from the original measure because it was designed as a self-report of symptoms. The UCLA-PTSD has shown adequate to excellent. Cronbach reliability (subscale  $\alpha$ 's range = .81 - .95), excellent construct validity with a clinical sample of adolescents (S-B  $\chi 2$  (263, N = 396) = 527.77; p < .001;  $\chi 2/df = 2.01$ ; RCFI = .94; RMSEA = .05) poor to excellent criterion validity ( $r^2$  range = .24 - .75; Bernstein et al., 2003). In the present study internal consistency reliability was excellent ( $\alpha = .88$ ). The UCLA-PTSD was given at Time 1 only in the present study to help categorize the types of traumas (e.g., physical abuse, neglect) an adolescent has experienced, their current level of PTSD symptoms, as well as establish the worst trauma experience.

**Disrupted Attachment.** Disrupted attachment was ascertained from the added questions on the UCLA-PTSD. Specifically, one question assessed whether an adolescent's trauma exposure led to separation from biological parents and subsequent caregivers. The number of times a participant's attachment had been disrupted since birth was also assessed by counting the number of times the participant had been in a different placement. The number of disruptions and age at each disruption was indicated in Time 1 survey. Beck Scale for Suicide Ideation (BSS). The BSS was included in both time points in order to examine current suicidal ideation. Previous work found that the BSS was able to differentiate survivors from non-survivors in a longitudinal sample spanning 9.5 years (Beck & Steer, 1991). The BSS has shown excellent internal consistency (e.g.,  $\alpha = .81$  to .96) and concurrent validity(*r* range = .90 to .94) and adequate divergent validity (*r* range = .58 to .69) when used with college student samples (Aaron T. Beck, Steer, & Ranieri, 1988). In the present study, internal consistency was excellent ( $\alpha = .88$ ).

Acquired Capability for Suicide Scale (ACSS). The ACSS is a 7-item measure with a 5-point response scale ranging from 1 (Not at all like me) to 5 (Very much like me) that assessed the two components of acquired capability, pain tolerance and fearlessness of death (Ribeiro et al, 2014). The ACSS has shown adequate internal consistency reliability ( $\alpha$  = .77 to .83) and adequate to excellent construct validity (*YB*  $\chi^2$  (*df* = 14) range = 21.67 to 88.65, *p*'s range = <.001 to .21; *SMSR* = .03 to .05; *CFI* = .93 to .99; *TLI* = .90 to .98; *RMSEA* = .04 to .08), concurrent validity (*r* range = -.50 to .67), and adequate to excellent discriminant validity (*r* range = .05 to .27) with college student samples (Ribeiro et al., 2014). In the present study, internal consistency was good ( $\alpha$  = .79). Scores on the ACSS will serve as a measure of acquired capability. The ACSS was given at both time points.

**Emotion Dysregulation.** Difficulties in Emotion Regulation Scale (DERS) is a 36-item measure of clinically significant emotion dysregulation (e.g., "I am attentive to my feelings") where responses range from 1 (almost never) to 5 (almost always; Gratz & Roemer, 2004). The scale consists of six subscales and a total score (Weinberg & Klonsky, 2009). The psychometric properties of the DERS have been found to have

excellent internal consistency reliability ( $\alpha = .93$ ; subscale  $\alpha$  range = .80 to .89) and concurrent validity (Gratz & Roemer, 2004). In this study, the subscales of DERS were found to have adequate to excellent internal consistency reliability (subscale  $\alpha$  range = .83 to .90). The DERS was administered at Time 1 only.

**Behavioral Dysregulation.** The Brief Agitation Measure (BAM; Ribeiro et al., 2011) is a 3-item self-report measure of agitation that was developed specifically to assess agitation among individuals at-risk for suicide. The BAM is one of the only known self-report measures of agitation and was found to have excellent internal consistency reliability ( $\alpha = .88$ ) and good convergent validity (*r* range = .42 to .67; Ribeiro et al., 2011). In the current study, internal consistency reliability was adequate ( $\alpha = .85$ ). Studies linking agitation to suicide risk have been retroactive wherein people close to the suicide attempter were asked if the individual appeared agitated (Ribeiro et al., 2011). Given the internal angst aspect of agitation, it is possible that other-report may miss someone who is agitated; thus, a self-report measure was included in this study. The total score of the agitation measure was used as a proxy for behavioral dysregulation. The BAM was administered at Time 1 only.

**Non-Suicidal Self-Injury (NSSI).** To assess for NSSI, the Functional Assessment of Self-Mutilation (FASM; Lloyd, Kelley, & Hope, 1997), a 33-item questionnaire assessing non-suicidal self-injurious behaviors over the last year, was administered. The FASM has excellent psychometric properties, and has been used in other studies assessing NSSI as a risk for suicide (Lloyd-Richardson, 2008). Specifically, internal consistency for the full spectrum of self-harm engagement has been found to range consistently around  $\alpha = .65$  to .66 (Lloyd-Richardson, Perrine, Dierker, & Kelley,

2007). The scale has shown excellent construct validity as well as had excellent ability to distinguish between mild self-mutilation from moderate/high mutilation (Lloyd-Richardson, Perrine, Dierker, & Kelley, 2007). In this study, the subscales showed adequate internal consistency reliability ( $\alpha = .83$  to .89). Having a history of NSSI has been shown to put individuals at increased risk for suicide (Franklin, Hessel, & Prinstein, 2011). Specifically, NSSI increases pain tolerance, and in the current researcher's model, NSSI needs to be controlled for with regard to the agitation variable. Given the mounting research evidence to suggest that NSSI can increase risk for acquired capability, the FASM was used as a control variable and was assessed at both time points.

Center for Epidemiological Studies – Depression Scale (CES-D). The CES-D consists of 20 items with a 4-point scale, ranging from "Rarely or None of the time/Less than 1 day" to "Most or all of the time/ 5-7 days" assessing depression symptoms (Radloff, 1977). Four items are reverse-scored (Radloff, 1977). Higher scores reflect higher levels of depressive symptoms (Radloff, 1977). The CES-D has been shown to have excellent specificity and sensitivity when using a cut-off score of 21 suggesting a clinical level of depression is likely (Shean & Baldwin, 2012). The CES-D has shown good internal consistency and construct validity with samples of suicidal college students (Brantley, Mehan, & Thomas, 2000). In the present study internal consistency was good ( $\alpha = .79$ ). Depression is a well-established predictor of suicide. In the original theory of interpersonal suicide risk, Joiner (2005) theorized depression as a precursor to suicide risk. Thus, the CES-D was included as a control variable and was assessed at Time 1 only.

Perceived burdensomeness & Thwarted belongingness. The Interpersonal Needs Questionnaire (INQ; revised) is a 15-item measure comprised of 2 subscales, one that measures thwarted belongingness (9 items) and another for perceived burdensomeness (6 items; Van Orden, Cukrowicz, Witte, & Joiner, 2012). This measure has a 7-point response scale where higher scores reflect higher levels of perceived burdensomeness and thwarted belongingness. The INQ has shown excellent internal consistency reliability when used with adolescent samples (Van Orden et al., 2010). In the current study, internal consistency was excellent for perceived burdensomeness ( $\alpha =$ .92) and adequate for thwarted belongingness ( $\alpha = .84$ ). Further, the scale showed adequate to excellent construct, convergent, and divergent validity (Van Orden et al., 2012). Perceived burdensomeness and thwarted belongingness subscales are included as control variables in the present study because in the tri-part theory (i.e., interpersonal theory of suicide) perceived burden, thwarted belongingness, and acquired capability work together to predict suicide risk. Controlling for the variance of burdensomeness and belongingness allows the researcher to establish acquired capability as an independent predictor of suicide. The INQ will be administered at both time points.

#### Chapter 4

#### **Statistical Analysis Plan**

Data were screened for missingness and normality, and missing values were estimated using maximum likelihood estimation because fewer than 30% of values were missing. As proposed, bootstrapping techniques using the Delta method as outlined by Preacher and Hayes (2008) were used to assess partial mediation using MPlus v.7 (Muthen & Muthen, 2007). Bootstrapping was selected because of the robustness of the test when assessing the role of multiple mediators in a model with smaller sample sizes (Fritz & MacKinnon, 2007; Mallinckrodt, Abraham, Wei, & Russell, 2006; Preacher & Hayes, 2008). The maximum likelihood estimator was used in MPlus to estimate results because data did not violate normality assumptions and there were no missing values. Analyses for each of the hypotheses are described next.

#### Hypothesis 1

The multiple mediation model (see Figure 1) was assessed using Mplus v.7 (Muthen & Muthen, 2007) wherein bootstrapping techniques and the Delta method (Preacher & Hayes, 2008) were used to assess whether emotional dysregulation at Time 1 mediated the relationship between disrupted attachment and acquired capability at Time 1. Additionally, the same bootstrapping techniques (Preacher & Hayes, 2008) were used to assess whether behavioral dysregulation at Time 1 mediated the relationship between disrupted attachment and acquired capability at Time 1. Finally, bootstrapping techniques (Preacher & Hayes, 2008) were used to assess whether the interaction between emotional and behavioral dysregulation at Time 1 mediated the relationship between disrupted attachment and acquired capability at Time 1. In all of these analyses,

time (in years) since last traumatic event, depression (CESD), NSSI (FASM), and perceived burden and thwarted belongingness (INQ) at Time 1 were controlled for.

## Hypothesis 2

To assess whether emotion dysregulation at Time 1 mediated the relationship between interpersonal trauma exposure and acquired capability for suicide at Time 1, and whether acquired capability at Time 1 mediated the relationship between emotional dysregulation at Time 1 and suicidal ideation at Time 2 a multiple mediation model (see Figure 2) was conducted using Bootstrapping techniques and the Delta method (Preacher & Hayes, 2008) in Mplus v.7 (Muthen & Muthen, 2007). Similarly, to assess whether behavioral dysregulation at Time 1 mediated the relationship between interpersonal trauma exposure and acquired capability for suicide at Time 1, and whether acquired capability for suicide at Time 1 then mediated the relationship between behavioral dysregulation at Time 1 and suicidal ideation at Time 2 Bootstrapping techniques (Preacher & Hayes, 2008) in Mplus v.7 (Muthen & Muthen, 2007) was completed. Finally, to assess whether the interaction between emotional and behavioral dysregulation at Time 1 mediated the relationship between interpersonal trauma exposure and acquired capability at Time 1, and whether acquired capability at Time 1 mediated the relationship between the interaction of emotional and behavioral dysregulation at Time 1 and suicidal ideation at Time 2, Bootstrapping techniques (Preacher & Hayes, 2008) in Mplus v.7 (Muthen & Muthen, 2007). In all of these analyses, time (in years) since last traumatic event, depression, NSSI, perceived burden and thwarted belongingness at Time 1 were entered as control variables.

#### Hypothesis 3a

As initially proposed, a mediation model (refer to Figure 3) using bootstrapping techniques (Preacher & Hayes, 2008) and Delta method was used to assess whether the relationship between exposure to physically painful forms of trauma (e.g., number of years physical abuse victim in childhood; Refer to Appendix A for more information) and acquired capability at Time 1 was mediated by behavioral dysregulation at Time 1. Additionally, another mediation model was used to assess whether emotional dysregulation at Time 1 mediated the relationship between the exposure to emotionally painful forms of trauma (e.g., number of years emotional neglect was endorsed in childhood; Refer to Appendix A) and acquired capability at Time 1. Finally, a third mediation model was used to examine whether the interaction between emotional dysregulation and behavioral dysregulation at Time 1 mediated the relationship between exposure to forms of trauma that are both emotionally and physically painful (e.g., number of years childhood rape victim; Refer to Appendix A) and acquired capability at Time 1. In all analyses, time (in years) since last traumatic event, NSSI, depression, perceived burdensomeness and thwarted belongingness were controlled for.

#### Hypothesis 3b

To assess whether acquired capability for suicide at Time 1 predicted suicide ideation at Time 2, a linear regression using IBM SPSS v.21 controlling for Time 1 suicide ideation, time (in years) since last traumatic event, depression, NSSI, and perceived burden and thwarted belongingness was completed.

#### **Additional Research Questions 1-4**

After assessing Hypotheses 1-3, wherein a piece of the interpersonal theory of suicide, that is, acquired capability for suicide, was examined more closely with regard to

potential predictors and mediators that lead one to acquire a capability for suicide, this researcher wanted to assess whether acquired capability for suicide fit within the interpersonal theory of suicide model in order to provide a broader context for the findings of the main hypotheses. To do this, four linear regressions using IBM SPSS v.21 were ran. The first regression assessed whether perceive burdensomeness, thwarted belongingness, and acquired capability for suicide was associated with suicide ideation at Time 1, that is, current report of perceived burdensomeness, thwarted belongingness, and acquired capability for suicide with current suicide ideation. The second regression assess whether the three components predict suicide ideation at Time 2, after controlling for suicide ideation at Time 1. The third regression assessed whether the three components of the interpersonal theory of suicide predicted past attempts. The fourth regression assessed whether the three components predict worst lethality of past suicide attempts.

#### Additional Research Questions 5 and 6

While NSSI was not initially introduced as an important component of suicide risk, it was introduced as a type of behavioral dysregulation. As will be seen in the results section, behavioral dysregulation, as measured by self-reported agitation, was not found to be a significant predictor or partial mediator in any of the models proposed in Hypotheses 1-3. Thus, after conducting the analyses as proposed, this researcher wanted to understand whether behavioral dysregulation as a construct was a predictor of suicide risk, which would help to understand where future research should go. To assess these additional research questions, two multiple regressions using IBM SPSS v.21 were ran. The first regression assessed whether the four reasons for NSSI as reported during Time 1

predicted Time 1 suicide ideation and past attempts. Time (in years) since last traumatic event and depression were both entered as control variables.

#### Chapter 5

## Results

Missing data were determined to be missing completely at random and thus were estimated using Maximum Likelihood data estimation (Kline, 2011). Data were screened to assess for normality. With the exception of perceived burdensomeness subscale and the social negative reinforcement subscale from the FASM scale, which were both skewed and kurtotic, all variables were normally distributed (Refer to Table 4). The natural log transformation of the perceived burdensomeness (M = 2.15, SD = .496, Skew = -1.35, Kurtosis = .420) and social negative reinforcement subscale (M = 1.22, SD = .703, Skew = -.383, Kurtosis = -.212) was used in analyses in order to fix the issue of non-normality.

Table 4

	М	SD	Skew	SE	Kurtosis	SE
Behavioral	12.04	6.29	.098	.221	-1.04	.438
Dysregulation						
Acquired Capability	20.13	6.59	.228	.221	404	.438
Non-Acceptance (DERS)	15.25	6.34	.276	.221	659	.438
Goals (DERS)	15.72	5.40	.190	.221	-1.04	.438
Impulse Control (DERS)	13.61	5.72	.829	.221	.016	.438
Awareness of Emotions (DERS)	18.67	5.67	142	.221	372	.438
Strategies Available (DERS)	20.79	8.19	.297	.221	813	.438

Means, Standard Deviations, and Normality of Main Variables.
Clarity of Emotions	13.90	4.68	.153	.221	418	.438
(DERS)						
Suicide Ideation	2.65	4.34	1.91	.221	2.79	.438
Anticipatory Negative Reinforcement(FASM)	1.69	2.28	1.08	.221	089	.438
Anticipatory Positive Reinforcement(FASM)	2.02	2.80	1.17	.221	.164	.438
Social Negative Reinforcement(FASM)	1.21	2.45	2.45	.221	7.28	.438
Social Positive Reinforcement(FASM)	2.30	4.02	1.80	.221	2.24	.438
Depression	27.33	7.14	025	.221	.126	.438
Belongingness	28.51	12.35	.221	.221	719	.438
Burdensomeness	10.17	6.85	2.09	.221	3.90	.438

## Correlations

Correlations between variables were also assessed. The subscales of emotion dysregulation were correlated with depression at a small to moderate level (*r* range = -223 - .470, *p* < .05), with the exception of awareness of emotions subscale, which was not correlated, the subscales were moderately correlated with behavioral dysregulation (*r* range = .362 - .543, *p*< .001). Behavioral dysregulation was moderately correlated with depression (*r* = .583, *p* < .001), small to moderately correlated with non-suicidal self injury (*r* range = .232 - .409, *p* < .05), and moderately correlated with suicide ideation (*r* = .412, *p* < .001). Acquired capability was not correlated with any of the variables of interest including depression, emotion dysregulation, behavioral dysregulation, suicide ideation, PTSD, non-suicidal self-injury, perceived burdensomeness and thwarted

belongingness. Please refer to Table 5 for a fuller picture of the bivariate correlations

among the variables.

Table 5

# Correlation Table of Main Variables.

	Disrupted Attachment	Interpersonal Trauma	Emotionally Painful Trauma	Physically Painful Trauma	Both Emo. & Phys. Painful Trauma
Acquired Capability	.19	.31*	29*	.02	.02
BSS Attempt Worst Leth.	.01 .22* .12	.21* .23** .21	01 11 21	.03 11 23	02 .11 10
Emotion Regulation	.21*	.19*	06	04	.09
Behavioral Regulation	.17^	.17^	.02	05	.10
Depression	.18*	.23**	01	02	.11
Thwarted Belonging	03	.01	06	04	.13
Perceived Burden	.07	.24**	02	14	.09
PTSD	.12	06	.07	.02	05
Anticipatory Negative Reinforcement	.11	.11	27**	16^	.17*
Anticipatory Positive Reinforcement	.12	.17^	20*	17^	.17*
Social Negative Reinforcement	.11	.06	13	11	.06
Social Positive Reinforcement	.07	.05	17^	14	01

## Hypothesis 1

In support of Hypothesis 1, after controlling for time (in years) since last traumatic event, depression (CES-D), NSSI (FASM), and perceived burden and thwarted belongingness (INQ) at Time 1, there was a direct effect of emotion dysregulation and disrupted attachment on acquired capability for suicide. Please see Figure 6 for a graphical representation of the findings. As can be seen in Table 5, in contrast to Hypothesis 1, there were no direct effects of disrupted attachment on any of the partial mediators in this model. As also observed in Table 6, in contrast to Hypothesis 1, the multiple mediation results revealed that emotional dysregulation, nor behavioral dysregulation, or the interaction between emotion and behavioral dysregulation at Time 1 partially mediated the relationship between disrupted attachment and acquired capability at Time 1.

Table 6

	Acquired Capability for Suicide						
Predictors	β	SE	р	CI			
Disrupted Attachment	172	.718	.017*	-3.93 to358			
Emotion Dysregulation (DERS)	.10	.029	.001***	.025 to .173			
Behavioral Dysregulation (BAM)	.061	.141	.433	409 to .131			
DERS*BAM	.001	.004	.237	010 to .009			
Direct Effect of Disrupted Attachment on Mediators							
Disrupted Attachment on DERS	.010	2.24	.997	-7.84 to 5.19			

*Hypothesis 1 Results of Multiple Mediation Model of Disrupted Attachment Predicting Acquired Capability for Suicide.* 

Disrupted Attachment on	.250	.956	.793	-1.31 to 4.17		
BAM						
Disrupted Attachment on	-13.56	12.48	.277	-55.51 to 20.03		
DERS*BAM						
Partial Mediator	Acquired Capability for Suicide					
DERS	.001	.253	.997	879 to .684		
BAM	.015	.102	.882	415 to .342		
DERS*BAM	014	.080	.858	445 to .181		

*Note.* Time (years) since last trauma, depression, NSSI, and perceived burden and thwarted belongingness were entered as control variables in each of these analyses. \*p < .05, \*\*p < .01, \*\*\*p < .001.



*Note.* Time since last trauma, depression, NSSI, and perceived burden and thwarted belongingness were entered as control variables in each of these analyses. \*p < .05, \*\*p < .01, \*p < .001.

Figure 6. Hypothesis 1 Results.

**Follow-up Research Questions for Hypothesis 1.** The control variables may be parsing out variance that, while shared with covariates, is still crucial to the constructs being assessed. Thus analyses were ran without control variables included for hypothesis 1. The results were similar to when the control variables were included. The researcher also assessed whether disrupted attachment, emotion dysregulation, behavioral

dysregulation, and the interaction between emotion and behavioral dysregulation had direct effects on suicide ideation in the event that acquired capability was not a good outcome variable. Results were the same as using acquired capability as the outcome variable. There was a trend toward significance of a direct effect of disrupted attachment on suicide ideation and a direct effect of emotion dysregulation on suicide ideation. Emotion dysregulation, nor behavioral dysregulation, or the interaction between emotion and behavioral dysregulation partially mediated the relationship between disrupted attachment and suicide ideation. Refer to Table 7 for details.

Table 7

Suicide Ideation							
Predictors	β	SE	р	CI			
Disrupted Attachment	1.55	.826	.061^	-1.28 to 3.11			
Emotion Dysregulation (DERS)	121	.033	.001***	20 to03			
Behavioral Dysregulation (BAM)	095	.141	.501	26 to .38			
DERS*BAM	.005	.007	.455	01 to .02			
	Direct Effect of Disrupted Attachment on Mediators						
Disrupted Attachment on DERS	.010	2.24	.997	-7.84 to 5.19			
Disrupted Attachment on BAM	.250	.956	.793	-1.31 to 4.17			
Disrupted Attachment on DERS*BAM	-13.56	12.48	.277	-55.51 to 20.03			
Partial Mediator		Suicide Ideation	n				
DERS	001	.296	.997	82 to .98			

*Follow-up Hypothesis 1 Results of Multiple Mediation Model of Disrupted Attachment Predicting Suicide Ideation.* 

BAM	.015	.102	.882	415 to .342
DERS*BAM	014	.080	.858	445 to .181

*Note.* Time (years) since last trauma, depression, NSSI, and perceived burden and thwarted belongingness were entered as control variables in each of these analyses. \*p < .05, \*\*p < .01, \*\*\*p < .001,  $^p < .10$ .

#### Hypothesis 2

As can be observed in Table 8, in contrast to Hypothesis 2, results revealed that after controlling for time (in years) since last traumatic event, depression, NSSI, perceived burden and thwarted belongingness at Time 1 were entered as control variables, emotion dysregulation at Time 1 did not mediate the relationship between interpersonal trauma exposure and acquired capability for suicide at Time 1, however, in support of Hypothesis 2, acquired capability at Time 1 partially mediated the relationship between emotional dysregulation at Time 1 and suicidal ideation at Time 2. In contrast to Hypothesis 2, behavioral dysregulation at Time 1 did not partially mediate the relationship between interpersonal trauma exposure and acquired capability for suicide at Time 1, and acquired capability for suicide at Time 1 did not partially mediate the relationship between behavioral dysregulation at Time 1 and suicidal ideation at Time 2. Finally, in contrast to Hypothesis 2, the interaction between emotion and behavioral dysregulation at Time 1 did not partially mediate the relationship between interpersonal trauma exposure and acquired capability at Time 1, and acquired capability at Time 1 did not partially mediate the relationship between the interaction of emotional and behavioral dysregulation at Time 1 and suicidal ideation at Time 2. There were no direct effects of interpersonal trauma on emotion dysregulation, behavioral dysregulation, or the interaction between emotion and behavioral dysregulation. Emotion dysregulation had a

direct effect on acquired capability for suicide, while interpersonal trauma exposure had a

marginally significant direct effect on acquired capability for suicide. A graphical

representation of the results can be found in Figure 7.

Table 8

*Hypothesis 2 Results of Multiple Mediation Model of Interpersonal Trauma Predicting Acquired Capability for Suicide and Suicide Ideation.* 

	Acquired Capability for Suicide						
Predictors	β	SE	р	CI			
Interpersonal Trauma	1.26	1.26	.058^	536 to 2.99			
Emotion Dysregulation (DERS)	.094	.094	.0001***	.019 to .166			
Behavioral Dysregulation (BAM)	.066	.135	.628	389 to .177			
DERS*BAM	.002	.004	.363	010 to .013			
	Direct Eff	fect of Interperson	nal Trauma or	n Mediators			
Interpersonal Trauma on DERS	1.29	1.78	.469	-4.14 to 5.31			
Interpersonal Trauma on BAM	677	.623	.277	-3.15 to .486			
Interpersonal Trauma on DERS*BAM	9.04	9.91	.362	-20.15 to 33.25			
Mediator	Acqui	red Capability fo	r Suicide				
DERS	.121	.194	.460	485 to .659			
BAM	044	.091	.625	384 to .197			
DERS*BAM	.014	.058	.813	104 to .337			
Partial Mediator		Suicide Ideation	n				
ACSS (DERS $\rightarrow$ SI)	047	.016	.003**	090 to011			
ACSS (BAM→ SI)	027	.061	.659	091 to .175			

ACSS	001	.002	.651	007 to .004
(DERS*BAM→SI)				

*Note.* Time (years) since last trauma, depression, NSSI, and perceived burden and thwarted belongingness were entered as control variables in each of these analyses. DERS is Emotion Dysregulation, BAM is Behavioral Dysregulation, ACSS is Acquired Capability for Suicide.

\*p < .05, \*\*p < .01, \*\*\*p < .001, ^p < .10.



*Note.* Time since last trauma, depression, NSSI, and perceived burden and thwarted belongingness were entered as control variables in each of these analyses. \*p < .05, \*\*p < .01, \*p < .001,  $^p < .10$ . *Figure 7.* Hypothesis 2 Results.

## Follow-up Research Questions for Hypothesis 2. Similar to the follow up of

Hypothesis 1, the researcher wanted to examine the extent that shared variance between the control variables and interpersonal trauma being parsed out was driving the findings. When not controlling for other variables, a direct effect of interpersonal trauma on emotion dysregulation was found ( $\beta = 5.49$ , SE = 2.24, p = .014, 95% CI = .46 to 11.26). There was a direct effect of emotion dysregulation on acquired capability ( $\beta = .094$ , SE =.028, p = .001, 95% CI = .019 to .17) and a trend toward significance of interpersonal trauma on acquired capability ( $\beta = 1.264$ , SE = .667, p = .058, 95% CI = ..54 to 2.99). There was a trend toward significance of emotion dysregulation partially mediating the relationship between interpersonal trauma exposure and acquired capability for suicide ( $\beta$  = .517, *SE* = .307, *p* = .09, 95% *CI* = -.09 to 1.54). The predicted relationships between interpersonal trauma and behavioral dysregulation ( $\beta$  = -.046, *SE* = .678, *p* = .946, 95% *CI* = -2.10 to 1.46), behavioral dysregulation and acquired capability ( $\beta$  = .066, *SE* = .135, *p* = .628, 95% *CI* = -.389 to .177), as well as interpersonal trauma and the interaction between emotion and behavioral dysregulation ( $\beta$  = 9.041, *SE* = 9.909, *p* = .362, 95% *CI* = -20.15 to 33.25), and the interaction between emotion and behavioral dysregulation to between emotion and behavioral dysregulation to .013) continued to be non-significant.

### Hypothesis 3a.

Results for Hypothesis 3a are located in Table 9. Contrary to Hypothesis 3a, after controlling for time (in years) since last traumatic event, NSSI, depression, perceived burdensomeness and thwarted belongingness, exposure to physically painful forms of trauma (e.g., number of years physical abuse victim in childhood; Refer to Appendix A for more information) and acquired capability at Time 1 was not partially mediated by behavioral dysregulation at Time 1. Additionally, emotion dysregulation at Time 1 did not partially mediate the relationship between exposure to emotionally painful forms of trauma (e.g., number of years emotional neglect was endorsed in childhood; Refer to Appendix A) and acquired capability at Time 1. Finally, the interaction between emotional dysregulation and behavioral dysregulation at Time 1 did not partially mediate the relationship between exposure to emotionally painful mediate the relationship between exposure to a emotional dysregulation and behavioral dysregulation at Time 1. Finally, the interaction between emotional dysregulation and behavioral dysregulation at Time 1 did not partially mediate the relationship between exposure to forms of trauma that are both emotionally and physically painful (e.g., number of years childhood rape victim; Refer to Appendix A)

and acquired capability at Time 1. Consistent with Hypothesis 3a, there was a direct effect of both emotionally and physically painful traumas on the interaction between emotion and behavioral dysregulation. The only variable that had a direct effect on acquired capability for suicide in this model was exposure to both emotionally and physically painful forms of trauma. The data are represented graphically in Figure 8. Also, to help understand the interaction between emotion and behavioral dysregulation, please refer to Figure 9.

Table 9

Acquired Capability for Suicide **Predictors** β SE CIр **Emotionally Painful Trauma** .457 .508 -.657 to 1.86 .368 Physically Painful Trauma -.138 .608 -1.02 to .52 .269 .0001\*\*\* Both Emotionally and -.932 .134 -1.28 to -.58 Physically Painful Trauma .0001\*\*\* Emotion Dysregulation .094 .094 .019 to .166 (DERS) Behavioral Dysregulation .066 .135 .628 -.389 to .177 (BAM) DERS\*BAM .002 .004 .363 -.010 to .013 Direct Effect of Trauma Type on Mediators Emotionally Painful .549 1.178 .641 -2.59 to 3.70 Trauma on DERS Physically Painful -.382 .469 .415 -2.75 to .303 Trauma on BAM Both Emotionally and -3.05 .873 .0001\*\*\* -5.38 to -.94 Physically Painful Trauma on DERS\*BAM

*Hypothesis 3a Results of Multiple Mediation Model of Painful Traumas Predicting Acquired Capability for Suicide.* 

Partial Mediator	Acquired Capability for Suicide						
DERS	010	.036	.776	05 to .27			
BAM	.008	.033	.817	21 to .06			
DERS*BAM	006	.011	.577	04 to .02			

*Note.* Time (years) since last trauma, depression, NSSI, and perceived burden and thwarted belongingness were entered as control variables in each of these analyses. DERS is Emotion Dysregulation, BAM is Behavioral Dysregulation, ACSS is Acquired Capability for Suicide.

 $p^{*} < .05, **p < .01, ***p < .001.$ 



*Note.* Time since last trauma, depression, NSSI, and perceived burden and thwarted belongingness were entered as control variables in each of these analyses. *Figure 8.* Hypothesis 3a Results.



*Note.* Lines represent Mean scores on Acquired Capability for Suicide.

*Figure 9*. Graph of Acquired Capability at the Interaction Between Emotion and Behavioral Dysregulation.

**Follow-up Research Questions for Hypothesis 3a.** When not controlling for other variables (Results are presented in Table 10), there was a direct effect of exposure to emotionally painful forms of trauma on emotion dysregulation. There was no direct effect of physically painful traumas on behavioral dysregulation, while the direct effect of traumas that are both emotionally and physically painful continued to be associated with the interaction between emotion and behavioral dysregulation. Traumas that are both emotionally and physically painful were significantly associated with acquired capability while none of the other variables were significantly associated with an acquired capability for suicide. The latter findings were different than when the control variables were being accounted for. As would be suspected based on the lack of direct effects, there were no significant partial mediators in this model when the control variables were not accounted for.

The researcher also wanted to examine whether there was a more direct relationship among the predictor variables and suicide ideation given that it was possible

that in this model acquired capability for suicide was not the best mechanism linking trauma types and suicide risk. Results revealed that after entering the same control variables as was entered in Hypothesis 3 model, emotion dysregulation had a direct effect on suicide ideation ( $\beta = .066$ , SE = .02, p = .001, 95% CI = .02 to .12) while neither behavioral dysregulation nor the interaction between emotion and behavioral dysregulation had direct effects on suicide ideation ( $\beta = .035$ , SE = .077, p = .650, 95% CI = -.069 to .303;  $\beta = .004$ , SE = .003, p = .269, 95% CI = -.005 to .011). There was a trend toward significance of emotionally painful traumas having a direct effect on suicide ideation ( $\beta = -.434$ , SE = .230, p = .059, 95% CI = -1.05 to .18) and there was a direct effect of physically painful traumas on suicide ideation ( $\beta = .656$ , SE = .269, p < .015, 95% CI = .18 to 1.21) as well as traumas that are both physically and emotionally painful on suicide ideation ( $\beta = 1.326$ , SE = .135, p < .001, 95% CI = .98 to 1.71). The interaction of emotion and behavioral dysregulation did not partially mediate the relationship between traumas that are both emotionally and physically painful and suicide ideation ( $\beta = -.011$ , SE = .012, p = .335, 95% CI = .01 to .05). Emotion dysregulation did not partially mediate the relationship between emotionally painful traumas and suicide ideation ( $\beta = .036$ , SE = .076, p = .634, 95% CI = -.147 to .312). When there were no other variables controlled for, there was a trend toward significance of emotion dysregulation partially mediating the relationship between emotionally painful traumas and suicide ideation ( $\beta = .243$ , SE = .145, p = .094, 95% CI = .001 to .892).

Table 10

Follow-up Hypothesis 3a Results of Multiple Mediation Model of Painful Traumas Predicting Acquired Capability for Suicide without Control Variables.

	Acquired Capability for Suicide					
Predictors	ictors ,			SE	р	CI
Emotionally Painful Traum	a	.457	1	.508	.368	66 to 1.86
Physically Painful Trauma		138	8	.269	.608	-1.02 to .52
Both Emotionally and Physically Painful Trauma		932	2	.134	.0001***	-1.28 to58
Emotion Dysregulation (DERS)	019		)	.027	.492	09 to .05
Behavioral Dysregulation (BAM)	ation02		)	.114	.861	66 to 1.86
DERS*BAM		.002		.004	.580	01 to .01
Direct Effect of Trauma Type on Mediators					diators	
Emotionally Painful Trauma on DERS	3	.706		1.87	.047	.60 to 8.99
Physically Painful Trauma on BAM	-	829		.831	.319	-3.45 to .39
Both Emotionally and Physically Painful Trauma on DERS*BAM	-3.05			.873	.0001***	-5.38 to94
Partial Mediator Ac			cquired Capa	bility for Suici	ide	
DERS	-,	.069		.098	.480	51 to .11
BAM	•	017		.041	.690	07 to .22
DERS*BAM	-,	.006		.011	.577	04 to .02

*Note.* Time (years) since last trauma, depression, NSSI, and perceived burden and thwarted belongingness were entered as control variables in each of these analyses. DERS is Emotion Dysregulation, BAM is Behavioral Dysregulation, ACSS is Acquired Capability for Suicide.

 $p^{*} < .05, p^{*} < .01, p^{*} < .001.$ 

# Hypothesis 3b

After controlling for Time 1 suicide ideation, time (in years) since last traumatic

event, depression, NSSI, and perceived burden and thwarted belongingness, acquired

capability for suicide at Time 1 was not predictive of suicide ideation at Time 2, ( $\beta = .091$ , *SE* = .867, *p* = .391).

### **Interpersonal Theory of Suicide Model**

Although not initially proposed, the researcher had the data to assess whether there was support for the tri-partite model of the Interpersonal Theory of Suicide. Refer to Figure 10 for a graphical representation of the following analysis. The researcher first wanted to assess the relationship between current suicide ideation (Time 1) and perceived burdensomeness, thwarted belongingness, and acquired capability. This would provide detailed information about whether the three parts of the interpersonal theory of suicide are associated with current suicide ideation. Results of this hierarchical regression revealed that perceived burdensomeness was significantly associated with suicide ideation ( $\beta = .573$ , SE = .051, t = 7.06, p < .001) while there was a trend toward acquired capability significantly being associated with suicide ideation ( $\beta = .135$ , SE = .047, t =1.87, p = .064). Lack of belongingness was not statistically significantly associated with suicide ideation ( $\beta = .096$ , SE = .029, t = 1.17, p = .242).



*Note.* Variables were entered hierarchically into the model (first, thwarted belongingness, second, perceived burdensomeness, and third, ACSS). ACSS = Acquired Capability for Suicide.

*Figure 10.* Components of the Interpersonal Theory of Suicide Predicting Time 1 Suicide Ideation.

Another analysis examining the same three predictors predicting suicide ideation at Time 2 was also ran to assess what predictors lead to future suicide ideation. See Figure 11. Results of this regression revealed that only acquired capability for suicide was predictive of suicide ideation at Time 2 ( $\beta = .302$ , SE = .082, t = 2.177, p = .034). Neither perceived burdensomeness ( $\beta = .131$ , SE = .129, t = .852, p = .398) nor lack of belongingness was statistically significantly predictive of suicide ideation at Time 2 ( $\beta = .165$ , SE = .053, t = 1.01, p = .320).



*Note.* Variables were entered hierarchically into the model (first, thwarted belongingness, second, perceived burdensomeness, and third, ACSS). ACSS = Acquired Capability for Suicide.

*Figure 11.* Components of the Interpersonal Theory of Suicide Predicting Time 2 Suicide Ideation.

Further, the researcher wanted to assess whether the three factors of the interpersonal theory of suicide predicted past suicide attempts (See Figure 12), and whether the constructs predicted the most lethal past attempt (See Figure 13). Because there were more participants who reported past attempts during the first data collection (n = 23 compared to n = 10) the researcher used the Time 1 data to complete these two hierarchical regression analyses. In all of the hierarchical linear regressions, lack of belongingness was entered into Step 1, in Step 2 perceived burdensomeness was entered, and in Step 3 acquired capability was entered. Results revealed that perceived burdensomeness and acquired capability both predicted prior suicide attempts ( $\beta = .353$ , SE = .009, t = 3.65, p < .001;  $\beta = .267$ , SE = .008, t = 3.12, p = .002, respectively), while

lack of belongingness was not found to be a significant predictor ( $\beta = -.121$ , SE = .005, t = -1.25, p = .212). The overall effect size was small ( $R^2 = .16$ ; and both perceived burdensomeness and acquired capability were found to add unique variance to the overall model, burdensomeness  $R^2$  change = .081, F(1, 118) = 10.478, p = .002; acquired capability  $R^2$  change = .07, F(1, 117) = 9.715, p = .002). Results of the lethality of suicide attempt regression, perceived burdensomeness was trending toward significance, ( $\beta = .436$ , SE = .021, t = 1.88, p = .076). Neither lack of belongingness nor acquired capability were associated with the lethality of prior attempts ( $\beta = .039$ , SE = .018, t = .166, p = .870;  $\beta = .243$ , SE = .023, t = 1.22, p = .239).



*Note.* Variables were entered hierarchically into the model (first, thwarted belongingness, second, perceived burdensomeness, and third, ACSS). ACSS = Acquired Capability for Suicide.

*Figure 12.* Components of the Interpersonal Theory of Suicide Predicting Past Suicide Attempts.



*Note.* Variables were entered hierarchically into the model (first, thwarted belongingness, second, perceived burdensomeness, and third, ACSS). ACSS = Acquired Capability for Suicide.

*Figure 13.* Components of the Interpersonal Theory of Suicide Predicting Lethality of Worst Suicide Attempt.

#### Non-Suicidal Self Injury

Two linear regressions examining whether the four reasons for non-suicidal selfinjury were predictive of suicide ideation and past attempts were ran. In both regressions, anticipatory negative reinforcement, anticipatory positive reinforcement, social negative reinforcement, and social positive reinforcement were entered into Step 1. See Figure 14 for graphical representation of the first regression explained next. In the first regression, social negative reinforcement and social positive reinforcement were statistically significant predictors of suicide ideation, ( $\beta = .341$ , SE = .221, t = 2.75, p = .007;  $\beta = -$ .311, SE = .146, t = -2.33, p = .021, respectively), while anticipatory positive reinforcement was trending toward significance ( $\beta = .288$ , SE = .256, t = 1.74, p = .084). Anticipatory negative reinforcement was not a statistically significant predictor of suicide ideation ( $\beta$  = .169, *SE* = .353, *t* = .908, *p* = .366). In the second regression (Refer to Figure 15), only anticipatory negative reinforcement was a statistically significant predictor of past suicide attempts ( $\beta$  = .365, *SE* = .049, *t* = 2.04, *p* = .043). Anticipatory positive reinforcement, social negative reinforcement, and social positive reinforcement were not predictive of past attempts ( $\beta$  = .237, *SE* = .036, *t* = 1.49, *p* = .140;  $\beta$  = .122, *SE* = .031, *t* = 1.02, *p* = .311;  $\beta$  = -.184, *SE* = .020, *t* = -1.43, *p* = .154, respectively).



*Note.* Predictor variables were entered into Step 1 of the model.

Figure 14. Components of Non-Suicidal Self-Injury Predicting Suicide Ideation.



*Note*. Predictor variables were entered into Step 1 of the model. *Figure 15*. Components of Non-Suicidal Self-Injury Predicting Suicide Attempts.

### **Chapter 6**

### Discussion

The overall goal of this project was to assess mechanisms that may explain the link between childhood trauma exposure and suicide risk. The framework of the project was set within the interpersonal theory of suicide and was specifically designed to examine the acquired capability for suicide. The sample consisted of only college students who had endorsed prior childhood trauma exposure. The traumas endorsed are similar to other studies of college students' history of trauma exposure (Read et al., 2011; Bernat, Ronfeldt, Calhoun, & Arias, 1998). Up until this study there has been relatively little research on the acquired capability and the theoretical mechanistic role of acquired capability for suicide lends itself well to explaining how childhood trauma exposure relates to suicide risk. Three main hypotheses were proposed to assess the mechanisms that lead to an acquired capability for suicide and one hypothesis was proposed to assess whether this acquired capability was itself predictive of suicide risk. The details of these findings are provided next.

#### Hypothesis 1

As hypothesized, disrupted attachment, defined as removal from caregivers and placed with new caregivers, was found to be related to an acquired capability for suicide in the present study. Further, emotion dysregulation was also found to be related to an acquired capability for suicide. These findings suggest that when children exposed to trauma are removed from their caregivers, the development of an acquired capability for suicide is strengthened. Emotion dysregulation, which has been found in previous studies to be related to other risk factors of suicide such as depression and non-suicidal self injury, was also related to an acquired capability for suicide in the present work. Contrary to Hypothesis 1, findings of the multiple mediation model proposed in Hypothesis 1 revealed that after controlling for time (in years) since last traumatic event, depression (CES-D), NSSI (FASM), and perceived burden and thwarted belongingness (INQ) at Time 1, emotional dysregulation, behavioral dysregulation, and the interaction between emotion and behavioral dysregulation at Time 1 did not partially mediate the relationship between disrupted attachment and acquired capability. These findings suggest that emotion dysregulation and behavioral dysregulation do not play a mechanistic role in the development of an acquired capability stemming from disrupted attachment in this sample. Instead, there was a direct effect of disrupted attachment and emotion

dysregulation on acquired capability when other factors known to be associated with an acquired capability are controlled for. The relationship between disrupted attachment, acquired capability for suicide, and emotion and behavioral dysregulation was similar regardless of whether the variance of the control variables was parsed out. There was no relationship between disrupted attachment and behavioral dysregulation, or behavioral dysregulation and acquired capability for suicide in this particular model. This latter finding was surprising given the theoretically derived association between behavioral dysregulation and an acquired capability and that behavioral dysregulation has been found to be associated with suicide risk (e.g., Nock et al., 2006). It is possible that selfreported agitation is not the best measure of behavioral dysregulation, and instead measurement of manifest dysregulated behaviors is a better way to capture behavioral dysregulation among individuals who are not at acute risk for death by suicide, but who are at a higher risk for suicide due to an acquired capability for suicide. Functionally, assessing someone for NSSI and other behaviors indicative of dysregulation (e.g., binge eating, substance abuse) when individuals endorse higher acquired capability for suicide may help identify more precisely who is likely to die by suicide if an intervention is not provided.

**Follow-up Research Questions for Hypothesis 1.** To examine whether data in this study supported prior research linking behavioral and emotion dysregulation with suicide risk, the researcher assessed the relationship between disrupted attachment, emotion and behavioral dysregulation, and suicide ideation. Results revealed a similar pattern as when acquired capability for suicide was used as the outcome variable. There was no direct relationship between behavioral dysregulation and suicide ideation or the

interaction between emotion and behavioral dysregulation and suicide ideation. Emotion dysregulation had a direct effect on suicide ideation and there was a trend toward significance of a direct effect of disrupted attachment on suicide ideation. Emotion dysregulation did not mediate the relationship between disrupted attachment and suicide ideation.

The findings of the tests of Hypothesis 1 suggest that there is a stronger relationship between disrupted attachment and the mechanism of an acquired capability for suicide as compared to disrupted attachment and suicide ideation. This is important because in the theorized model of the interpersonal theory of suicide, an acquired capability for suicide was thought to be predictive of death by suicide when in conjunction with suicide ideation. We know that suicide ideation is not the best predictor of who is at highest risk for death by suicide. Stated differently, the results from these analyses suggest that disrupted attachment has a more direct effect on a theorized better predictor of death by suicide. On the front end, when childhood trauma occurs, the child welfare system should take into consideration the risk for death by suicide that can occur when children are removed from their caregivers. More broadly, this finding supports the limited yet important research linking children in foster care to having more severe outcomes than children who are not removed from their caregivers and placed in foster care.

**Summary of Hypothesis 1.** In summary, while disruptions in attachment during childhood were associated with emotion dysregulation, they were not found to be associated with behavioral dysregulation. This could have been due to the fact that the timing of the disrupted attachment occurred, on average, seven years prior to the current

assessment of behavioral dysregulation (Please see Limitations section below). Thus, the null results of behavioral dysregulation and disrupted attachment are in tandem with prior research suggesting that timing of events is important. Results from the present study do provide some support that children with disruptions in their attachments to caregivers have more difficulty with emotion dysregulation. This is cautiously interpreted because there appears to be a suppression effect occurring in the model. Thus, the directionality of the results are based on the direction of the bivariate correlations rather than the direction of the mediation model. College students who had a disrupted attachment during childhood were found to have a higher acquired capability for suicide. Thus, there may be underlying emotional pain involved in being removed from one's caregivers and that emotional pain leads to a higher tolerance for emotional pain, which is a theorized necessary step toward being at risk for death by suicide. There was no support in the current study for disrupted attachment to lead to behavioral dysregulation, suggesting that with regard to an acquired capability for suicide the underlying precursor is the emotional distress associated with disruptions in the care-giving system. Alternatively, behavioral dysregulation as measured by self-reported agitation may not be the best measure of behavioral dysregulation when assessing suicide risk among samples that are not at acute risk for suicide. Instead, it may be more telling to assess for observable dysregulated behaviors (e.g., NSSI, substance abuse) when attempting to assess suicide risk of individuals who are not currently at acute risk for suicide.

#### Hypothesis 2

In support of Hypothesis 2, results revealed that after controlling for time (in years) since last traumatic event, depression, NSSI, and perceived burden and thwarted

belongingness at Time 1, interpersonal trauma exposure had a significant direct effect on acquired capability for suicide but did not have a direct effect on emotion or behavioral dysregulation. Again, there was a direct relationship between emotion dysregulation and acquired capability for suicide. This finding suggests that there is a link between interpersonal trauma exposure and acquired capability. In contrast to Hypothesis 2, interpersonal trauma exposure was not directly related to emotion dysregulation. It is possible that the severity of the trauma exposures or the amount of fear generated by the trauma exposures is what predicts emotion dysregulation. Results further revealed emotion dysregulation at Time 1 did not partially mediate the relationship between interpersonal trauma exposure and acquired capability for suicide at Time 1; however, acquired capability at Time 1 partially mediated the relationship between emotion dysregulation at Time 1 and suicidal ideation at Time 2. Stated differently, acquired capability for suicide stemming from interpersonal trauma exposure served as a mechanism between emotion dysregulation and suicide ideation. Acquired capability did not partially mediate the relationship between behavioral dysregulation and suicide ideation nor the relationship between the interaction of emotion and behavioral dysregulation and suicide ideation. This is likely due to the nonsignificant direct effects of these variables on suicide ideation. Stated differently, behavioral dysregulation in the form of self-reported agitation does not predict suicide ideation and since there is not a relationship between these two variables, acquired capability cannot serve as a mediator. Likewise, there was not a direct effect of the interaction between emotion and behavioral dysregulation on suicide ideation. This would suggest that behavioral dysregulation does

not serve a multiplicative function for emotion dysregulation when predicting suicide ideation.

Neither behavioral dysregulation nor the interaction between emotion and behavioral dysregulation at Time 1 partially mediated the relationship between interpersonal trauma exposure and acquired capability for suicide at Time 1, which is contrary to Hypothesis 2. This would suggest that in this sample, there is no relationship between interpersonal trauma exposure and the interaction between emotion and behavioral dysregulation and that the relationship between emotion dysregulation and acquired capability is stronger without behavioral dysregulation. Acquired capability for suicide at Time 1 also did not partially mediate the relationship between behavioral dysregulation at Time 1 and suicidal ideation at Time 2. This finding is not surprising given that there was not a direct relationship between behavioral dysregulation and suicide ideation. Finally, acquired capability at Time 1 did not partially mediate the relationship between the interaction of emotional and behavioral dysregulation at Time 1 and suicidal ideation at Time 2. Again, this can be explained by the fact that the interaction between emotion and behavioral dysregulation was not predictive of suicide ideation.

**Summary of Follow-up Research Questions for Hypothesis 2.** When not controlling for other variables, a direct effect of interpersonal trauma on emotion dysregulation was found. There continued to be a direct effect of emotion dysregulation on acquired capability and a trend toward significance of interpersonal trauma on acquired capability. There was a trend toward significance of emotion dysregulation partially mediating the relationship between interpersonal trauma exposure and acquired

capability for suicide. Taken together, trauma exposure, in general, was predictive of emotion dysregulation, but interpersonal trauma, in and of itself, was not the biggest component of this relationship. Interpersonal trauma exposure is predictive of an acquired capability and when variables that are also predictive of an acquired capability are allowed to co-vary with interpersonal trauma exposure, the relationship between interpersonal trauma exposure and acquired capability for suicide is not as clearly identified.

**Summary of Hypothesis 2**. In summary, individuals with interpersonal trauma exposure are at greater risk for acquired capability for suicide. Further, when someone with emotion dysregulation develops an acquired capability for suicide, the individual is at higher risk for suicide ideation than with just emotion dysregulation alone. The shared variance between emotion dysregulation and depression and NSSI is important in understanding the relationship between interpersonal trauma exposure and emotion dysregulation, as there was a significant relationship between these two variables when other control variables were not parsing out the shared variance of emotion dysregulation. Behavioral dysregulation, in contrast, was not an underlying mechanism linking interpersonal trauma exposure to an acquired capability for suicide. It is entirely possible that the painful experience of interpersonal trauma, in and of itself, causes an increase in pain tolerance and fearlessness of death rather than interpersonal trauma exposure leading to behavioral dysregulation that, in turn, leads to an acquired capability for suicide. Additionally, the interaction between emotion and behavioral dysregulation also was not a significant partial mediator in this model. This would suggest that emotion dysregulation, in and of itself, is an important predictor and partial mediator of acquired

capability for suicide, while behavioral dysregulation does not contribute to the model as a partial mediator or as a multiplicative effect on emotion dysregulation.

#### Hypothesis 3a

Consistent with Hypothesis 3a, after controlling for time (in years) since last traumatic event, NSSI, depression, and perceived burdensomeness and thwarted belongingness, there was a direct effect of traumas that are both emotionally and physically painful on the interaction between emotion and behavioral dysregulation, and there was a direct effect of exposure to trauma that is both emotionally and physically painful on acquired capability for suicide. However not consistent with Hypothesis 3, the interaction between emotional dysregulation and behavioral dysregulation did not mediate the relationship between exposure to traumas that are both emotionally and physically painful and acquired capability for suicide. This indicates that the interaction between emotion and behavioral dysregulation does not serve in a mechanistic role to link exposure to traumas that are both emotionally and physically painful and an acquired capability for suicide. Instead, exposure to emotionally and physically painful traumas (i.e., rape, physical assault) are associated with an acquired capability directly.

Contrary to predictions, there was no direct effect of traumas that are only emotionally painful on the development of emotion dysregulation, and there was also no direct effect of traumas that cause physical pain only on behavioral dysregulation. Further, in this model, emotion dysregulation was not associated with acquired capability for suicide, nor was there an association between behavioral dysregulation and acquired capability for suicide. As would be expected given the lack of direct effects between these variables, exposure to physically painful forms of trauma and acquired capability

was not mediated by behavioral dysregulation. Additionally, emotion dysregulation did not mediate the relationship between exposure to emotionally painful forms of trauma and acquired capability. In summary, when control variables are accounted for, only traumas that are both emotionally and physically painful (e.g. rape, physical assault) lead to more dysregulation and higher acquired capability for suicide.

**Follow-up Research Questions for Hypothesis 3a.** When not controlling for other variables, there was a direct effect of exposure to emotionally painful forms of trauma on emotion dysregulation. This finding suggests that the shared variance between emotionally painful forms of trauma and the control variables accounts for more of the variance of emotionally painful trauma exposure and when that variance is accounted for, there is not enough left to predict emotion dysregulation. The finding that when the control variables are not accounted for, the interaction between emotion and behavioral dysregulation is no longer directly related to an acquired capability for suicide suggests that the shared variance among the control variables and the interaction between emotion and behavioral dysregulation drowns out the effect that the unique variance of only the interaction between emotion and behavioral dysregulation has on an acquired capability for suicide.

A possible concern was that only one of the predictor variables had a direct effect on acquired capability, so the researcher assessed whether the same predictor variables had direct effects on suicide ideation rather than acquired capability. Results revealed that emotion dysregulation had a direct effect on suicide ideation while neither behavioral dysregulation nor the interaction between emotion and behavioral dysregulation had direct effects on suicide ideation. The fact that behavioral dysregulation was not

associated with suicide ideation is significant because it is described in the literature to be most associated with acute risk for death by suicide (Ribeiro et al., 2011). While it is somewhat surprising that there was no relationship between behavioral dysregulation and suicide ideation, it is entirely possible that the current sample is just not at acute risk for death by suicide.

There was a trend toward significance of emotionally painful traumas having a direct effect on suicide ideation and there was a direct effect of physically painful traumas on suicide ideation as well as traumas that are both physically and emotionally painful on suicide ideation. These findings provide support for the notion that childhood trauma exposure has a direct impact on suicide risk during college years. The interaction of emotion and behavioral dysregulation did not mediate the relationship between traumas that are both emotionally and physically painful and suicide ideation. Emotion dysregulation did not mediate the relationship between traumas that are both emotionally and physically painful and suicide ideation. Emotion dysregulation. When there were no other variables controlled for, there was a trend toward significance of emotion dysregulation mediating the relationship between emotionally painful traumas and suicide ideation.

**Summary of Hypothesis 3a**. In summary, emotionally painful trauma and physically painful trauma exposures, in and of themselves, were not found to lead to an acquired capability for suicide. Rather, there is a direct relationship with suicide ideation. This could indicate that these trauma types are not associated with the acute risk for death by suicide, but instead are related to a less severe risk of suicide ideation, which only accounts for a small portion of the variance of acute suicide risk (Joiner, 2005; Ribeiro et al., 2014). Traumas that are both emotionally and physically painful do have a more

direct effect on acquired capability. This finding would suggest that traumas that are both emotionally and physically painful (i.e., rape, physical assault) are painful enough to lower one's fearlessness of death and increase pain tolerance. In support of Joiner's (2005; Ribeiro et al., 2014) conceptualization of an acquired capability for suicide, traumas that are both emotionally and physically painful do not predict suicide ideation, which was theorized to be a less severe risk for death by suicide. Thus, traumas that are both emotionally and physically painful are associated with more severe acute risk for suicide. There was no mechanistic role of behavioral agitation found between physically painful trauma and acquired capability. This could be because the sample of participants were not at a high acute risk for suicide, which is when agitation has been found to be reported by individuals at risk for suicide (Ribeiro et al., 2014). It could also mean that self-reported agitation is not a good measure of behavioral dysregulation, or it could mean that behavioral dysregulation is not a helpful factor in predicting an acquired capability for suicide. Instead, perhaps the manifestations of observable dysregulated behaviors (e.g., NSSI, substance abuse) are better predictors and subsequent mediators of trauma exposure and acquired capability for suicide. Unlike in the models for disrupted attachment and interpersonal trauma exposure and acquired capability, there was not a mechanistic role of emotion dysregulation on acquired capability in the Hypothesis 3a model. This could be because emotionally painful traumas do not generate enough fear to warrant a lowered fear of death or enough emotional pain to increase pain tolerance, and thus emotionally painful traumas do not lead to emotion dysregulation because emotionally painful traumas are less severe. Perhaps the interaction emotion and behavioral dysregulation that was a significant predictor of acquired capability in this

model was being driven by the emotion dysregulation variable in the interaction. This would fit the overall story that this data has told wherein self-reported agitation is not adequately capturing the mechanism between trauma exposure and acquired capability for suicide.

#### Hypothesis 3b

After controlling for Time 1 suicide ideation, time (in years) since last traumatic event, depression, NSSI, and perceived burden and thwarted belongingness, acquired capability for suicide at Time 1 was not predictive of suicide ideation at Time 2. The null finding was likely due to too much shared variance being parsed out. Thus, in summary, acquired capability for suicide serves as one of many predictors in a network of predictors of suicide. The findings of Hypothesis 3b provide support for an additive effect of acquired capability for suicide in predicting suicide risk.

#### **Integration of Findings with Previous Literature**

**Regulation, Pain, and Suicide Risk.** The results of the present study also did not support emotional pain leading to agitation, or behavioral dysregulation. This could have been due to the fact that this particular sample was not acutely agitated, and that it is acute behavioral dysregulation that propels one toward suicide risk (Busch & Fawcett, 2004; Busch, Fawcett, & Jacobs, 2003; Fawcett et al., 1990; Kovasznay, Miraglia, Beer, & Way, 2004). There was also not support for behavioral dysregulation leading to an increase in one's tolerance for physical pain. However, consistent with prior research indicating that behavioral dysregulation strategies (e.g., NSSI) have been shown to be related to increased suicide risk (Hawton & Harriss, 2007; Nock, Joiner, Gordon, Lloyd-

Richardson, & Prinstein, 2006), NSSI in the present study was associated with suicide risk.

NSSI and Suicide Risk. The way that NSSI was measured in the present study was to examine the presence and reasons for engagement in NSSI. There were four subscales of reasons for NSSI, including anticipatory negative reinforcement, anticipatory positive reinforcement, social positive reinforcement and social negative reinforcement. The results of the present study revealed a unique pattern of suicide risk, which differed based on the reason for NSSI. Engagement in NSSI in anticipation of taking away the presence of a negative stimulus (i.e., anticipatory negative reinforcement) was associated with having made a prior suicide attempt. That is, individuals who engage in NSSI because they are trying to escape something negative (e.g., feeling distress, agitation) appear to be more likely to have made an actual suicide attempt. In comparison, engagement in NSSI in anticipation of positive reinforcement (e.g., feeling *something*) was not associated with prior suicide attempts, but was trending toward being associated with suicide ideation. Similarly, engagement in NSSI for social positive reinforcement (e.g., 'others will notice me') and social negative reinforcement (e.g., 'others will stop teasing me') was not associated with past suicide attempts, but was associated with suicide ideation.

Based on these findings, the relationship between NSSI and suicide differs depending on the aspect being considered. Individuals who feel numb and who engage in NSSI to feel something, do not appear to be likely to have made a prior suicide attempt, but may have suicide ideation. Additionally, individuals who are looking for social support may have suicide ideation but are not likely to have made prior suicide attempts.

The role of suicide ideation may actually be a coping tool in the face of stress. This is consistent with prior research that has found suicide ideation to be used as a coping mechanism (e.g., Kalichman, Heckman, Kochman, Sikkema, & Bergholte, 2000). The cognitive act of suicide ideation may reduce rumination on the lack of feeling or social support or presence of abuse by others in one's life. This could explain why some individuals who engage in NSSI never move on to attempt suicide, while others do. These findings highlight the importance of assessing for the underlying reason for engagement in NSSI. This is especially the case when suicide ideation is present.

#### Fit of Proposed Model within Existing Models

NSSI and Acquired Capability for Suicide. Results of the present study support Selby, Anestasis, and Joiner's (2008) emotional cascade model, wherein behavioral dysregulation results from escaping/ temporarily relieving emotional pain associated with negative affect and rumination. Specifically, individuals in the current study who reported engagement in NSSI due to a need to escape their emotional distress/ emotional pain, also had prior suicide attempts. Individuals who were engaging in NSSI for other reasons were at risk for suicide ideation, but not suicide attempts, specifically. As initially suggested in the introduction of this paper, the findings of this study do suggest that behavioral dysregulation strategies are more salient suicide risks when emotion dysregulation and associated perceived pain accompany behavioral dysregulation.

Interpersonal Theory of Suicide (IPT). Findings from this study partially support the IPT. Specifically, and consistent with prior research (e.g., Hill & Pettit, 2012; Kleiman, Liu, & Riskind, 2014), perceived burdensomeness was a strong predictor of

current suicide ideation. Lack of belongingness was not found to be a significant predictor of current suicide ideation. This has been found inconsistently in prior research examining these constructs (e.g. no link between constructs, Hill & Pettit, 2012; link between constructs, Kleiman, Liu, & Riskind, 2014; Van Orden, Witte, James, Castro, ..., & Joiner, 2008). One explanation for the null finding was that perceived burdensomeness and lack of belongingness are highly correlated constructs, and perceived burdensomeness is a stronger predictor of the two, thus any effect that lack of belongingness would have is washed out by the effect that perceived burdensomeness has. Results revealed a unique pattern for the role of acquired capability for suicide. While there was only a trend toward significance of acquired capability for suicide on current suicide ideation, acquired capability for suicide was the only significant predictor of future suicide ideation. This would suggest that acquired capability does not have an immediate effect, but rather builds over time with regard to suicide ideation. This is significant because in the original IPT model, acquired capability is theorized to impact suicide risk at a more severe level of risk. Those who tend to ruminate or engage in suicide ideation as a viable coping mechanism over time are at higher risk of death by suicide (Miranda, Tsypes, Gallagher, & Rajappa, 2013), and the findings of this study support this prior research.

Further, acquired capability was significantly associated with previous attempts. Suicide attempts are thought to be indicative of greater risk for death by suicide and has been found to be predictive of future attempts. The fact that acquired capability was associated with prior attempts, suggests that those who are at higher risk for suicide have a greater acquired capability for suicide. This finding is consistent with the IPT.
Additionally, perceived burdensomeness was also associated with previous attempts. This is consistent with the IPT wherein perceived burdensomeness is thought to impact risk for suicide once suicide ideation enters the equation and generally remains a risk factor when suicide attempts emerge.

The null findings with regard to lethality of past suicide attempts was likely due to the lack of power afforded with a sample size of 23 participants. As previously stated, a sample size of at least forty-six would have afforded more power to detect a medium effect. Thus, the sample size of individuals reporting a prior suicide attempt did not afford the researcher enough power to examine this effect.

**Trauma Exposure and Acquired Capability for Suicide.** Results from the present study support Smith's (2013) model wherein trauma exposure was linked to suicide risk via the development of an increased pain tolerance (i.e., acquired capability for suicide) and the development of PTSD via a psychosocial disruption, which lead to perceived burdensomeness and thwarted belongingness, and in turn, these are associated with suicide risk. In the present study, there was not support for the role of behavioral dysregulation leading to an acquired capability for suicide. Further, the trend toward significance of acquired capability leading to suicide risk supports the first part of Smith's (2013) model. The second part of Smith's (2013) model was partially supported as well. Specifically, a quarter of the sample had a probable diagnosis of PTSD, which is slightly above the statistics (e.g., 6%-17%) of the number of trauma exposed college students who develop PTSD (Read, Ouimette, White, Colder, & Farrow, 2011).

attachment was associated with acquired capability for suicide. Second, analyses in the present study examining the relationship between thwarted belongingness and perceived burdensomeness predicting suicide risk found that perceived burdensomeness was associated with current suicide ideation, as well as past suicide attempts. Thus, in a trauma exposed sample, perceived burdensomeness did increase suicide risk, providing support for this indirect relationship between trauma exposure and risk to die by suicide via perceived burdensomeness. Thwarted belongingness in the present study was not found to be a predictor. There was a correlation between thwarted belongingness and perceived burdensomeness better accounts for the role that thwarted belongingness and perceived burdensomeness better accounts for the role that thwarted belongingness plays in predicting suicide risk.

**Childhood Trauma as a Precursor for More Traumas.** Following the importance of timing of trauma exposure in predicting acute risk for suicide (see Stark & Flitcraft, 1995 and Sankey, 2003 for detailed observations of the importance of timing of trauma in suicide risk), another explanation of the role of childhood trauma exposure in later suicide risk is that childhood trauma exposure serves as a gateway to additional traumas across the lifetime. Perhaps childhood trauma exposure puts someone at risk for additional trauma exposures (Zetterqvist, Lundh, & Svedin, 2013), and it is the more recent traumas that lead to increased suicide risk. Alternatively, perhaps it is the accumulation of trauma across time that leads to suicide risk. Toward this end, all but three participants experienced additional trauma exposure after age 12, and all participants who reported current suicide ideation had experienced trauma after age 12.

# Limitations

The present study was not without limitations. First, the use of a college student sample limits the generalizability of the findings to other samples. It is important to highlight that despite the college student sample, 100% (N = 121) of the participants endorsed having been exposed to childhood traumatic events, and 98% (n = 118) reported multiple traumas. The traumas endorsed are similar to other studies of college students' history of trauma exposure (Read et al., 2011; Bernat, Ronfeldt, Calhoun, & Arias, 1998). A limitation for this study was that few participants had experienced disrupted attachment in addition to trauma exposure, thus the results of the first hypothesis should be interpreted and extrapolated on with caution. Further, the classification of trauma types into physically painful, emotionally painful, and traumas that are both physically and emotionally painful limit the understanding of how specific trauma exposures impact acquired capability. The classification system, while based on prior research's definitions of painfulness, is limited by the fact that there have not been empirical studies to assess more definitively to what extent trauma types fall into which pain category. An additional limitation in this regard is that despite trauma exposure, being college students is indicative of a relatively well functioning sample. To this end, 24% (n = 27) met criteria for PTSD (more than is typically found in college student samples; Read et al., 2011; Bernat et al., 1998), 83% (n = 99) reported elevated symptoms of depression, and finally, 9% (n = 11) reported having made a prior suicide attempt. Thus, while the sample may not generalize to lower functioning clinical samples, the sample was representative of moderate to higher functioning college students with childhood trauma exposure. The UCLA-PTSD-RI for DSM-5 has not been validated with a college-student sample.

There is prior research to suggest that timing of trauma may play an important role in whether trauma exposure leads to suicide risk. A limitation of this particular sample was the number of years between last childhood trauma and current age was on average seven years. Given the prior literature pointing to the importance of timing, and generally the first year post trauma, in predicting the dynamic relationship between trauma exposure and adverse outcomes, it was a limitation that symptoms were not examined within the first year after trauma exposure ended. Further, there was on average more than 10 years between the occurrence of childhood trauma exposure and the assessment of symptoms (e.g., emotion and behavioral dysregulation, NSSI) and suicide risk. Based on the findings of the present study, it is unclear whether behavioral dysregulation is simply not a predictor of suicide risk, or perhaps behavioral dysregulation is a more immediate symptom that occurs closer to after the traumatic event and/or perhaps behavioral dysregulation occurs right before a suicide attempt occurs. The design of the present study limited the ability of this particular research question to be explored.

## **Future Research**

**Methodological Alternatives.** One methodological consideration that should be addressed in future research is the issue of timing of events. As already discussed, there was a large gap in time between disrupted attachment and trauma exposure and the measurement of emotion and behavioral dysregulation and suicide risk. The design of future studies should be such that participants are within a year or six months of the traumatic event in order to disentangle whether behavioral dysregulation plays any role in suicide risk. This methodological change in study design would allow for further

exploration of the role of behavioral dysregulation in linking childhood trauma exposure and suicide risk. Another possible methodological change would be to develop a better measure of an acquired capability for suicide. In the present study, not all proposed predictors and mediators came out as hypothesized and the strength of the bivariate correlations of those predictors with the acquired capability for suicide measure suggest that perhaps acquired capability as measured by the ACSS was not a good measure of acquired capability. Prior research using the ACSS also supports the notion that the ACSS measure is just not a great measure (Ribeiro et al., 2014), although it is the best currently available measure of acquired capability.

**Partial Mediator Alternatives.** Future research could also assess a number of other variables that may be related. The severity of traumas endorsed may provide more telling evidence for the role of trauma in predicting suicide risk via the acquired capability for suicide. Impulsivity, which was not assessed in the present study, has been shown to be associated with risk for suicide (Zouk, Tousignant, Seguin, Lesage, & Turecki, 2006; Wang, Zhi He, Miao Yu, Hui Qiu, ..., Jie Yang, 2014) as well as trauma exposure (Ceschi, Billieux, Hearn, Furst, & Van der Linden, 2014) and forms of dysregulated behaviors like substance abuse and NSSI (Marshall-Berenz, Vujanovic, MacPherson, 2011; Vujanovic, Suchting, Atkinson, Green, & Schmitz, 2014). Additionally, impulsivity has been associated with higher risk-taking (Romer, 2010; Stanford, Greve, Boudreaux, Mathias, & Brumbelow, 1996). Given that death by suicide involves a great deal of risk-taking, there may be an underlying connection between the two via impulsivity. Depression could also be assessed as a partial mediator within the present model. In lieu of a self-report of behavioral dysregulation, future research should

examine behavioral dysregulation as it has more traditionally been conceptualized. One such way to achieve this would result in study design change involving participant's close family or friend(s) reporting the participant's manifest behavioral agitation. Alternatively, known measures of behavioral dysregulation like NSSI, could be examined as a partial mediator in place of behavioral dysregulation.

**Alternative Samples.** As already discussed, the generalizability of the results of this study was limited by the use of a college student sample. Future research should utilize a clinical adolescent sample given that several of the findings of the present study point to the necessity of timing when examining the dynamic relationship among the childhood trauma exposure and suicide risk. Another alternative would be to examine trauma exposure in adulthood (controlling for childhood trauma exposure) with a clinical adult sample. This would be an important extension of the model of complex trauma, especially since complex trauma accounts for the developmental trajectory of the individual recovering from trauma exposure. It is a common limitation in adult research to under assess the developmental stage of the participant. With regard to clinical samples, it would be helpful to utilize a sample of previously hospitalized psychiatric patients using the current framework. While there is evidence to support that immediately after a suicide attempt individuals report decreases symptoms, it is possible that there are aspects of emotion dysregulation and especially behavioral dysregulation that were not captured with the college student sample that could be captured with a recently hospitalized psychiatric population.

Alternative Models. The results of the present study, in particular the results for the additional research questions 1-4 did not find thwarted belongingness to be a

significant predictor in any of the models assessing the components of the interpersonal theory of suicide and suicide risk. Thus, it would be worth considering refining the interpersonal theory of suicide. Additionally, there were a number of theoretical models of suicide risk that were not examined in the present study. Namely, the hopelessness theory of depression could be used as a framework wherein childhood trauma exposure leads to emotion dysregulation and depression, and the cycle of depression leads to greater hopelessness, which in turn predicts suicide risk. Mentioned briefly within this paper, the emotional cascade model could be used as a viable framework for the connection of childhood trauma exposure to suicide risk.

#### Chapter 7

### **Conclusions and Implications**

In conclusion, partial support for the proposed models of mechanisms of acquired capability for suicide was found. Specifically, emotion dysregulation seems to be the best predictor of acquired capability and for suicide ideation, while behavioral dysregulation was not predictive of either. Disrupted attachment and traumas that are both emotionally and physically painful were also predictors of acquired capability for suicide. On a theoretical level, acquired capability for suicide should be more related to past attempts and future suicide ideation based on where acquired capability is purported to predict suicide risk within the interpersonal theory of suicide (Joiner, 2005). The findings from the present study do support this for the most part. The finding that acquired capability for suicide was not associated with the lethality of past attempts was inconsistent with the literature that has found that as acquired capability for suicide increases, lethality of suicide attempts increases (Ribeiro et al., 2014). Behavioral dysregulation as measured by self-reported agitation was not found to be a predictor or partial mediator of childhood trauma exposure and suicide risk (either acquired capability for suicide or suicide ideation). NSSI appeared to be a better measure of behavioral dysregulation. Specifically, self-harm for anticipated negative reinforcement was predictive of past suicide attempts, which suggests that those who engage in NSSI in order to reduce emotional distress are also more likely to have made a prior suicide attempt, while those who self-harm for other reasons (e.g., for anticipated positive reinforcement – to feel something rather than be numb) are not more likely to have made a prior suicide attempt. More broadly speaking, the underlying motivation for dysregulated behavior may be more indicative of

suicide risk rather than the outward behavioral dysregulation. Thus, future research should assess motivations for behavioral dysregulation (i.e., reasons for NSSI). It can also be concluded that the interactive effect of behavioral dysregulation and emotion dysregulation appears to not be a predictor of or partial mediator of an acquired capability for suicide. Rather, results point to future research needing to focus on emotion dysregulation.

This study had several important implications. First, to the researcher's knowledge, no prior research exists linking childhood trauma to the IPT specifically. Second, clarifying the role of the underlying mechanisms examined in this study inform novel interventions that ultimately lead to suicide prevention. Third, the researcher provided evidence on whether future research should focus on the type of trauma, the complexity of the trauma, or both. Little was known about the relationship between interpersonal trauma exposure and suicide risk, so this study helped to shed light on this relationship.

There are also applied implications that are important to highlight. First, findings on disrupted attachment and its relationship to suicide risk provide compelling information that should be taken into consideration by children's services when considering whether to remove children from their homes and place them in foster care. More work with biological parents is needed and shifting the children's welfare system from punitive to preventative could reduce risk for suicide in the long run. As was evidenced regarding the role that childhood trauma exposure plays in later suicide risk, interpersonal traumas and traumas that have both a physical and emotional pain component were most associated with later suicide risk. Thus, once a child has been

exposed to interpersonal and emotionally and physically painful forms of trauma, there is already increased risk for suicide. Trauma exposure is preventative with proper education, emotion and behavioral regulation skills being taught to parents and social and financial support being provided to families who are at risk for exposing their children to traumatic events (e.g., neglect). These kinds of preventions are arguably difficult to manage on a mass level, and even with preventions aimed at family units, there is still risk for trauma exposure outside of the family unit (e.g., community violence, assault, rape by a non-familial perpetrator). Nonetheless, policies and preventative plans should be developed for childhood trauma exposure within the family unit. These more interpersonal traumas and not non-interpersonal traumas, were found to be associated with suicide risk, signifying the important role that prevention within families would play in the prevention of suicide risk. Further, awareness of the role that disrupted attachments plays should drive the decision-making of children's services and the judicial system. Disrupted attachment is one type of trauma exposure that is managed by individuals who are supposed to be protecting children, thus protectors of children should be more trauma informed and should know about the increased risk for suicide that adding a disrupted attachment, or in many cases, multiple disruptions in attachment has on suicide risk.

Interventions for emotion dysregulation and manifest behavioral dysregulation should be implemented within a trauma-informed evidence-based therapeutic context in order to reduce risk for death by suicide. Traditional preventative interventions for suicide may miss the mark with emotion dysregulation and behavioral management strategies when working with individuals who have had trauma exposure during childhood. Many evidence-based therapies (e.g., cognitive behavioral therapy;

behavioral management; behavioral activation) focus on the present and without integration of how past trauma could be influencing present thoughts, feelings, and behaviors, the underlying trauma is not being addressed in therapy. Given that the underlying trauma, in and of itself, plays a role in suicide risk, focusing on it in therapy may reduce suicide risk.

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## Appendix A

## Trauma Type Classification

Emotionally Painful	1 = Physical Neglect Victim, 2 = Emotional Neglect Victim,
Trauma	3 = Emotional Abuse Victim, $4 =$ Emotional Abuse Witness,
	6 = Physical Abuse Witness, 7 = School Violence Witness,
	10 = Sexual Abuse Other than Rape Witness, $12 =$ Rape Witness,
	13 = Community Violence Witness, 15 = Domestic Violence Witness,
	16 = Childhood Bereavement,
	18 = Natural Disaster Witness/Learned About Close Other,
	20 = Medical Illness Witness of Close Other, 21 = Learned of Close
	Other War, 23 = Serious Accident Witness/Learned of Close Other,
	24 = Terrorism Victim, 25 = Terrorism of Close Other
	Witness/Learned about, 26 = Kidnapped Victim, 27 = Kidnapped Close
	Other Witness/Learned about, 29 = Physical Assault Witness,
	30 = Robbery Victim, 31 = Robbery Witness/Learned about Close
	Other, 32 = Unavailable Parent
Physically Painful Trauma	5 = Physical Abuse Victim, 8 = School Violence Victim,
	14 = Community Violence Victim, 17 = Natural Disaster Victim, 19 =
	Medical Illness Victim,
	22 = Serious Accident Victim
Both emotionally &	9 = Sexual Abuse Other than Rape Victim, $11 =$ Rape Victim,
physically painful traumas	28 = Physical Assault Victim,
Multiple Traumas	0 = No, 1 = Yes
# of Traumas	
Traumas before age 12?	0 = No, 1 = Yes
Occur in immediate family	0 = No, 1 = Yes
environment?	
Interpersonal Trauma	0 = No, 1 = Yes
# of Interpersonal Traumas	
Emotionally Painful	0 = No, 1 = Yes
Trauma	
# of Emotionally Painful	
Traumas	
Physically Painful Trauma	0 = No, 1 = Yes
# of Physically Painful	
Traumas	
Both emotionally &	0 = No, 1 = Yes
physically painful Trauma	
# of emotionally &	
physically painful traumas	
Disrupted Attachment	0 = No, 1 = Yes
# of Disrupted Placements	

## Appendix B

## **Operational Definitions of Traumatic Events**

Definitions based on the National Child Traumatic Stress Network's list of traumatic stressors children can be exposed to (http://www.nctsn.org/trauma-types).

*Community Violence* includes acts of violence personally witnessed by or wherein the child is the victim of resulting in actual threat of or death or serious injury. The perpetrator must be outside of the child's family. Examples of community violence include armed robbery, beatings, rape, and shootings.

*Medical Trauma* includes experiencing pain, injury, or threat of death due to a serious illness or an invasive medical procedure or treatment. Examples include chemotherapy, surgery, radiation, burn treatments, and chronic blood draws.

*Natural Disasters* include any natural or unintentional environmental event (i.e., tornadoes, earthquakes, hurricanes, tsunamis), fire, flood, or explosion resulting in damage, threat to or actual death of a child's close friends and family, and/or child's environment (e.g., home, neighborhood, or school destroyed or damaged). *Neglect* includes anytime a parent or caregiver does not provide care for a child based on the child's age despite having the means to do so. Neglect can include not providing food, clothing, and shelter for a child. It can also include not providing medical or mental health treatment, ensuring a child is given medications as prescribed, and not ensuring a child receives an education. Neglect also includes exposing children to harmful or dangerous environments. Neglect also covers abandonment of the child or expelling a child from the home.

*Emotional Abuse* includes verbal derogatory statements directed toward child that threaten the wellbeing of the child. Emotional abuse can include verbally threatening to physically harm the child, offensive name calling, repeatedly pointing out perceived flaws of the child, and belittling the child.

*Physical Abuse* includes forceful action resulting in actual or attempted physical pain or injury. Examples include hitting, punching, beating, kicking, burning, or otherwise forceful means of hurting a child.

School Violence includes actual or threatened death of a student or teacher. Examples include physical fighting, students carrying weapons to school, verbal or electronic aggressive threats made by one student toward another or toward a teacher. *Sexual Abuse* includes unwanted sexual behaviors between a child and another individual. Examples of sexual abuse involving bodily contact are sexual kissing, touching, fondling of genitals, intercourse, and sexual exploitation for prostitution. Examples of sexual abuse not involving bodily contact include genital exposure, witnessing pornography or others engaged in sexual activity, verbal solicitation of sexual activity, and sexual exploitation for pornography.

*Traumatic Grief* can occur after the loss of a close other via a traumatic experience. The loss must have occurred due to sudden, unexpected, or anticipated death and results in the child being unable to experience the natural bereavement process. Specifically, the child is unable to think of the loved one without also eliciting frightening thoughts, images, or pictures of how the loved one died.

*Witnessing Domestic Violence* includes a child observing actual or threatened emotional, sexual, or physical violence between adults who are or were in a romantic relationship.

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Examples include hitting, pushing, slapping, biting, forced sexual intercourse, forced groping, pulling hair, using or threatening the use of any weapon (including guns, knives, belts, etc.), manipulation, and name calling in a derogatory manner.

*Complex Trauma* includes exposure to either simultaneous or sequential traumas that result in disruptions of the child's developmental trajectory. Complex trauma must begin before age 6, and occur within the child's immediate familial environment. Types of traumatic events include physical and emotional neglect, physical abuse, sexual abuse, and exposure to domestic violence.