FREQUENCY, VERSATILITY, AND DURATION OF NONSUICIDAL SELF-INJURY IN RELATION TO ACQUIRED CAPABILITY FOR SUICIDE AMONG ADOLESCENTS

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DEDICATION

I would like to thank the members of my Graduate Committee, my husband, my family members, classmates, and friends who supported me throughout this entire process.

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by

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Abstract

Suicide is the 2nd leading cause of death among youth, and those who present to inpatient settings have been shown to have higher rates of suicidal behaviors (World Health Organization, 2012). Nonsuicidal self-injury (NSSI) is a leading risk factor for suicide. We propose that an increase in frequency, versatility, and/or duration of NSSI is associated with an increased risk for suicide attempt (SA) by means of the Acquired Capability for Suicide (ACS) proposed in Joiner's (2005) Interpersonal Psychological Theory of Suicide (IPTS) regardless of demographic or diagnostic factors. Preliminary results from this sample of inpatient adolescents (N = 150) were consistent with our proposed hypotheses. Yet, depressive symptoms appeared to interact with the association between these NSSI variables and ACS. These findings suggest that inpatient youth with greater NSSI versatility, frequency and duration, are at an increased risk for future SA by means of increased ACS. Consistent with the IPTS, the link between engagement in NSSI and history of SA appeared to be mediated by the ACS component. While limited by its cross-sectional design, the findings from this study have clinical implications regarding suicide risk assessment and prevention.

Keywords: suicide, frequency, versatility, duration, nonsuicidal self-injury, acquired capability for suicide, interpersonal psychological theory of suicide

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LIST OF ABBREVIATIONS

SIB – Self-injurious behaviors

NSSI – Nonsuicidal Self-Injury

SI-Suicidal Ideation

SA – Suicide Attempt

DSM-5 – Diagnostic and Statistical Manual of Mental Disorders, 5th edition

IPTS – Interpersonal-Psychological Theory of Suicide

C-SSRS – Columbia Suicide Severity Rating Scale

QIDS-A-SR-17 – Quick Inventory of Depressive Symptomatology-Adolescent-Self-Report

ACS – Acquired Capability for Suicide

ACSS-FAD – Acquired Capability for Suicide-Fearlessness About Death

ISAS – Inventory of Statements About Self-Injury

CHAPTER ONE

Introduction

This study investigates the relationship between frequency (i.e., how many lifetime episodes), versatility (i.e., how many methods), and duration (i.e., how many years) of nonsuicidal self-injury (NSSI) and the acquired capability for suicide (ACS). It is important to understand NSSI due to the immediate physical and emotional distress and destruction it causes for individuals, family members, and friends. If medical intervention becomes necessary, NSSI also places a financial burden on both the individual and the health system through emergency medical care and hospital admission. Moreover, NSSI has been shown to be highly associated with both suicidal ideation (SI) and future suicide attempts (SA). The Interpersonal-Psychological Theory of Suicide (IPTS) offers a framework to organize the research on adolescent and adult suicide. A unique contribution of this theory is the concept of the ACS, proposed to be necessary in order for an individual to make a SA along with negative interpersonal cognitions. This component has been infrequently investigated in adolescence, when Self-Injurious Behaviors (SIB) frequently begin, and is particularly relevant to NSSI, which has been proposed as an important avenue for increasing ACS. This study provides information that examines whether frequency, versatility, and duration of NSSI are associated with differences in ACS. The findings have theoretical implications for the IPTS, and could have clinical implications for assessing risk for SA in youth.

Self-injurious behaviors (SIB) refer to actions causing direct and deliberate harmful consequences against oneself (Power & Brown, 2009). Encompassed in this concept is nonsuicidal self-injury (NSSI), suicide attempt (SA), and completed suicide (Hamza, Stewart, &

Willoughby, 2012). These behaviors are included within the larger overarching category of self-harm. However, to distinguish these behaviors from accidents, neglect, or cultural customs, one must conclude that the behaviors have immediate consequences, are not culturally sanctioned, and are performed with deliberate intent to hurt oneself (Power & Brown, 2009). SIB can be used to refer to direct bodily harm that has immediate, definitive consequences but indeterminable suicidal intent (Power & Brown, 2009).

Self-injury refers to the "purposeful destruction of body tissue without suicidal intent" (Hamza et al., 2012). It has also been referred to as NSSI (Muehlenkamp, 2006), deliberate self-injury (Klonsky, 2007), deliberate self-harm (Gratz, 2003), and self-mutilation (Nock & Prinstein, 2004, 2005), but is typically denoted as NSSI in order to distinguish it from suicidal behaviors. Recent data indicate that about 18% of adolescents engage in NSSI at some point in their lives (Muehlenkamp, Claes, Havertape, & Plener, 2012). Prevalence rates reach over 60% with adolescent inpatient populations (Perez, Venta, Garnaat, & Sharp, 2012). Nearly half a million people were admitted to emergency facilities for NSSI in 2011, and it is estimated that about $6.5 billion have been spent on medical and work-loss costs resulting from NSSI (Centers for Disease Control [CDC], 2011).

Suicidal ideation (SI) includes not only thoughts of suicide but also deliberation of how one might cause one's own death, and has been associated with SIB as part of the progression towards actual suicidal behavior (American Psychiatric Association [APA], 2013). In a review of 18 studies regarding NSSI and suicidal behavior, individuals with a history of SA were more likely to have reported engaging in NSSI or experiencing SI (Hamza et al., 2012). In fact, more than 40% of adolescents receiving emergency crisis services reported SI accompanied by NSSI

ideation in the past 24 hours (Cloutier, Martin, Kennedy, Nixon, & Muehlenkamp, 2010). SI prevalence remains significantly higher among young adults between the ages of 18 and 29 years than among adults over the age of 30 years (CDC, 2011).

A suicide attempt (SA) is defined as any non-fatal self-directed potentially injurious behavior, with any intent to die as a result of the behavior (Jacobson & Gould, 2007). Of the 1.5 million violent deaths that occur each year, suicide accounts for 800,000 of those, at a rate of one suicide every 40 seconds (World Health Organization [WHO], 2012). Both globally and in the United States, suicide is listed as the second leading cause of death for adolescents and young adults 15-34 years old (WHO, 2012). Furthermore, 16% of high school students report severe SI and 8% report at least one SA within the previous year, with more than 2% of these adolescents having made a SA requiring medical attention (Eaton et al., 2012). Within both adult and adolescent community samples, those with a history of at least one SA were more likely to also have a history of NSSI in their lifetime when compared to non-attempters (Andover, Primack, Gibb, & Pepper, 2010; Martin, Swannell, Hazell, Harrison, & Taylor, 2010; Brausch & Gutierrez, 2010; Laye-Gindhu & Schonert-Reichl, 2005). These studies found few people with SA and no NSSI, yet the reason for that co-occurrence remains unknown.

In clinical samples, up to 70% of adolescents report history of both NSSI and SA (Nock, Joiner Jr., Gordon, Lloyd-Richardson, & Prinstein, 2006), while up to 7% of community samples report a history of both behaviors (Muehlenkamp & Gutierrez, 2007; Brausch & Gutierrez, 2010). Consequently, NSSI, SI, and SA are major public health concerns with an imperative need to be better understood and identified, particularly in adolescents, so as to prevent death by suicide (Office of the Surgeon General, 2012). Newly released, the fifth edition of the Diagnostic

and Statistical Manual of Mental Disorders (DSM-5) is making steps towards furthering understanding of the differentiation of NSSI from suicidal behavior by including both NSSI Disorder and Suicidal Behavior Disorder as two new diagnoses for further study. These assessment tools reflect the latest research in addressing different types of self-injurious thoughts and behaviors, and aim to help clinicians differentiate between NSSI, SI, and SA.

Prior to the DSM-5 publication, researchers attempted to explain self-injury as a consequence of having a personality disorder, a mood disorder, an intellectual disability, or some other psychotic disorder. Recent research has found that this behavior is not limited to one diagnosis, but rather affects individuals with a number of psychological problems. Presently, the DSM-5 is working towards distinguishing between forms of self-harm that while dangerous, are not intended to end a person's life (APA, 2013).

CHAPTER TWO

Review of the Literature

Differentiation of NSSI, SI, and SA

If NSSI, SA, and SI are all predictive risk factors for completed suicide, one might presume they are related in some way. While this study is primarily focused on NSSI, it is important to recognize how NSSI is associated with but also different from SA, SI, and completed suicide. In order to be diagnosed with NSSI Disorder, an individual must have engaged in self-injury with the anticipation that the injury will result in some bodily harm, but not death. Individuals engage in this behavior in order to deal with personal problems, obtain a positive feeling, or discover relief from a negative emotion (APA, 2013). On the other hand, SA is the act of trying to end one's own life with the potential to die while a completed suicide is the act of intentionally causing one's own death (APA, 2013).

SA and NSSI share an experiential similarity in that both cause direct bodily harm, but suicide attempts are often more dangerous than NSSI and can be lethal. In addition, NSSI tends to occur chronically with high frequency whereas SA tends to occur less often. Moreover, suicide attempters typically utilize a single method whereas nonsuicidal self-injurers often utilize multiple methods (Kerr, Muehlenkamp, & Turner, 2010). In fact, nearly 70% of individuals who engage in NSSI use at least two different methods to self-injure (Kerr, Muehlenkamp, & Turner, 2010). Common methods of self-harm may drastically differ as SA commonly includes poisoning, hanging, or shooting oneself whereas NSSI often encompasses cutting, burning, scratching, or biting (Victor & Klonsky, 2014).

These behaviors differ functionally in that NSSI is used as a means of regulating both negative and positive emotions, whereas suicide is a means of ridding oneself of both negative and positive emotions (Stanley, Gameroff, Michaelsen, & Mann, 2001). In other words, NSSI intends to alleviate or communicate distress whereas SA and SI aim at escaping distress entirely (Turner, Layden, Butler & Chapman, 2013; Prinstein et al., 2008). Characteristics of SIB ideation also differ based on type of self-injury. Among adolescents with histories of both NSSI and SA, the majority had one thought of NSSI per day of moderate intensity lasting less than 30 minutes during a two-week time period (Nock, Prinstein, & Sterba, 2009). However, SI was longer, less frequent, and less likely to lead to SIB than NSSI ideation. This information offers further support for the form and function of different SIB by examining the distinct yet overlapping progression from ideation to action of NSSI and SA (Nock et al., 2009).

Muehlenkamp (2005) identified that social responses to these behaviors drastically differ. SA usually elicits reactions of compassion, concern, and care from others. In contrast, NSSI commonly brings about feelings of disgust, fear, and hostility towards the self-injurer. Yet NSSI often results in a personal sense of relief and satisfaction upon completion, while SA aftermath usually entails continued despair and hopelessness (Nock, 2010). Fortunately, completed suicide is much rarer than SA, which is still less common than NSSI and SI (APA, 2013). Studying and understanding the precursors and consequences of these behaviors is critical for future prevention interventions.

Biopsychosocial Framework of Risk Factors

While the DSM-5 is making efforts to reflect the psychological aspects of NSSI and SA via their diagnostic criteria, it is equally important to identify both the biological and social risk

factors for SIB, so as to account for each dynamic involved in an individual's disrupted functioning. Considering the complex nature of the initiation and progression of SIB, it is likely that these nonsuicidal self-injurious and suicidal behaviors are multidetermined and might be better explained in an expanded model - specifically the biopsychosocial model. Research regarding the contextual factors influencing NSSI incorporates a vast array of findings.

Demographic differences, including age, gender, ethnicity, and socioeconomic status, that could potentially increase the risk of these behaviors should be analyzed. For instance, while some research reports finding no significant differences between demographic factors among those engaging in NSSI, other research suggests differences that should be considered until research is more conclusive (Hamza et al., 2012). In particular, adolescent girls have been found to be at a greater risk for NSSI and have an earlier onset of NSSI, exhibiting acute emotional distress without the intent to die (Victor & Klonsky, 2014; Parellada et al., 2008). While girls are more inclined to engage in self-cutting behaviors, boys are more inclined to engage in self-hitting or burning behaviors (Andover & Gibb, 2010; Whitlock, Muehlenkamp, & Eckenrode, 2008). Gender differences appear to be more pronounced in early adolescence, given that studies assessing NSSI among adults do not find such gender differences in either clinical or community samples (Bureau et al., 2010; Claes et al, 2010; Darke, Torok, Kaye, Ross, & McKetin, 2010; Gratz, Conrad, & Roemer, 2002; Heath, Toste, Nedecheva, & Charlebois, 2008).

There is growing evidence that sexual orientation, or a person's intimate attraction to others, may also affect an adolescent's risk for NSSI (Skegg, 2005). Adolescents identifying as homosexual or bisexual were shown to exhibit an increased risk for NSSI, with most NSSI occurring immediately after realizing that they were not exclusively heterosexual (Skegg, 2005).

Racial or ethnic minorities with a sexual minority identity are often shown to be at greater risk for NSSI due to the strong community component and larger fear of rejection (Green, 1994). Additionally, those with a socioeconomic disadvantage may be at an increased risk for NSSI, possibly due to decreased access to resources or health care (Skegg, 2005). Neurobiological traits, such as a genetic predisposition or serotonergic hypofunction, may also increase the likelihood that an individual will engage in NSSI or suicidal behaviors (Alcántara & Gone, 2007). Physical illnesses, such as epilepsy or HIV infection, can also increase one's risk for NSSI or other SIB (Skegg, 2005). Consequently, thorough assessment of medical and biological components should be completed.

A psychological component that inevitably increases the risk for SIB is the poor ability to regulate emotions. Emotion dysregulation may lead to NSSI, SI, and SA, depending on how individuals perceive and cope with distress (Perez, Venta, Garnaat, & Sharp, 2012; Alcántara & Gone, 2007). For example, in a laboratory investigation, those displaying higher emotional reactivity experienced a larger reduction in negative affect after experiencing pain than those displaying low emotional reactivity (Bresin, Gordon, Bender, Gordon, Joiner Jr., 2010). Relatedly, insufficient coping or problem-solving skills for psychological distress oftentimes may not only lead individuals to regulate affective experiences through NSSI, but also increases the likelihood that they will continue engaging in NSSI or more severe SIB (Andrews, Martin, Hasking, & Page, 2013; Klonsky & Glenn, 2009; Nock & Prinstein, 2005). Direct or indirect impulsivity and aggression may also influence NSSI, especially in males (Skegg, 2005). Direct impulsivity refers to the actual tendency to act impulsively when emotional distress arises, whereas indirect impulsivity refers to an inability to consider the consequences of one's actions

(Klonsky & May, 2010). In a clinical sample of adolescents, those who engaged in both NSSI and SA displayed elevated impulsivity on standard clinical and laboratory measures compared to those who engaged in NSSI only (Dougherty et al, 2009). Unfortunately, it is difficult to decipher between which of these disinhibiting traits predict NSSI, which predict SI, and which predict SA (Horesh, Gothelf, Ofek, Weizman, & Apter, 1999; Klonsky & May, 2010). Other psychiatric internalizing disorders such as Post-Traumatic Stress Disorder, Generalized Anxiety Disorder, Obsessive-Compulsive Disorder, Major Depressive Disorder, as well as externalizing disorders such as Conduct Disorder and Oppositional Defiant Disorder, have been linked to NSSI (Nock et al., 2006). Similarly, substance use disorders, personality disorders, and eating disorders have been associated with NSSI (Nock et al., 2006; Skegg, 2005).

Additionally, social and family environments can either serve as a protective or risk factor. The lack of a sufficient social support system accompanied by a family history of suicidal behaviors, physical or sexual abuse, parent separation or divorce, loss of a parent, or other familial conflict increases the risk for SA (Prinstein et al., 2008). Additionally, negative media and peer influence may be risk factors, whereas having a strong social support, healthy familial relations, a religious affiliation, or cultural norms may serve as protective factors (Skegg, 2005).

Engaging in NSSI is widely reported as one of the strongest predictors of suicidal behaviors in depressed adolescents, evidenced by an accumulation of studies that found a history of NSSI was more indicative of future suicidal behavior regardless of age, sex, socioeconomic status, and assessment methods (Hamza et al., 2012; Asarnow et al., 2011; Darke et al., 2010; Tang et al., 2011; Wilkinson & Goodyer, 2011). Reasons for engaging in NSSI vary from regulating intense emotions, punishing the self, and being influenced socially or as a part of a

behavioral contagion (Wilkinson, 2013). As conditions become more stressful, NSSI is likely to become more severe if current NSSI behaviors no longer regulate the emotions effectively (Whitlock & Knox, 2007). An absence of positive affect, or the presence of flat affect, may be related to NSSI in that a painful feeling is perceived to be better than a lack of feeling (Klonsky, 2007; Klonsky & Glenn, 2009; Nock & Prinstein, 2004). However, while those experiencing depression, hopelessness, post-traumatic stress, substance abuse or dependence, and violent ideation or aggression may be more inclined to participate in NSSI, evidence that not everyone with these diagnoses develops or acts on this inclination, indicates that there must be a unique factor motivating individuals to do so (Alcántara & Gone, 2007).

Research related to factors influencing future suicidal behavior is more extensive. It has been found that the older an individual is, the more at risk they become for suicide if they have been diagnosed with a mood disorder and have a long history of SA (Parellada et al., 2008). Excluding China, males complete suicide at a higher rate than females worldwide (Van Orden et al., 2010; WHO, 2003; Victor & Klonsky, 2012). According to the American Association of Suicidology (2006), death by suicide is four times higher in males than females whereas attempted suicide is three times higher in females than males. Nonlethal suicide attempts occur far more often than lethal attempts, which means that women and girls engage in SIB far more than men and boys (American Association of Suicidology, 2006). In regards to adolescent deaths by suicide, it has been found that a planned SA is more medically severe and far more prevalent than an unplanned or impulsive SA (Witte et al., 2008). However, those who planned a SA were also more inclined to engage in impulsive behaviors such as substance use or risky sexual encounters (Witte et al., 2008).

Socioeconomic status is not consistently related to suicidal research (Cubbin, LeClere, & Smith, 2000). However, minority or rural populations may be at a heightened risk due to discrimination or lack of resources (Alcántara & Gone, 2007). Adolescent Native Americans are at the highest risk for SA, possibly related to the low degree of social integration and high level of access to weapons and substances (American Association of Suicidology, 2006). However, Caucasians, African Americans, and Asian-Pacific Islanders are all at an increased risk for SA as well. Similarly, sexual minorities are at an increased risk for SIB as literature suggests that SA rates among sexual minority youth are 20-40% higher than heterosexual youth (Kitts, 2005). Common psychological risk factors for suicide include psychiatric and substance use disorders, eating disorders, history of suicidality, history of abuse or neglect, and interpersonal conflict (Alcántara & Gone, 2007; Turner et al., 2013). Other significant life stressors such as experiencing a loss of a loved one, having a personal injury or illness, or being bullied, may also increase an adolescent's risk for SA. Yet again, most people with mood disorders do not actually attempt suicide (Reardon, 2013). Of all of these predictive risk factors, possibly the most stable predictors for future SA in adolescents is a prior history of SA, making previous adolescent suicide attempters 18 times more likely to attempt and complete suicide in the future (Lewinsohn, Rohde, & Seeley, 1994; Lewinsohn, Rohde, & Seeley, 1996; Shaffer et al., 1996). Nevertheless, only one-quarter to one-third of adolescents who die by suicide have a history of prior attempts, implying that even the strongest predictor for completed suicide only pertains to a small percentage of death by suicide (Shaffer et al., 1996).

When comparing adolescents who engage in NSSI alone with those who engage in both NSSI and suicidal behavior, those engaging in both behaviors have exhibited a higher rate of

psychopathology and are less likely to seek help from others (Claes et al., 2010). A meta-analysis by Victor and Klonsky (2014) examined both cross-sectional and longitudinal studies in order to help determine the correlates of SA among nonsuicidal self-injurers. Data from the 52 empirical articles concluded that the strongest correlate of a history of SA was SI, followed by the frequency and versatility of NSSI (Brezo, Paris, & Turecki, 2006). Moderate predictors of SA history included BPD, impulsivity (Horesh et al, 1999), PTSD, self-cutting, and depression (Moller, 2003). Less influential correlates for SA included a history of adverse childhood experiences (Felitti & Anda, 2010), anxiety disorders (Page, Taylor, Hall, & Carter, 2009), substance use disorders (Vijayakumar, Kumar, & Vijayakumar, 2011), or eating disorders (Victor & Klonsky, 2014). Clearly, due to the potential involvement of a number of biopsychosocial components, confounding variables are not uncommon, and one correlate of SA is commonly associated with another. For example, hopelessness is often linked with depression (Beck, Kovacs, & Weissman, 1975), BPD is commonly found in those with a history of abuse (Lieb, Zanarini, Schmahl, Linehan, & Bohus, 2004), and impulsivity is frequently seen in those with anxiety (Taylor et al., 2008). Though these biopsychosocial risk factors are fairly common, the combination of these risk factors, which predicts higher risk for SA, is far less prevalent (World Health Organization, 2008). Consequently, suicide has a low base rate despite prevalent risk factors.

Duration, Frequency, and Versatility

Individuals with a personal history of SA, SI, or NSSI generally remain at a greater risk for a future completed suicide (Victor & Klonsky, 2014). A relationship between suicidal behavior and NSSI frequency (i.e., how many lifetime episodes), versatility (i.e., how many

methods), and duration (i.e., how many years) has been suggested. Nonetheless, results remain inconclusive. The relationship between NSSI and suicide can be accounted for in a few different ways. One possibility is that the mere presence of NSSI increases risk for SA, whereas another explanation could be that greater frequency of NSSI better accounts for the relationship. Still another option is that NSSI versatility helps explain SA. However, because NSSI includes a variety of physically painful experiences, Turner et al. (2013) justified the uncertainty of whether frequency or versatility independently predicts SA. Instead, it is suggested that a combination of these explanations are simultaneously influencing a person's ability to follow through with suicidal behaviors (Turner et al., 2013). A possible method of detecting more specific determinants of NSSI, SI, and SA may be to analyze the frequency, versatility, and duration of NSSI.

One of the few adolescent studies looking at these NSSI variables found that in addition to greater NSSI versatility, a longer NSSI duration and an absence of physical pain during NSSI were also associated with SA (Nock et al., 2006). One might presume that a higher NSSI frequency is associated with a higher physical pain tolerance. However, adolescents reporting less physical pain tolerance were actually associated with significantly less NSSI frequency and smaller NSSI versatility (Nock et al., 2006). Nevertheless, those reporting higher pain tolerance during NSSI and utilizing more methods to engage in NSSI reported a history of more SA (Nock et al., 2006). In the same sample of adolescents, SA frequency was associated with NSSI versatility and duration but NSSI frequency was not (Nock et al., 2006).

Another study found that adolescent inpatients with a history of SA and SI reported higher NSSI versatility than those with a history of SI only, but NSSI frequency between the two

groups was indistinguishable (Zlotnick, Donaldson, Spirito, & Pearlstein, 1997). Likewise, other research has found that adolescents in the community with a history of both NSSI and SA were more likely to have experienced more severe NSSI and received inpatient treatment than those with a history of NSSI only (Lloyd-Richardson et al., 2007). Individuals in the community with a history of both NSSI and SA also reported less fear of engaging in SIB, but no more frequency of NSSI than those engaging in NSSI only (Muehlenkamp & Gutierrez, 2007).

Nonetheless, frequency may serve as a strong predictor for NSSI continuation given the results of a longitudinal study, which found that adolescents in the community who continued to self-injure one year later initially engaged in NSSI about 12 more times than those who stopped the behavior (Andrews et al., 2013). Adolescents continuing to self-injure exhibited an increase in frequency, injury severity, and versatility of NSSI (Andrews et al., 2013).

While utilizing a greater number of NSSI methods may be associated with higher suicide risk, it is important to consider that some NSSI methods (e.g., pinching) inherently occur more frequently than others (e.g., burning) (Victor & Klonsky, 2014). Furthermore, an increase in NSSI versatility may also indicate an increased desire to engage in any form of NSSI, depending on if an individual's favored method is unavailable at a given place or period of time (Victor & Klonsky, 2014). For instance, an individual who prefers to cut but is unable to find a tool to do so may instead pick at preexisting wounds to interfere with the healing process. However, this individual may incur more distress and a higher risk for SA if these alternative coping methods fail to alleviate the emotional pain.

NSSI versatility is most consistently related to increased risk for SA. Still, multiple studies have suggested that NSSI versatility, frequency, and duration may all increase severity of

SA (Turner et al., 2013; Andover & Gibb, 2010). NSSI versatility consistently appears to also increase both SI frequency and general risk for SA (Turner et al., 2013; Andover & Gibb, 2010). In a study of college students, NSSI frequency was found to only be a significant predictor of SA when NSSI versatility was high (Anestis, Khazem, & Law, 2014). This introduces the notion that NSSI frequency and versatility may both interact with SA, but simply in a different way. While NSSI frequency may increase an individual's suicidal desire, NSSI versatility may increase the capability to proceed with suicide by increasing psychological comfort with self-inflicted bodily harm overall (Anestis et al., 2014). Therefore, measuring the combination of an increase in NSSI frequency with NSSI versatility may be the most effective tool in identifying risk for suicide in certain subgroups (Anestis et al., 2014).

Research pertaining to development of SIB suggests that NSSI and suicidal behavior may have more of a curvilinear relationship. In a sample of undergraduate students, NSSI frequency led to more frequent suicidal behavior, in the form of ideation, plans, and attempts, but only up to 50 NSSI episodes (Whitlock & Knox, 2007). Because the temporal onset of NSSI typically occurs prior to suicidal behavior, focusing research on adolescent NSSI, SI, and SA is necessary in order to better predict and prevent the progression of SIB. Additional findings reported that SI declined in the first six months post-hospitalization only to reemerge the following year (Prinstein et al., 2008). This cyclical course has been found in depressive symptoms as well (Prinstein et al., 2008).

Variance in research results may be due in part to the varying demographics within the samples of these studies. Developmental differences between adolescents and adults as well as the psychological differences between clinical and community samples can significantly

influence outcomes (Victor & Klonsky, 2014). Overall, NSSI frequency and duration is less consistently related to SA while NSSI versatility is more consistently related to SA. Nevertheless, the association found between all three NSSI variables deems it important to consider all three factors in suicide assessment.

Theoretical research on relationship between NSSI & SA

As distinguishable as NSSI and SA are, both forms of SIB are commonly co-occur (Joiner, Ribeiro, & Silva, 2012). In an attempt to understand the association between NSSI and SA, various theories have been formed and continue to develop, but very little theory-driven research has sought to explain why those who engage in NSSI are at an increased risk for SA. Several models simply assume that those experiencing the fewest number of co-occuring risk factors will result in SI while those with the greatest number will likely result in death by suicide, and that SA results from experiencing a moderate number of risk factors (Van Orden et al., 2010). The Gateway Theory proposes that SIB lies on a continuum with one side represented by NSSI and the other by suicide (Brausch & Gutierrez, 2010; Linehan, 1986; Stanley, Winchel, Molcho, Simeon, & Stanley, 1992). NSSI is said to precede suicide because suicidal behavior escalates from having engaged in NSSI (Nock et al., 2008). Support for this claim lies in the fact that the average age of onset for NSSI is 13 years whereas the estimated onset for suicide is 16 years of age (Nock et al., 2008; Darke et al., 2010). Yet, this theory neither accounts for the co-occurrence of SA and NSSI nor explains the imprecision of risk factors. The Gateway Theory is also contradicted by studies that found a higher rate of SAs among adolescents with a history of NSSI rather than a history of SA (Asarnow et al., 2011; Wilkinson et al., 2011). One model that does attempt to do so is the interpersonal-psychological theory of attempted or completed suicide

(Joiner, 2005).

Interpersonal-Psychological Theory of Suicide. Joiner's (2005) Interpersonal-Psychological Theory of Suicide (IPTS) proposes that in order to commit suicide, an individual must not only develop the desire to die but also the capability to do so. Similar to the DSM-5 but unlike other theories of suicide, Joiner places an emphasis on the distinction between ideation and attempt, thus challenging the assumption that suicidal acts result primarily from suicidal thoughts (Van Orden et al., 2010). Additional concepts not addressed in other theories but addressed in the IPTS are that ideators and attempters do not necessarily have similar characteristics, that SI can be active or passive, that NSSI may or may not precede SA, and that severity of attempts can largely vary. Joiner (2005) argues that because purposefully hurting oneself is a painful and frightening experience that requires humans to overcome these inherently forbidden ideas, suicidal desire alone is a necessary but insufficient cause for one to engage in SIB. Biopsychosocial risk factors are then associated with SA as they contribute to the ACS that enables an individual to act on SI.

Developing the desire to die relies on two interpersonal constructs: thwarted belongingness and perceived burdensomeness (Van Orden et al., 2010). Thwarted belongingness arises from feelings of loneliness or the absence of reciprocal care, as well as the lack of social support in the form of quality relationships, family cohesion, and tightknit peer groups (Roberts, Roberts, & Chen, 1998; Prinstein, Boergers, Spirito, Little, & Grapentine, 2000; Bearman & Moody, 2004; McKeown et al., 1998; Van Orden et al., 2010). Perceived burdensomeness derives from the belief that one is a strain on others and is accompanied by feelings of self-hate and liability (Van Orden et al., 2010; Joiner, 2005). Depending on their stability, these constructs

are proximal and sufficient causes for either passive or active suicidal desire (Van Orden et al., 2010). Both of these constructs can result in depression and subsequent SI (Van Orden et al., 2010).

The IPTS proposes that suicide capability relies on a third complex construct, acquired capability for suicide (ACS), comprised of a lowered fear of death with an increased physical pain tolerance (Van Orden et al., 2010). Unlike the desire component, which is relatively dynamic in nature, capability is comparatively static (Van Orden et al., 2010). Supporting research established that self-reported fearlessness and pain insensitivity differentiated suicide attempters from suicide ideators (Smith et al., 2010). ACS scores did not significantly differ between suicidal attempters and controls, suggesting that ACS develops separately from the ideation components of the IPTS (Smith et al., 2010).

Repeated exposure to physical pain or emotional fear gradually habituates people to painful and provocative events (PPE; Van Orden et al., 2010), enhancing their capability to engage in a SA. Joiner proposes that severe suicidal behavior then derives from a context of thwarted belongingness, perceived burdensomeness, reduced fear of suicide, and elevated physical pain tolerance (Van Orden et al., 2010). Ultimately, developing the desire to die and acquiring capability to do so contributes to the association between NSSI and suicidal behavior (Joiner et al., 2012). While depression appears to be linked to suicidal desire, other disorders, manifested by an inability to control agitation and impulsivity, appear to be linked to suicidal capability (Van Orden et al., 2010).

A study of undergraduates support Joiner's hypothesis by determining that pain tolerance mediated the relationship between PPE & ACS (Franklin, Hessel, & Prinstein, 2011). PPE can

range anywhere from thrill-seeking activities such as getting a tattoo, jumping from high or mobile objects, or stealing from a store, to more harmful activities like hurting animals or others, shooting a gun, or using intravenous drugs (Joiner, 2005; Bender et al, 2011; Joiner et al., 2012). Joiner (2005) proposes that impulsive individuals have a greater tendency to experience PPE, which is the mechanism that directly links impulsivity with ACS and indirectly links impulsivity with SA. In two cross-sectional studies of community and clinical samples, Bender et al. (2011) concluded that impulsivity was indirectly related to ACS and mediated by PPE. Having a family history of suicide and a serotonergic dysfunction are said to increase the likelihood that an individual will behave impulsively (Van Orden et al, 2010).

Discernably, the most extreme forms of PPE, thus the greatest risk factors for future SA, are engaging in NSSI and attempting suicide (Van Orden et al., 2010; Franklin, Hessel, & Prinstein, 2011; Victor & Klonsky, 2014). This is evidenced by suicide attempters that endorsed higher ACS scores than suicide ideators (Smith, Cukrowicz, Poindexter, Hobson, & Cohen, 2010) and the lack of significant association between SI with ACS (Rasmussen & Wingate, 2011). SA and NSSI have actually been found to be more predictive of ACS than typical life stressors, suggesting that it is not only painful and fearful exposure but also subsequent desensitization contributing to ACS (Smith et al., 2010). Correspondingly, research suggests that distress tolerance and exposure to PPE are positively associated with ACS (Anestis, Bender, Selby, Ribeiro, & Joiner, 2011).

In particular, NSSI seems to gradually desensitize an individual to the fear and pain involved in taking one's own life through a gradual increase in pain tolerance and sense of fearlessness (Muehlenkamp & Gutierrez, 2007; Stanley et al., 2001; Smith et al., 2010). In fact, it

was recently found that when NSSI was specifically isolated as one type of PPE, individuals engaging in NSSI had significantly greater levels of ACS and decreased pain perception than a control group with no history of NSSI (Franklin, Hessel, & Prinstein, 2011). Yet, the lack of longitudinal research triggers questions of whether individuals had a greater pain tolerance prior to NSSI engagement given that cross-sectional research is unable to study underlying associations (Nock et al., 2006).

Evidence suggests that males demonstrated higher fearlessness about death and pain tolerance than females (Witte, Gordon, Smith, & Van Orden, 2012) and ACS findings remain the same cross-culturally, allowing the number of past SA to significantly predict ACS scores outside Caucasian samples (Zhang, Lester, Zhao, & Zhou, 2013; Van Orden, Witte, Gordon, Bender, & Joiner Jr., 2008). Furthermore, more frequent and greater versatility of NSSI was linked to an increased likelihood of making a future SA (Victor & Klonsky, 2014). Whether the duration since an individual's first SA influences future SA is less certain.

Corresponding to the Gateway Theory, the IPTS also proposes that NSSI precedes suicidal behavior. However, unlike the Gateway Theory, Joiner argues that NSSI is only one of many behaviors capable of directly increasing ACS and therefore indirectly increasing suicidal behavior (Hamza et al., 2012). Consequently, individuals who do not engage in NSSI may still be at risk for suicide if they experience or are engaged in other PPE that lead to ACS, such as engaging in combat, struggling with substance abuse, or witnessing interpersonal violence (Hamza et al., 2012; Van Orden et al., 2010). Another distinction is that the IPTS proposes ACS alone to be insufficient, and therefore must be paired with perceived burdensomeness and thwarted belongingness (Joiner, 2005).

Confirmation of Joiner's idea of ACS has been found in both self-report and objective assessment measures. For instance, self-reported engagement in PPE, such as being a victim of physical or sexual abuse, was significantly correlated with an individual's self-reported ACS (Anestis, Bagge, Tull, & Joiner, 2011; Bender et al., 2011; Van Orden et al., 2008). Utilizing a cold compressor task, an objective study also found that experiencing PPE might lead to a desensitization of the fear or pain associated with suicide by resulting in a greater pain tolerance and threshold (Franklin et al., 2011). Both SI and NSSI were better predictors for SA than depression, anxiety, impulsivity, and BPD in three different samples of adolescent patients and students who completed assessments to measure each of these constructs (Klonsky, May, & Glenn, 2013). Furthermore, as frequency and duration of NSSI increased, lethality of predicted SA also increased (Andover & Gibb, 2010). In fact, presence and frequency of NSSI were both as strongly associated with presence and frequency of SA (Andover & Gibb, 2010). Similarly, utilization of multiple NSSI methods has been shown to amplify the probability of future SA in comparison to using a single NSSI method (Nock et al., 2006). A higher ACS could be inferred from the finding that suicide attempters reported significantly more positive attitudes toward death and were more repulsed by life with fewer reasons for living than self-injurers (Muehlenkamp & Gutierrez, 2007).

Victor and Klonsky (2014) note that "NSSI frequency and NSSI methods were in fact as strongly or more strongly correlated with SA history compared to other variables, providing evidence for the acquired capability component of the interpersonal–psychological theory of suicide" (p. 290). Mixed research regarding the relationship between frequency and duration of NSSI with SA is unclear about whether an increase in these NSSI constructs suggest that higher

exposure to PPE leads to higher pain thresholds for SA or that individuals are simply more willing and able to engage in NSSI (Nock et al., 2006). Some argue that because NSSI methods, such as cutting, can considerably differ from suicidal behavior, such as drug overdose, habituating to one method does not necessarily habituate an individual to another (Andover & Gibb, 2010). Proponents of the IPTS argue that though pain tolerance may be method specific, various methods similarly influence the cognitive appraisal of whether the pain of suicide will be tolerable (Van Orden et al., 2010). While drug overdose was the most common method of SA, those with NSSI history were twice as likely to use cutting as a means of SA, which suggests that NSSI methods preceding suicidal behavior do in fact influence an individual's ACS (Stanley et al., 2001). Though the IPTS has been widely researched and validated among adult populations, it has yet to be thoroughly tested in adolescent populations using specific measures of its central constructs (Van Orden et al., 2010).

Depressive Symptomatology

Depressive symptoms are hypothesized to be associated with heightened perceived burdensomeness and thwarted belongingness identified in the IPTS, and subsequently associated with SI (Van Orden et al., 2010). The Treatment of SSRI-Resistant Depression in Adolescents (TORDIA) study confirmed that NSSI is a common problem specifically among adolescents with treatment-resistant depression and that NSSI is a better predictor than prior suicidal behavior for future SA and NSSI (Asarnow et al., 2011). This aligns with findings from the Adolescent Depression Antidepressant and Psychotherapy Trial (ADAPT) study discovering that a baseline NSSI-history revealed a slower recovery from depression than those without a history of NSSI (Wilkinson, Kelvin, Roberts, Dubicka, & Goodyer, 2011). Consistent with components

of IPTS, Turner et al. (2013) found that NSSI versatility interacted with depression to predict suicide risk. Individuals demonstrating more depressive symptoms and greater NSSI versatility were at a heightened risk for suicide while those demonstrating fewer depressive symptoms and greater NSSI versatility exhibited lower risk (Turner et al., 2013). Utilizing IPTS or integrating theories to form a more comprehensive model of suicide risk could help explain the relationship between suicide and depression over time while better informing future research and clinical interventions (Kleiman, Liu, & Riskind, 2014).

Assessment, Treatment, & Intervention

Obtaining information regarding biopsychosocial risk and protective factors specific to NSSI requires clinicians to assess for different NSSI variables and to acquire a historical timeline of an individual's engagement in SIB. Prior to the development of the Inventory of Statements About Self-Injury (ISAS; Glenn & Klonsky, 2009) that is utilized in this study, either the Functional Assessment of Self-Mutilation (FASM; Lloyd, Kelley, & Hope, 1997) or Deliberate Self Harm Inventory (DSHI; Gratz, 2001) was primarily used to distinguish NSSI behaviors from suicidal behaviors by specifically inquiring about the frequency, severity, and versatility of NSSI.

The Self-Harm Behavior Questionnaire (SHBQ; Gutierrez, Osman, Barrios, & Kopper, 2001) is another assessment that measures NSSI as part of a SIB continuum, but contains fewer items specific to NSSI. While the Suicide Attempt Self-Injury Interview (SASII; Linehan, Comtois, Brown, Heard, & Wagner, 2006) does not specifically assess for NSSI, it is widely used in clinical settings to investigate nonfatal SA and intentional self-injury (Whitlock, Exner-Cortens, & Purington, 2014). A major strength of the SASII is that it incorporates standardized

definitions for various SIB actions that are often imprecisely defined in other measures. For example, an "episode" is defined as a "single event or act" while a "cluster" is defined as a group of "single events or acts" (Linehan, 2006). If assessment measures were able to agree on congruent definitions of these terms, research would have the potential to be much more conclusive.

An assessment tool that measures frequency, versatility, and duration of NSSI, NSSI ideation, SI, and SA is the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock, Holmber, Photos, & Michel, 2007). Currently, the SITBI is the only comprehensive SIB assessment tool whose reliability and validity has been empirically tested in adolescents. There is also a 72-item short version of the structured interview available, which may be more feasible in a clinical setting. Furthermore, the DSM-V has included NSSI Disorder as a condition for further study that consists of criteria regarding the duration and frequency of the behavior (APA, 2013). This not only offers a more accurate diagnosis for individuals who formerly would have likely been diagnosed with Borderline Personality Disorder (BPD), but also allows for a more focused approach to treatment (APA, 2013). If criteria are met and a diagnosis for NSSI Disorder is made, individuals should receive proper care and management immediately.

While a number of therapy modalities have been studied in treating those engaging in SIB and experiencing other comorbid mental health issues, results regarding the effectiveness of those interventions vary. This could be due in part to the relatively static nature of ACS as opposed to the more dynamic desire construct of the IPTS, comprised of thwarted belongingness and perceived burdensomeness (Van Orden et al., 2008). Cognitive Behavioral Therapy (CBT) has been shown to improve underlying maintaining factors of NSSI such as hopelessness and

lack of problem-solving skills (Brausch & Girresch, 2012; Washburn et al., 2012). Outcomes from the TORDIA study indicated individuals with comorbid NSSI and depression that received a combination of CBT and medication, as opposed to one or the other, were more inclined to improve (Asaranow et al., 2011). Still, remission rates were slower and smaller than anticipated (Asarnow et al., 2011). Consequently, researchers emphasize the need for comprehensive interventions that would accelerate treatment response in adolescents with depression or other comorbid diagnoses so as to indirectly reduce future risk for SIB (Asarnow et al., 2011).

One the most prominent therapy modalities for specifically reducing hospitalizations caused by NSSI is Dialectical Behavior Therapy (DBT; Brausch & Girresch, 2012; Groves, Backer, van den Bosch, & Miller, 2012; Linehan, 1993; Miller, Rathus, Linehan, Wetzler, & Leigh; 1997), a derivative of CBT (Washburn et al., 2012). The DBT model suggests that adolescents engaging in NSSI have emotion regulation deficits putting them at risk for future SIB (Nock & Prinstein, 2004). This could help explain research finding a higher rate of SAs among adolescents presenting with baseline histories of NSSI (Muehlenkamp, 2006; Wilkinson et al., 2011; Asarnow et al., 2011). Another derivative of CBT is Problem-Solving Therapy (PST; D'Zurilla & Goldfried, 1971), which helps individuals recognize NSSI as a dysfunctional solution to problems and develops better coping skills (Muehlenkamp, 2006; Washburn et al., 2012). However, PST has been found to be most effective long-term when other interpersonal, cognitive, and behavioral elements are additionally incorporated for a more comprehensive approach (Muehlenkamp, 2006). Consequently, Manual Assisted Cognitive Therapy (MACT; Evans et al., 1999) was designed as short-term version of PST that incorporates cognitive techniques and relapse prevention to manage negative thoughts and emotions. The efficacy of

MACT is supported by findings of lower rates of NSSI as well as longer time delays between NSSI in comparison to control groups (Muehlenkamp, 2006; Tryer et al., 2003). Emotion Regulation Group Therapy teaches more adaptive behaviors and has been specifically proven to reduce NSSI frequency in women with BPD pathology (Gratz & Gunderson, 2006). This stresses the importance of tailoring therapy and intervention to the unique facets of an individual's diagnosis (Gratz & Gunderson, 2006). Group, art, and recreational therapies have also been found to reduce engagement in NSSI particularly when accompanied by other therapeutic interventions (Washburn et al., 2012). This suggests that combining multiple therapy modalities may be beneficial in tailoring effective treatments for specific individuals.

Summary. Overall, this research provides promising for support of the ACS construct of Joiner's IPTS among adolescents. Based on the present lack of NSSI theoretical research for adolescents, it is important to understand NSSI particularly in relation to a theoretical framework. The IPTS has direct and specific implications for the mechanisms related to NSSI and SA as measurable indicators for ACS have shown an association between SITB (Self-Injurious Thoughts and Behaviors) in adults. According to the IPTS, ACS is a general construct presumably enhanced by various behaviors and experiences obtained through various experiences, not only including NSSI, but also combat, trauma, and other PPE. However, it is likely that NSSI is the most frequent method by which ACS is obtained in adolescents. Therefore, it is worthwhile looking more closely at NSSI's association with ACS.

Joiner and colleagues (2009) developed an ACS measure as a more specific measurement than using NSSI as a proxy for ACS, and it has consistently shown to be associated with SA. Yet, very few adolescent studies examining variability in ACS as a result of characteristics of

NSSI exist (Van Orden et al., 2008) and none use the newly validated, more focused ACSS-FAD (Acquired Capability for Suicide – Fearlessness About Death) measure. In order to identify what contributes to the increase in ACS, there is a need to examine the continuous nature of ACS as opposed to the mere "presence" or "absence" of it. Past studies have confirmed the association between NSSI and SA. However, confirming whether increased NSSI engagement influences ACS, the underlying mechanism proposed to increase the likelihood of SA, would provide more nuanced information regarding risk. Furthermore, deciphering whether or not the association between NSSI and ACS is attributable to their shared association with depression would further clarify particular dynamics of SIB.

This study focuses on ACS in adolescents in relation to frequency, versatility, and duration of NSSI. If NSSI does, in fact, enhance an adolescent's ACS, and if ACS can explain its relationship to SA, this would suggest that risk in adolescents who engage in NSSI might be managed by focusing on the variable aspects of ACS, notably fearlessness of death. By utilizing instruments specifically designed to measure ACS among adolescents, which is central to the IPTS, the influence that ACS has on the development of NSSI and suicidal behaviors was captured with more precision and consistency. Results indicating how NSSI frequency, versatility, and duration are associated with ACS may provide useful information regarding the applicability of ACS as an underlying construct and a continuous variable of the IPTS. Specifically, this study examines whether longer, more frequent, and more varied engagement with NSSI is associated with an increase in ACS.

Aims & Hypotheses

Primary Aim I: Determine whether versatility, frequency, and duration of NSSI are associated with adolescent's ACS after controlling for demographic variables (i.e., age, sex, lifetime SA).

> **Hypothesis I**: Greater levels of NSSI as assessed by versatility, frequency, and duration will be both independently and jointly associated with higher levels of ACS among inpatient adolescents regardless of demographic controls.

Primary Aim II: Determine whether the effects of the relationship between NSSI frequency, versatility, duration, and ACS, if any, are explained by, or independent of the association between depressive symptoms and ACS after controlling for depressive symptoms and demographic variables (i.e., age, sex, lifetime SA).

> **Hypothesis II***:* The relationship between ACS and NSSI versatility, frequency, and duration will individually and simultaneously be independent of depressive symptoms and demographic controls.

Secondary Aim: Identify whether, after controlling for age and sex, ACS mediates the link between NSSI and history of SA, as Joiner's IPTS theory predicts.

> **Hypothesis III***:* NSSI, ACS, and SA will all be associated with each other, but once the relationship between ACS and SA is accounted for, NSSI will no longer be associated with SA.

Exploratory Aim: Identify whether, after controlling for age and sex, ACS mediates the link between NSSI variables (e.g., frequency, versatility, and duration) and history of SA**.**

Exploratory Hypothesis: NSSI variables, ACS, and SA will all be associated with each other, but once the relationship between ACS and SA is accounted for, NSSI variables will no longer be associated with SA.

CHAPTER THREE

Method

Participants

Participants for this study are adolescents who present for inpatient services at Children's Health Children's Medical Center of Dallas. The sample described encompasses 150 participants recruited through March 2015. If participants were admitted on more than one occasion during this study, only data from their first admission was utilized.

Inclusion and Exclusion Criteria. Inclusion criteria consisted of English speaking 12-17 year old adolescents who had been admitted to an inpatient psychiatric hospital, were actively enrolled in school, who may or may not have been receiving medication(s) or other treatment(s). Exclusion criteria included those with an intellectual disability, active psychosis, or a neurological disorder impacting ability to complete questionnaires. These qualifications were set in order to rule out differential diagnoses, better meet the proposed clinical criteria for NSSI, and provide a common language in which researchers could study and understand these behaviors.

Procedure

Approval for the research study was obtained from the Institutional Review Board (IRB) at UT Southwestern Medical Center (UTSW) in accordance with the Federalwide Assurance (FWA). Following admission to the psychiatric inpatient unit Children's Health Children's Medical Center of Dallas, all adolescents were recruited and consented to participate in a comprehensive semi-structured interview and to complete the self-report questionnaires. See Appendix A for complete consent form. Trained and supervised clinical research students conducted all assessment procedures.

Measures

Information regarding psychiatric and abuse history was gathered from review of electronic medical record and included in analyses as control variables if they correlate with the outcomes at enrollment.

Suicidal Ideation and Behavior. Suicidal ideation, suicidal behavior, and medical severity of attempts were measured and categorized using the Columbia Suicide Severity Rating Scale (C-SSRS; Posner et al., 2008). See Appendix B for complete measure. Designed to better differentiate between variable concepts within SI and suicidal behavior, the C-SSRS measures four constructs: severity of ideation, intensity of ideation, suicidal behavior, and lethality. Utilizing this measure complements the more nuanced nature of the IPTS. Ideation severity is rated on an ordinal scale (1=wish to be dead, 2=nonspecific active suicidal thoughts, 3=suicidal thoughts with methods, 4=suicidal intent, and 5=suicidal intent with plan). Intensity of ideation is rated according to frequency, duration, controllability, deterrents, and reason for ideation. Suicidal behavior is rated on a scale differentiating between NSSI, actual attempt, aborted attempt, interrupted attempt, and preparatory actions. Lethality is rated on a scale from zero to five. If actual lethality of the attempt is zero, potential lethality is assessed. The C-SSRS differentiates adolescents with medically severe attempts from adolescents with less medically severe attempts.

Among adolescents and adults, the C-SSRS had been found to have good convergent and divergent validity with other assessments of SI and behaviors (Posner et al., 2011). The C-SSRS demonstrates high sensitivity and specificity for classification of suicidal behavior when compared to other methods of classification (i.e., other behavior scales, an independent suicide

evaluation board) (Posner et al., 2011). Results suggest that both SI and suicidal behavior subscales are sensitive to change over time, and the SI intensity portion of the measure was found to have internal consistency in the moderate to strong range (Posner et al., 2011). Among one study of adolescent attempters, the worst-point lifetime SI as measured by the C-SSRS was more predictive of SA than the Scale for Suicide Ideation, which demonstrated ambivalent efficacy in predicted SA (Posner et al., 2011). Those presenting with intent or intent with plan at baseline, the two highest levels of SI severity, had a higher probability for SA during the study (Posner et al., 2011).

Depression. Depression was measured using the Quick Inventory of Depressive Symptomatology – Adolescent Version Self-Report (QIDS-A-SR-17; Rush et al., 2006; Rush et al., 2003). See Appendix C for full measure. This 17-item self-report instrument is intended to assess severity of the nine core symptoms of Major Depressive Disorder as defined by the DSM-5 (APA, 2013). The respondent is instructed to describe each item on a Likert scale from 0 to 3 and the highest score is then taken from overlapping domains is used to form a possible score range from 0 to 27. The adolescent version was adapted from the original 16-item QIDS by adding a 17th item measuring irritability to reflect the DSM-5 diagnostic criteria of distressed mood in adolescents presenting as either sadness or irritability (Rush et al., 2003; APA, 2013).

The QIDS-A-SR-17 strongly correlates with the Children's Depression Rating Scale Revised (CDRS-R, Poznanski & Mokros, 1996), a reputable standard measure of adolescent depression ($r = .63$; Haley, 2009; Hughes et al., 2009). Unidimensional in format, items of the QIDS-A-SR-17 display strong internal consistency ($\alpha = .84$) and acceptable reliability ($\alpha = .78$) by only measuring a single construct (Haley, 2009). Results from classical test theory analyses

suggest that the addition of the 17th item measuring irritability does not significantly reduce reliability on the QIDS-SR-A-17 (Haley, 2009). In the present study, the internal consistency of the QIDS-SR-A-17 total score was strong (α = .85). Respondents within our sample endorsed an average score of 13.8, signifying moderately severe depressive symptomatology.

Acquired Capability for Suicide. ACS was measured using a revised version of the Acquired Capability for Suicide Scale (ACSS; Van Orden et al., 2008; Bender, Gordon, & Joiner, 2007). See Appendix D for the complete measure. The ACSS, developed by Joiner's research group, is a 20-item self-report measure intended to assess a respondent's fearlessness of death and perceived pain tolerance, the two facets proposed to comprise ACS. Seven items were written to assess fearlessness about death, two for pain tolerance, and the remaining for PPE, which are not an aspect of ACS but should contribute to it. Each item consists of a statement related to one of the aforementioned relevant factors of ACS (e.g., "I am not at all afraid to die"). The respondent is instructed to rate each statement on a Likert scale from 0 ("not at all like me") to 4 ("very much like me"). For most items, a higher score on each item represents a higher level of ACS. However, there are reverse scored questions in which a higher score indicates a lower level of ACS. The ACSS has a Flesch-Kincaid grade reading level of 2.8.

Recently, the Joiner group validated a revised 7-item scale intended to measure fearlessness of death, one of the two components of ACS, in young adults and an inpatient psychiatric sample (Ribeiro et al., 2014). Invariance analyses found that the scale structure is comparable across genders (Ribeiro et al., 2014). Because PPE are causal but not defining elements in the development of ACS, the authors of the scale dropped them and recommended that this revised scale be utilized in order to reflect its content more specifically (Ribeiro et al.,

2014). Consequently, the analyses of this study utilized the ACSS-FAD including the following items: 7 ("The fact that I am going to die does not affect me"), 8 ("The pain involved in dying frightens me"; reverse-scored), 10 ("I am very much afraid to die"), 11 ("It does not make me nervous when people talk about death"), 13 ("The prospect of my own death arouses anxiety in me"; reverse-scored), 14 ("I am not disturbed by death being the end of life as I know it"), and 19 ("I am not at all afraid to die"). Previous research has described the factor structure and has supported the reliability and validity of the ACSS-FAD within the current sample (Horton et al., 2015). The 7-item fearlessness of death subscale had strong internal consistency within our sample ($\alpha = .84$). Respondents within our sample endorsed a Likert-scale average value of 2.7 with a range from 1 to 4, signifying a moderate degree of fearlessness about death according to individual ACSS-FAD items.

Consistent with the IPTS, the ACSS has a moderate negative correlation with the Fear of Suicide subscale of the Reasons for Living Inventory (Linehan, Goodstein, Nielsen, & Chiles, 1983) and a strong positive correlation with an item from the Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1991) that queries about courage to kill oneself (Bender et al., 2007, Van Orden et al., 2008). Also consistent with the theory that ACS develops separately from current distress or depressive symptoms, ACSS is not correlated with mood (Bryan, Morrow, Anestis, & Joiner, 2010). The scale does not correlate with the Beck Scale for Suicide Ideation (Bender et al., 2007; Van Orden et al., 2008) or the Beck Depression Inventory (Bender et al., 2007, Van Orden et al., 2008) in outpatient samples, which is indicative of discriminant validity. Among adults, internal consistency has been found to be adequate ($.88 \geq \alpha \geq .67$) (Smith et al., 2010; Van Orden et al., 2008).

Nonsuicidal Self-Injury. Frequency (i.e., how many lifetime episodes), versatility (i.e., how many methods), and duration (i.e., how many years) of NSSI were assessed using the Inventory of Statements About Self-injury (ISAS; Glenn & Klonsky, 2009). See Appendix E for complete measure. This measure serves as a comprehensive assessment for NSSI function and frequency in both research and treatment settings (Klonsky & Glenn, 2009). The first section of the ISAS measures the lifetime frequency of 12 NSSI behaviors including banging or hitting, biting, burning, carving, cutting, interfering with wound healing, pinching, pulling hair, rubbing skin against rough surfaces, severe scratching, sticking self with needles, and swallowing dangerous chemicals. Construct validity of the ISAS has been indicated by theoretically consistent relationships to other NSSI and with clinical diagnoses (e.g., BPD, depression, and anxiety) and contextual variables (e.g., the tendency to self-injure alone) have been found using the ISAS (Klonsky & Olino, 2008). The NSSI behaviors section of the ISAS has also demonstrated good short-term test–retest reliability ($r = .85$) over the span of a few weeks (Klonsky & Olino, 2008).

CHAPTER FOUR

Results

Of the 150 participants, 114 (76%) endorsed engaging in NSSI at some point in their lives. The average age of participants was 14.7 years (*SD* = 1.40) and the average age of onset of NSSI was 14.4 years (*SD* = 1.45). The sample was primarily female (76%) and Caucasian, non-Hispanic (71%). Prior to analyses, square root transformations were performed to achieve normal distributions for frequency of NSSI, as it was a non-normal variable. All analyses used pairwise deletion to include all available data from participants. Consequently, sample sizes of various analyses may vary slightly but the analyses used in this study are generally robust to minor violations of the assumption of normality (Osborne & Waters, 2002), so we proceeded with our planned analyses. Descriptive data for the variables incorporated into this study can be found in Table 1.

Association Between NSSI Variables & ACS with Demographic Controls

Our first aim was to determine whether versatility (i.e., how many methods), frequency (i.e., how many lifetime episodes), and duration (i.e., how many years) of NSSI are associated with an adolescent's ACS. We predicted that greater levels of NSSI as assessed by versatility, frequency, and duration of NSSI would be associated with higher levels of ACS and would explain a significant amount of variance in ACS scores among inpatient adolescents. Bivariate correlations were first conducted to determine simple association of the variables utilized in the primary analyses. Preliminary findings indicated that versatility, $r(149) = .37$, $p < .01$, frequency, $r(149) = .32$, $p < .01$, and duration, $r(149) = .22$, $p < .01$, were each significantly correlated with ACSS-FAD. NSSI variables and ACSS-FAD were significantly correlated with depression.

Every significant correlation fell below the .7 cutoff suggested by Tabachnick and Fidell (2001) for multivariate statistics. All intercorrelations for the variables utilized in the primary analyses are provided in Table 2. Three linear regression analyses were then conducted to determine whether after controlling for demographic variables, NSSI versatility, frequency, and duration were independently associated with higher levels of ACS. After controlling for age, sex, and number of lifetime SA, versatility, $\beta = .35$, $t(145) = 4.09$, frequency, $\beta = .28$, $t(146) = 3.13$, and duration, $\beta = .19$, $t(145) = 2.30$, significantly predicted ACS scores. Versatility, $F(1, 142) = 16.74$, $p<.001$, frequency, $F(1, 141) = 9.81$, $p=.002$, and duration, $F(1, 141) = 5.29$, $p=.02$, also explained a significant proportion of variance in ACS scores. Finally, one multiple regression analysis was conducted to determine whether after controlling for demographic variables, versatility, frequency, and duration were simultaneously associated with higher levels of ACS. Once demographic variables were controlled for, versatility, $\beta = .30$, $t(146) = 2.64$, $p = .01$, was the only NSSI variable that remained significantly associated with ACS when NSSI versatility, duration, and frequency were concurrently analyzed. See Table 3 for statistical figures.

Association Between NSSI Variables & ACS with Depression Controls

The second aim of this study was to determine whether the effects of the relationship between NSSI frequency, versatility, duration, and ACS, would be explained by, or independent of the association between depressive symptoms and ACS. We predicted that the relationship between ACS and these variables would be independent of depressive symptoms. Three linear regression analyses were conducted to determine whether after controlling for depressive symptoms, versatility, frequency, and duration add independent prediction to ACS or would be explained by depressive symptoms. Once depressive symptoms were controlled for, duration,

$\beta = .14$, $t(145) = 1.71$, $p = .09$, lost significance but versatility, $\beta = .24$, $t(146) = 2.82$, $p = .01$, and frequency, $\beta = .20$, $t(145) = 2.33$, $p = .02$, significantly predicted ACS scores. Versatility, $F(1, 140) = 7.95$, $p = .01$, and frequency, $F(1, 139) = 5.42$, $p = .02$, also explained a significant portion of variance in ACS scores. One multiple regression analysis was then conducted to determine whether after controlling for depressive symptoms, versatility, frequency, and duration would be simultaneously associated with higher levels of ACS. Once depressive symptoms and demographic variables were controlled for, all NSSI variables lost significant association with ACS when NSSI versatility, duration, and frequency were concurrently analyzed. Changes in significance can be seen in Table 4.

Association Between NSSI and SA as Mediated by ACS

A secondary aim of this study was to identify whether ACS mediated the link between NSSI and history of SA, as Joiner's IPTS theory predicts. We predicted that NSSI and SA would both be associated with each other, but once the relationship between ACS and SA was accounted for, NSSI would longer be associated with SA. This would represent the indirect effect that ACS has on the relationship between NSSI and SA. A binary logistic regression analysis was conducted to identify whether after controlling for demographic variables, ACS mediated a link between NSSI and presence of SA history, as Joiner's IPTS predicts. This analysis incorporated a sample size (N=143) with 63 (44 %) of the individuals endorsing a history of at least one prior suicide attempt. Step one assessed for whether or not there was a relationship between a history of NSSI and a history SA. The binary logistic regression revealed that a history of NSSI, $p = .03$, was in fact associated with history of SA. Step two assessed whether ACS accounted for, and therefore mediated, the relationship between NSSI and SA.

When ACS was incorporated in step two of the regression model, ACS, $p < .001$, was significantly associated with SA but history of NSSI, $p = .06$, was no longer associated with history of SA. The odds that a person would have a history of SA increased by 2.42 for every 1-point increase on the ACS. Our findings suggest a nonlinear model in which the total effect is a modified combination of NSSI and ACS as opposed to a linear model in which the total effect would be equal to the sum of NSSI and ACS. To facilitate interpretation of the findings, results are presented for these variables in Table 5.

Association Between NSSI Variables and SA as Mediated by ACS

Similarly, an exploratory aim of this study was to determine whether ACS mediated the link between NSSI variables and history of SA. We predicted that all three NSSI variables would be associated with SA, but once the relationship between ACS and SA was accounted for, NSSI variables would no longer be associated with SA. This would further display the indirect effect that ACS has on the relationship between NSSI and SA. Three binary logistic regression analyses were conducted to identify whether after controlling for age and sex, ACS mediated a link between NSSI variables and presence of SA history. Step one assessed for whether or not there was a relationship between NSSI variables and a history of SA. All three binary logistic regressions revealed that NSSI frequency, $p = .01$, versatility, $p < .001$, and duration, $p = .05$, were in fact associated with history of SA. Step two assessed whether ACS accounted for, and therefore mediated, the relationship between NSSI variables and SA. When ACS was incorporated in step two of the NSSI frequency and duration regression models, ACS, $p < .001$, was significantly associated with SA but NSSI frequency, $p = .16$, and NSSI duration, $p = .28$, were no longer associated with history of SA. Yet, when ACS was incorporated in step two of

the NSSI versatility regression model, ACS, $p < .001$, and NSSI versatility, $p = .02$, were both associated with history of SA. This suggests that the relationship between NSSI versatility and SA may not be mediated by ACS, and further emphasizes that influence that NSSI versatility has on risk for SA. To facilitate interpretation of the findings, results are presented for these variables in Table 6.

CHAPTER FIVE

Discussion

The primary aim of this study was to clarify which NSSI factors, if any, increased an adolescent's risk for suicide by means of ACS within an inpatient sample. Specifically, we anticipated that an increase in NSSI frequency, versatility, and duration would all be significantly associated with an increase in ACS and would account for unique variance in suicide risk even after controlling for a number of factors. This is the first study of which we are aware to use the ACSS-FAD measure, theoretically-based and recently validated in adolescents, to systematically examine the influence NSSI has on ACS for adolescents with a recent history of SIB. Age was controlled for because ACS should theoretically increase with age as an individual is exposed to more PPE. Sex was controlled for based on previous research and adult studies that have found a tendency for men to have a lower fear of death and higher pain tolerance in comparison to women. This sample demonstrated a significant association between sex and NSSI versatility as well as depression.

Results supported part of hypothesis one, indicating that after controlling for age, sex, and lifetime suicide attempts, inpatient youth with greater NSSI versatility, frequency, and duration were at an increased risk for future SA by means of increased ACS when assessed independently. These three NSSI variables also explained a significant proportion of variance in ACS scores. Contrary to our expectations but consistent with prior research (Nock et al., 2006), when all three NSSI variables were analyzed and controlled for simultaneously, NSSI versatility was the only variable to maintain a significant association with ACS. Individual associations between each independent variable (i.e., NSSI versatility, frequency, duration) and the dependent

variable (i.e., ACS) were all significant but NSSI versatility was the only independent variable to maintain a significant association with ACS when independent variables were analyzed together. This may have been due to the high correlation among the independent variables and controls that we discovered in preliminary analyses. Less than half of our sample endorsed a history of SA, which could explain the loss of significance between NSSI frequency and ACS, as there was a strong correlation between NSSI frequency and lifetime SA. Likewise, this adolescent sample was, on average, rather young, and NSSI duration was strongly correlated with age, so the loss of significance between NSSI duration and ACS could have been due in part to their stage of adolescence. Another possible reason results were insignificant for NSSI duration and frequency may be the abstract way in which these variables were measured. This is also a plausible explanation as to why much of the existing research regarding these NSSI variables is inconsistent. Determining whether participants accurately depicted NSSI frequency according to lifetime number of episodes, rather than number of days or wounds is uncertain. Similarly, the accuracy of measuring NSSI duration by number of years leaves rather than number of months is less certain. On the other hand, NSSI versatility is a fairly concrete variable in that it involves simply taking the sum of different types of methods.

Once depressive symptomatology was controlled for in hypothesis two, only NSSI versatility and frequency remained significantly associated with ACS. Greater versatility of NSSI methods may result in an overall increase in comfort with SIB, reflect failed attempts at prior methods, or indicate impulsive behavior that could manifest in using any immediate means possible rather than waiting for an opportunity to engage in a preferred method (Anestis, Khazem, & Law, 2014). Moreover, each individual method of NSSI could serve as a distinct

PPE that ultimately increases ACS by eliciting several different types of pain rather than a single type of pain (Turner et al., 2013). These results align with prior research in an adult sample (Turner et al., 2013) that found that versatility was most robustly associated with increased risk for suicide by means of ACS. However, NSSI frequency should not be discounted. While it is still unclear whether NSSI frequency impacts pain tolerance or indicates a failure to experience physical pain during NSSI, these findings indicate a significant positive association between NSSI frequency and ACS. Though not demonstrated by these findings, NSSI duration has been previously proven to influence the frequency of future SA (Nock et al., 2006). Similar studies utilizing more stringent guidelines to assess for duration (e.g., number of months, gaps of time) would help clarify the role that length of NSSI history has in accordance with ACS.

When all three NSSI variables were analyzed simultaneously with demographic and depressive symptomatology controls, depression was the only variable to remain significantly associated with ACS, as all NSSI independent variables lost significance. At first glance, these findings appear inconsistent with Joiner's theory in that depressive symptoms appear to not only attribute to thwarted belongingness and perceived burdensomeness but also play a significant role in the ACS component. This could be explained in part by distressing events that simultaneously lead to an increase in both depressive symptoms and ACS by means of PPE. On the other hand, individuals may be at risk for SA regardless of depressive symptoms but may not actually engage in SIB until they have experienced depressive symptoms by means of thwarted belongingness and perceived burdensomeness. Still, these findings may also simply be indicative of the depressive nature of this inpatient sample, as more than half had attempted suicide and the mean QIDS score was a 13.8 out of 17. Replicated studies utilizing more diverse samples from

community and outpatient populations would be necessary to determine whether or not that is the case.

The secondary aim of this study was to determine whether ACS mediated the relationship between history of NSSI and history of SA. Results indicate that history of NSSI was independently associated with history of SA at step one, but after accounting for ACS and controls, the initial significant association between history of NSSI and history SA was replaced with a significant association between ACS and history of SA. Consistent with the IPTS, the link between engagement in NSSI and history of SA appears to be mediated by the ACS component. These findings suggest that while the mere presence or absence of NSSI may increase suicide risk, risk for suicide is inherently higher when an individual's ACS is higher.

The exploratory aim of this study examined whether results of the secondary aim would change after replacing presence or absence of NSSI with the three NSSI variables analyzed in the other aims. Results indicated that the relationship between NSSI duration and frequency with history of SA was still mediated by ACS. However, the relationship between NSSI versatility and history of SA remained significantly associated after adding ACS, indicating that the relationship may not be mediated by ACS. Rather, higher levels of NSSI versatility and ACS may produce the highest risk for SA in adolescents. Furthermore, NSSI versatility may remain significantly associated with SA even after controlling for ACS because each method of NSSI adds a separate PPE that increases habituation to different types of pain (e.g., tearing, burning, bruising). Yet, the ACSS-FAD only assesses fearlessness about death; it does not assess pain or habituation to pain. As a result, both versatility and ACSS-FAD seemingly contribute significantly and separately to the likelihood of attempting suicide, which is consistent with

IPTS.

Limitations

Several limitations of this study should be noted. First, due to the cross-sectional design and retrospective report, we are unable to determine the causality or temporal order of events, as it does not capture variables in the sequence they are presumed to occur. For instance, there could be potentially other PPE, such as trauma, resulting in higher ACS, which could add error to prediction. Additionally, our sample consisted of adolescents admitted to an inpatient psychiatric unit who were mostly female and had Caucasian descent, and thus may not generalize to other samples. For example, rates of NSSI, depressive symptomatology, ACS, and lifetime SA observed in this study may be lower among a community sample. Furthermore, our reliance on self-report measures depends on the candidness and insight of participants. Personal recall is required, but is not always accurate. However, it should be noted that individual perceptions are critical to the IPTS, and our corresponding interview measures are likely to somewhat mitigate these concerns. Another limitation was that this study only examined a limited range of NSSI constructs potentially involved in the development and maintenance of SIB. It is possible that NSSI, SA, and ACS are all confounded by other constructs not examined, such as the function of NSSI at the time of the episode. Finally, this study was based on data obtained from an existing study so some constructs, such as NSSI duration or frequency and the pain tolerance dynamic within ACS, were not measured as precisely or comprehensively as possible.

The nature of SIB makes it difficult for researchers to determine the distinct characteristics between those that engage in NSSI and those that attempt or complete suicide.

Consequently, the extent to which research can determine whether prior suicidal behavior actually applies to future death by suicide is fairly uncertain. Nevertheless, NSSI and ACS are worth reducing or preventing, as both increase the likelihood of future SA, cause distress to individuals in the social support system of attempting adolescents, and result in financial costs to the families and societies involved. NSSI and ACS also result in utilization of scarce resources in terms of mental health services and are currently stigmatized, which can decrease the support available to these vulnerable youth. Despite the limitations of this study, we believe our findings provide valuable insight about the mechanisms and contexts of NSSI, which can be applied to acute psychiatric settings. Directly measuring frequency, versatility, and duration in relation to ACS may allow for a more refined and better assessment for suicidal risk.

Clinical Implications

These findings have direct implications that can assist clinicians in providing comprehensive patient care. Not only do they have the potential to inform future assessment to evaluate for SIB but they also can help formulate emergent interventions to treat SIB. Rather than assessing for a mere presence or absence of NSSI, our results suggest that versatility, frequency, and duration of these behaviors all contribute to explaining variance in suicidal behaviors among those engaging in NSSI, and should therefore be comprehensively assessed. Accordingly, this research provides aid to tailoring interventions that meet the needs of individuals based on where they fall in the IPTS model, while providing further empirical support for the theory itself in the context of adolescents.

Based on the high rate of NSSI and SA among adolescents, it is imperative that clinicians are familiar with not only the correlations between demographic (e.g., age, sex) and diagnostic

(e.g., depression) variables but also the relationships between various SIB. Although NSSI and SA are two distinct forms of SIB, there was a high rate of adolescents in our sample who had a history of both NSSI and SA. Consequently, clinicians must assess and treat NSSI as seriously as SA, particularly in adolescents with a history of multiple SIB. Adolescents exhibiting depressive symptomatology are also of particular concern as multiple studies concluded that individuals with depression experience slower recovery rates and higher rates of SIB (Asarnow et al., 2011; Wilkinson et al., 2011; Vitiello et al., 2009). Clinicians should be prompted to obtain information pertaining to past and current engagement in or ideation about SIB including versatility, frequency, and duration, during a complete suicide and NSSI risk assessment. Prior to assessing for NSSI, the clinician should offer a clear definition of NSSI as to clarify the intent of the behavior. Likewise, when assessing for the frequency of NSSI behavior, the clinician should explain frequency in terms of number of distinct episodes of NSSI as opposed to number of injuries that ensued. It may also be clinically more useful to inquire about NSSI frequency on average (e.g., two times per week) as opposed to a total sum of NSSI frequency for the purpose of corresponding with DSM-5 criteria. By asking about specific methods of NSSI as opposed to merely asking for number of NSSI methods an individual has utilized, a clinician would be evaluating an adolescent's episodic memory as opposed to the semantic memory. Studies have shown that prevalence rates are higher and more precise when an individual's episodic memory is triggered (Lundh, Bjarehed, & Wangby-Lundh, 2012). Furthermore, the distinction between number of methods and number of means used to engage in NSSI should be clarified. For instance, an individual may only use one method (e.g., cutting) to self-injure, but may use multiple means (e.g., scissors, knife, nails, etc.) to do so.

While this study primarily utilized the ISAS and C-SSRS to obtain information about SIB, there are other plausible measures available that may offer additional relevance in assessing these behaviors, particularly for NSSI in adolescents. Currently, one of the most practical and comprehensive assessments for distinctly assessing for NSSI, NSSI ideation, SI, and SA in adolescents is the SITBI. The 72-item short version may be of particular use as an initial, general screening measure to gather basic data about each type of SITB to determine what additional information needs to be gathered using another assessment such as the ACSS. While typically measured in years, NSSI duration may be more precisely assessed by inquiring about the number of months an adolescent has engaged in NSSI. Additionally, obtaining information about whether or not the engagement in NSSI was continuous or sporadic may better inform the clinician of the persistence of the SIB. Better assessing these behaviors is likely to lead to an eventual understanding of who is at imminent risk for SIB.

Future Directions

The correlation between NSSI and depressive symptomatology is not surprising given prior work linking these two constructs. However, the correlation between depressive symptomatology and ACS warrants further inquiry. It will be important for future research to replicate this study in diverse samples in order to examine the consistency of these findings with those observed in additional inpatient, outpatient, and community samples of adolescents. This will help determine whether or not our results regarding depression and ACS can be justified by the nature of this inpatient sample. If depressive symptomatology continues to interact with ACS in other general populations, it may be plausible that Joiner's IPTS is revised to include

depressive symptoms as an influential factor for both components as opposed to only the two factors that comprise the desire component.

Because exposure to PPE, fearlessness of death, and pain tolerance accumulate over time, finding a treatment that is completely effective may not feasible once an individual's ACS is amplified. Ideally, the most effective way to eliminate these three aspects of ACS, and in turn eliminate SIB, is to prevent adolescents from ever engaging in SIB. Certain biopsychosocial risk factors may no doubt be unavoidable. Nevertheless, instilling protective factors by teaching techniques proven to increase distress tolerance and emotion regulation, and thus alleviating risk factors for SIB, is encouraged for adolescents displaying the desire or capability to attempt suicide (Asarnow et al., 2011).

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Table 1

Descriptive Statistics of All Participants & Variables

Characteristic	*% (n)*	*Mean (SD)*	*Range*
Sex (*n* = 150)			
Female	75.3 (113)		
Male	24.7 (37)		
Ethnicity (*n* = 140)			
White	70.7 (99)		
Hispanic	12.9 (18)		
African American	9.3 (13)		
Other	7.1 (10)		
SIB Engagement (*n* = 150)			
NSSI Only	29.3 (44)		
Suicide Attempt Only	10 (15)		
NSSI + SA	46.7 (70)		
None	14 (21)		
Age (*n* = 150)		14.7 (1.40)	12-17
NSSI Variables (*n* = 146)			
Frequency[a]		128.3 (277.10)	0-1800
Versatility		2.8 (2.71)	0-12
Duration		1.8 (2.21)	0-10
Measures			
QIDS-SR-A-17 (*n* = 147)		13.8 (6.4)	1-25
ACSS-FAD (*n* = 149)		2.7 (1.46)	0-4

Note. All analyses used pairwise deletion to include all available data from participants; NSSI = Nonsuicidal Self-Injury; SA = Suicide Attempt; QIDS-SR-A-17 (Quick Inventory of Depressive Symptomatology – Adolescent Version Self-Report, Rush et al., 2006) used to measure Depression; ACSS-FAD (Acquired Capability for Suicide Scale-Fearlessness About Death, Ribeiro et al., 2014) used to measure Acquired Capability for Suicide.
[a]Excluded Outliers (22677, 2069).

Table 2

Bivariate Correlations Among Study Variables

Subscale	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*
1. Age	--							
2. Sex[a]	-.01	--						
3. Total SA	-.08	-.09	--					
4. Depression[b]	.08	**-.21****	.17*	--				
5. ACS[c]	.02	-.13	.19*	**.41****	--			
6. Frequency[d]	-.04	-.12	**.42****	**.29****	**.32****	--		
7. Versatility	-.07	-.11	**.30****	**.40****	**.37****	**.68****	--	
8. Duration	**.23****	**-.30****	**.15**	**.22****	**.23****	**.48****	**.52****	--
Sample Size (N)	*150*	*149*	*149*	*147*	*149*	*146*	*146*	*146*

Note. All analyses used pairwise deletion to include all available data from participants; SA = Suicide Attempt; ACS = Acquired Capability for Suicide

[a]Sex coded as 0 and 1, where Girl = 0, Boy = 1

[b]Depression was measured using the QIDS-SR-A-17 (Quick Inventory of Depressive Symptomatology – Adolescent Version Self-Report, Rush et al., 2006)

[c]ACS was measured using the ACSS-FAD (Acquired Capability for Suicide Scale-Fearlessness About Death, Ribeiro et al., 2014)

[d]Square root transformations performed to achieve normal distributions

* p< .05. **p< .01.

Table 3

Contribution of NSSI Variables to ACS After Controlling for Demographic Information in Multiple Regression Analyses

Independent Variables	df	R^{2b}	Adjusted R^{2b}	ΔR^{2c}	B	SE B	β	t	*p*
Frequency[a]	141	.12	.09	.06	.02	.01	.28	3.13	**.002**
Age					.02	.06	.02	.26	.80
Sex					-.26	.20	-.11	-1.32	.19
Lifetime SA					.01	.01	.07	.85	.40
Duration	141	.09	.07	.03	.09	.04	.19	2.30	**.02**
Age					-.02	.06	-.03	-.35	.73
Sex					-.30	.20	-.12	-1.49	.14
Lifetime SA					.02	.01	.16	1.89	.06
Versatility	142	.15	.13	.10	.14	.03	.35	4.09	**<.001**
Age					.03	.06	.05	.60	.55
Sex					-.06	.20	-.02	-.27	.79
Lifetime SA					.01	.01	.09	1.09	.28
ACSS-FAD	141	.17	.13	.11					**.001**
Age					.02	.06	.03	.34	.73
Sex					-.12	.20	-.05	-.61	.54
Lifetime SA					.01	.01	.07	.80	.43
Frequency[a]					.01	.01	.08	.70	.49
Versatility					.12	.04	.30	2.64	**.009**
Duration					.01	.05	.02	.17	.87

Note. All analyses used pairwise deletion to include all available data from participants; NSSI = Nonsuicidal Self-Injury; ACS = Acquired Capability for Suicide; ACSS-FAD (Acquired Capability for Suicide Scale-Fearlessness About Death, Ribeiro et al., 2014) used to measure ACS; Controls: age, sex, and lifetime SA; Dependent Variable: ACSS-FAD

[a]Square root transformations performed to achieve normal distributions

[b]Value of variance for full model including demographics

[c]Value of the unique variance from NSSI variables to ACSS-FAD after demographics were controlled for in the previous step

Table 4

Contribution of NSSI Variables to ACS After Controlling for Depression in Multiple Regression Analyses

Independent Variables	df	R^{2c}	Adjusted R^{2c}	ΔR^{2d}	B	SE B	β	*t*	*p*
Depression[a]	139	.18	.15		.05	.01	.32	3.96	<.**001**
Age					-.01	.06	-.01	-.12	.91
Sex					-.11	.20	-.04	-.57	.57
Lifetime SA				.18	.01	.01	.05	.62	.54
Frequency[b]		.21	.18	.03	.01	.01	.20	2.33	.**02**
Depression[a]	139	.18	.15		.06	.01	.34	4.21	<.**001**
Age					-.03	.06	-.05	-.58	.56
Sex					-.13	.20	-.05	-.65	.52
Lifetime SA				.18	.01	.01	.11	1.38	.17
Duration		.19	.16	.02	.07	.04	.14	1.71	.09
Depression[a]	140	.18	.15		.05	.01	.30	3.58	<.**001**
Age					.01	.06	.01	.17	.87
Sex					.03	.20	.01	.15	.89
Lifetime SA				.18	.01	.01	.07	.87	.38
Versatility		.22	.19	.04	.10	.03	.24	2.82	.**006**
ACSS-FAD	139	.23	.19						.**03**
Age					-.001	.06	-.002	-.02	.98
Sex					-.04	.20	-.01	-.18	.86
Lifetime SA					.01	.01	.05	.62	.54
Depression[a]		.18	.15	.18	.05	.01	.28	3.34	**<.001**
Frequency[b]					.00	.01	.07	.66	.51
Duration					.01	.04	.20	.21	.84
Versatility				.05	.08	.04	.20	1.79	.08

Note. All analyses used pairwise deletion to include all available data from participants; All analyses reported at Step 2; NSSI = Nonsuicidal Self-Injury; ACS = Acquired Capability for Suicide; ACSS-FAD (Acquired Capability for Suicide Scale-Fearlessness About Death, Ribeiro et al., 2014) used to measure ACS; Controls: age, sex, lifetime SA, and depression; Dependent Variable: ACSS-FAD

[a]Depression was measured using the QIDS-SR-A-17 (Quick Inventory of Depressive Symptomatology – Adolescent Version Self-Report, Rush et al., 2006)

[b]Square root transformations performed to achieve normal distributions

[c]Value of variance for full model including demographics

[d]Value of the unique variance from NSSI variables to ACSS-FAD after demographics were controlled for in the previous step

Table 5

Association Between NSSI[a] and SA as Mediated by ACS

	B	SE B	df	*p*	Exp(B)	95% CI
Step 1						
Age	.04	.12	1	.77	1.04	[.82, 1.32]
Sex	-.22	.41	1	.59	.80	[.36, 1.80]
NSSI	.87	.41	1	**.05**	2.30	[1.08, 5.32]
Step 2						
Age	.04	.07	1	.80	1.04	[.80, 1.35]
Sex	.01	.45	1	.98	1.01	[.42, 2.46]
NSSI	.84	.45	1	.06	2.32	[.96, 5.58]
ACSS-FAD	.88	.20	1	**<.001**	2.42	[1.65, 3.56]

Note. All analyses used pairwise deletion to include all available data from participants; CI represents Confidence Interval; NSSI = Nonsuicidal Self-Injury; SA = Suicide Attempt; ACS = Acquired Capability for Suicide; Controls: age and sex; Dependent Variable: Presence/Absence of SA.

[a]Measured Presence/Absence of NSSI

Table 6

Association Between NSSI Variables and SA as Mediated by ACS

	B	SE B	df	*p*	Exp(B)	95% CI
Step 1						
Age	.07	.12	1	.59	1.07	[.83, 1.36]
Sex	-.15	.42	1	.72	.86	[.38, 1.94]
Frequency[a]	.06	.02	1	**.01**	1.06	[1.02, 1.11]
Step 2						
Age	.05	.13	1	.70	1.05	[.81, 1.36]
Sex	-.05	.44	1	.91	.95	[.40, 2.27]
Frequency[a]	.03	.02	1	.16	1.04	[.99, 1.09]
ACSS-FAD	.78	.20	1	**<.001**	2.19	[1.47, 3.25]
Step 1						
Age	-.02	.12	1	.88	.98	[.77, 1.25]
Sex	-.32	.41	1	.44	.73	[.33, 1.62]
Duration	.17	.09	1	**.05**	1.19	[1.00, 1.41]
Step 2						
Age	.001	.14	1	.997	1.00	[.77, 1.30]
Sex	-.12	.44	1	.78	.88	[.38, 2.08]
Duration	.10	.09	1	.28	1.10	[.92, 1.32]
ACSS-FAD	.85	.20	1	**<.001**	2.34	[1.59, 3.45]
Step 1						
Age	.06	.13	1	.63	1.06	[.83, 1.36]
Sex	.07	.43	1	.87	1.08	[.46, 2.50]
Versatility	.28	.08	1	**<.001**	1.32	[1.13, 1.55]
Step 2						
Age	.05	.13	1	.72	1.05	[.81, 1.36]
Sex	.12	.45	1	.79	1.13	[.46, 2.74]
Versatility	.20	.09	1	**.02**	1.22	[1.03, 1.44]
ACSS-FAD	.75	.20	1	**<.001**	2.11	[1.42, 3.14]

Note. All analyses used pairwise deletion to include all available data from participants; CI represents Confidence Interval; NSSI = Nonsuicidal Self-Injury; SA = Suicide Attempt; ACS = Acquired Capability for Suicide; Controls: age and sex; Dependent Variable: Presence/Absence of SA.

[a]Square root transformations performed to achieve normal distributions

APPENDIX A

Consent Form

The University of Texas Southwestern Medical Center at Dallas
Parkland Health & Hospital System
Children's Medical Center

CONSENT TO PARTICIPATE IN RESEARCH

Title of Research:	Risk Factors for Peer Contagion of Nonsuicidal Self-Injury among Adolescents
Funding Agency/Sponsor:	UT Southwestern Medical Center
Study Doctors:	Beth Kennard, Psy.D. Sunita Stewart, Ph.D.
Research Personnel:	Taryn L. Mayes, M.S. Sarah Ezzell, B.A. Jacquelyn Saxton, B.A. Jennifer Hughes, Ph.D. Jessica King, B.A.

You may call these study doctors or research personnel at 817-760-0488

Note: If you are a parent or guardian of a minor and have been asked to read and sign this form, the "you" in this document refers to the minor.

Instructions:
Please read this consent form carefully and take your time making a decision about whether to participate. As the researchers discuss this consent form with you, please ask him/her to explain any words or information that you do not clearly understand. The purpose of the study, risks, inconveniences, discomforts, and other important information about the study are listed below. If you decide to participate, you will be given a copy of this form to keep.

Why is this study being done?
This study is being done to explore characteristics of adolescents seeking psychiatric care. These characteristics include: self-awareness and emotion control difficulties, exposure to non-suicidal self-injury, and suicidal thoughts. These findings may help find ways to reduce and/or treat self-injury.

Why am I being asked to take part in this research study?
You are being asked to take part in this study because you are seeking psychiatric care. You may or may not have any symptoms of depression, anxiety, or suicidal thoughts, and you may or may not do things to harm yourself. Medical research involves offering a plan of care to a group of patients, collecting and studying information about each patient's experience, and using that information to develop the best possible care for future patients.

APPENDIX A

Consent Form

How many people will take part in this study?
About 200 people will take part in this study through UT Southwestern/Children's Medical Center.

What is involved in the study?
If you agree to be in this study, you will be asked to sign this consent form and will have the following tests and procedures.

Procedures and Evaluations during the Research:
You will be asked to complete several brief paper and pencil questionnaires. The assessments will be conducted one time only, and will take approximately 30 minutes to complete. In addition, your doctor will ask questions about depression or suicidal thoughts during your normal visit, but that is not part of this research.

If you agree to participate, the researchers will also review your medical record to obtain your demographic information, psychiatric history and current diagnosis (as identified by your doctor).

How long can I expect to be in this study?
Your participation in this study involves a one-time visit that will last approximately 30 minutes. All efforts will be made to collect the study data at the time of this visit. If for some reason all data is not collected during this visit, we will gather the remaining data by sending the incomplete questionnaires home with you, along with a pre-addressed envelope, for you to mail back to us. Upon completion of all data during this visit, there may be further contact related to this study within two years to clarify information.

You can choose to stop participating for any reason at any time.

What are the risks of the study?

Psychological Stress
Some of the questions we will ask you as part of this study may make you feel uncomfortable. You may refuse to answer any of the questions, take a break or stop your participation in this study at any time.

Loss of Confidentiality
Any time information is collected, there is a potential risk of loss of confidentiality. Every effort will be made to keep your information confidential; however, this cannot be guaranteed. Your name will not be linked to the questionnaires. Instead, you will be assigned an ID number that will be linked to the questionnaires.

What are the possible benefits of this study?
If you agree to take part in this study, there may not be direct benefits to you. The researchers cannot guarantee that you will benefit from participation in this research.

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However, you will be answering questionnaires that examine suicidal thoughts, self-injurious behaviors and symptoms of depression and anxiety. The information obtained through this study will be accessible by your physician at Children's Medical Center who will be able to help you with treatments to address these issues.

We hope the information learned from this study will benefit adolescent who self-injure in the future. Information gained from this research could lead to better understanding of how to prevent and treat self-injury in adolescents.

What options are available if I decide not to take part in this research study?
This is not a treatment study. You do not have to be part of it to get treatment for your condition.

Will I be paid if I take part in this research study?
No. There are no funds available to pay for parking expenses, transportation to and from the research center, lost time away from work and other activities, lost wages, or child care expenses.

Will my insurance provider or I be charged for the costs of any part of this research study?
No. Neither you, nor your insurance provider, will be charged for anything done only for this research study (i.e., the questionnaires described above).

However, the standard medical care for your condition (care you would have received whether or not you were in this study) is your responsibility (or the responsibility of your insurance provider or governmental program). You will be charged, in the standard manner, for any procedures performed for your standard medical care.

What will happen if I am harmed as a result of taking part in this study?
It is important that you report any illness or injury to the research team listed at the top of this form immediately.

Compensation for an injury resulting from your participation in this research is not available from the University of Texas Southwestern Medical Center at Dallas or Children's Medical Center at Dallas.

You retain your legal rights during your participation in this research

Can I stop taking part in this research study?
Yes. If you decide to participate and later change your mind, you are free to stop taking part in the research study at any time.

If you decide to stop taking part in this research study, it will not affect your relationship with the UT Southwestern or Children's Medical Center staff or doctors. Whether you participate or not will have no effect on your legal rights or the quality of your health care.

If you or a family member are a medical student, fellow, faculty, or staff at the Medical

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Center, your status will not be affected in any way.

Will my information be kept confidential?

Medical information collected during this study and the results of any test or procedure that may affect your medical care may be included in your medical record. The information included in your medical record will be available to health care providers and authorized persons including your insurance company.

You should know that certain organizations that may look at and/or copy your medical records for research, quality assurance, and data analysis include:

- UT Southwestern Medical Center
- Representatives of government agencies, like the U.S. Food and Drug Administration (FDA), involved in keeping research safe for people; and
- The UT Southwestern Institutional Review Board.

In addition to this consent form, you will be asked to sign an "Authorization for Use and Disclosure of Protected Health Information." This authorization will give more details about how your information will be used for this research study, and who may see and/or get copies of your information.

Whom do I call if I have questions or problems?

For questions about the study, contact Sarah Ezzell at 817-760-0488.

For questions about your rights as a research participant, contact the UT Southwestern Institutional Review Board (IRB) Office at 214-648-3060.

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SIGNATURES:

YOU WILL BE GIVEN A COPY OF THIS CONSENT FORM TO KEEP.

Your signature below certifies the following:

- You have read (or been read) the information provided above.
- You have received answers to all of your questions and have been told who to call if you have any more questions.
- You have freely decided to participate in this research.
- You understand that you are not giving up any of your legal rights.
- You understand that a copy of this signed consent document, information about this study, and the results of any test or procedure that may affect your medical care, may be included in your medical record. Information in your medical record will be available to health care providers and authorized persons including your insurance company.

_____
Name of Participant (Printed)

_____ _____ _____ AM / PM
Signature of Participant Date Time

_____
Legally Authorized Representative's Name (Printed)

_____ _____ _____ AM / PM
Legally Authorized Representative's Signature Date Time

_____
Name of Person Obtaining Consent (Printed)

_____ _____ _____ AM / PM
Signature of Person Obtaining Consent Date Time

ASSENT OF A MINOR:

I have discussed this research study with my parent or legal guardian and the researchers, and I agree to participate.

_____ _____ _____ AM / PM
Participant's Signature (age 12 through 17) Date Time

APPENDIX B

Columbia Suicide Severity Rating Scale (C-SSRS)

SUICIDAL IDEATION		
Ask questions 1 and 2. If both are negative, proceed to "Suicidal Behavior" section. If the answer to question 2 is "yes", ask questions 3, 4 and 5. If the answer to question 1 and/or 2 is "yes", complete "Intensity of Ideation" section below.	Lifetime: Time He/She Felt Most Suicidal	Past ___ Months
1. Wish to be Dead Subject endorses thoughts about a wish to be dead or not alive anymore, or wish to fall asleep and not wake up. *Have you wished you were dead or wished you could go to sleep and not wake up?* If yes, describe:	Yes ☐ No ☐	Yes ☐ No ☐
2. Non-Specific Active Suicidal Thoughts General non-specific thoughts of wanting to end one's life/commit suicide (e.g., *"I've thought about killing myself"*) without thoughts of ways to kill oneself/associated methods, intent, or plan during the assessment period. *Have you actually had any thoughts of killing yourself?* If yes, describe:	Yes ☐ No ☐	Yes ☐ No ☐
3. Active Suicidal Ideation with Any Methods (Not Plan) without Intent to Act Subject endorses thoughts of suicide and has thought of at least one method during the assessment period. This is different than a specific plan with time, place or method details worked out (e.g. thought of method to kill self but not a specific plan). Includes person who would say, *"I thought about taking an overdose but I never made a specific plan as to when, where or how I would actually do it…and I would never go through with it."* *Have you been thinking about how you might do this?* If yes, describe:	Yes ☐ No ☐	Yes ☐ No ☐
4. Active Suicidal Ideation with Some Intent to Act, without Specific Plan Active suicidal thoughts of killing oneself and subject reports having some intent to act on such thoughts, as opposed to *"I have the thoughts but I definitely will not do anything about them."* *Have you had these thoughts and had some intention of acting on them?* If yes, describe:	Yes ☐ No ☐	Yes ☐ No ☐
5. Active Suicidal Ideation with Specific Plan and Intent Thoughts of killing oneself with details of plan fully or partially worked out and subject has some intent to carry it out. *Have you started to work out or worked out the details of how to kill yourself? Do you intend to carry out this plan?* If yes, describe:	Yes ☐ No ☐	Yes ☐ No ☐
INTENSITY OF IDEATION		
The following features should be rated with respect to the most severe type of ideation (i.e., 1-5 from above, with 1 being the least severe and 5 being the most severe). Ask about time he/she was feeling the most suicidal. Lifetime - *Most Severe Ideation:* _____ (*Type # (1-5)*) _____ (*Description of Ideation*) Past X Months - *Most Severe Ideation:* _____ (*Type # (1-5)*) _____ (*Description of Ideation*)	Most Severe	Most Severe
Frequency *How many times have you had these thoughts?* (1) Less than once a week (2) Once a week (3) 2-5 times in week (4) Daily or almost daily (5) Many times each day	____	____
Duration *When you have the thoughts how long do they last?* (1) Fleeting - few seconds or minutes (2) Less than 1 hour/some of the time (3) 1-4 hours/a lot of time (4) 4-8 hours/most of day (5) More than 8 hours/persistent or continuous	____	____
Controllability *Could/can you stop thinking about killing yourself or wanting to die if you want to?* (1) Easily able to control thoughts (2) Can control thoughts with little difficulty (3) Can control thoughts with some difficulty (4) Can control thoughts with a lot of difficulty (5) Unable to control thoughts (0) Does not attempt to control thoughts	____	____
Deterrents *Are there things - anyone or anything (e.g., family, religion, pain of death) - that stopped you from wanting to die or acting on thoughts of committing suicide?* (1) Deterrents definitely stopped you from attempting suicide (2) Deterrents probably stopped you (3) Uncertain that deterrents stopped you (4) Deterrents most likely did not stop you (5) Deterrents definitely did not stop you (0) Does not apply	____	____
Reasons for Ideation *What sort of reasons did you have for thinking about wanting to die or killing yourself? Was it to end the pain or stop the way you were feeling (in other words you couldn't go on living with this pain or how you were feeling) or was it to get attention, revenge or a reaction from others? Or both?* (1) Completely to get attention, revenge or a reaction from others (2) Mostly to get attention, revenge or a reaction from others (3) Equally to get attention, revenge or a reaction from others and to end/stop the pain (4) Mostly to end or stop the pain (you couldn't go on living with the pain or how you were feeling) (5) Completely to end or stop the pain (you couldn't go on living with the pain or how you were feeling) (0) Does not apply	____	____

APPENDIX B

Columbia Suicide Severity Rating Scale (C-SSRS)

SUICIDAL BEHAVIOR *(Check all that apply, so long as these are separate events; must ask about all types)*	Lifetime	Past __ Years
Actual Attempt: A potentially self-injurious act committed with at least some wish to die, *as a result of act.* Behavior was in part thought of as method to kill oneself. Intent does not have to be 100%. If there is *any* intent/desire to die associated with the act, then it can be considered an actual suicide attempt. *There does not have to be any injury or harm*, just the potential for injury or harm. If person pulls trigger while gun is in mouth but gun is broken so no injury results, this is considered an attempt. Inferring Intent: Even if an individual denies intent/wish to die, it may be inferred clinically from the behavior or circumstances. For example, a highly lethal act that is clearly not an accident so no other intent but suicide can be inferred (e.g., gunshot to head, jumping from window of a high floor/story). Also, if someone denies intent to die, but they thought that what they did could be lethal, intent may be inferred. *Have you made a suicide attempt?* *Have you done anything to harm yourself?* *Have you done anything dangerous where you could have died?* *What did you do?* *Did you_____ as a way to end your life?* *Did you want to die (even a little) when you_____?* *Were you trying to end your life when you _____?* *Or Did you think it was possible you could have died from_____?* *Or did you do it purely for other reasons / without ANY intention of killing yourself (like to relieve stress, feel better, get sympathy, or get something else to happen)?* (Self-Injurious Behavior without suicidal intent) If yes, describe:	Yes ☐ No ☐ Total # of Attempts _____	Yes ☐ No ☐ Total # of Attempts _____
Has subject engaged in Non-Suicidal Self-Injurious Behavior?	Yes ☐ No ☐	Yes ☐ No ☐
Interrupted Attempt: When the person is interrupted (by an outside circumstance) from starting the potentially self-injurious act *(if not for that, actual attempt would have occurred).* Overdose: Person has pills in hand but is stopped from ingesting. Once they ingest any pills, this becomes an attempt rather than an interrupted attempt. Shooting: Person has gun pointed toward self, gun is taken away by someone else, or is somehow prevented from pulling trigger. Once they pull the trigger, even if the gun fails to fire, it is an attempt. Jumping: Person is poised to jump, is grabbed and taken down from ledge. Hanging: Person has noose around neck but has not yet started to hang - is stopped from doing so. *Has there been a time when you started to do something to end your life but someone or something stopped you before you actually did anything?* If yes, describe:	Yes ☐ No ☐ Total # of interrupted _____	Yes ☐ No ☐ Total # of interrupted _____
Aborted Attempt: When person begins to take steps toward making a suicide attempt, but stops themselves before they actually have engaged in any self-destructive behavior. Examples are similar to interrupted attempts, except that the individual stops him/herself, instead of being stopped by something else. *Has there been a time when you started to do something to try to end your life but you stopped yourself before you actually did anything?* If yes, describe:	Yes ☐ No ☐ Total # of aborted _____	Yes ☐ No ☐ Total # of aborted _____
Preparatory Acts or Behavior: Acts or preparation towards imminently making a suicide attempt. This can include anything beyond a verbalization or thought, such as assembling a specific method (e.g., buying pills, purchasing a gun) or preparing for one's death by suicide (e.g., giving things away, writing a suicide note). *Have you taken any steps towards making a suicide attempt or preparing to kill yourself (such as collecting pills, getting a gun, giving valuables away or writing a suicide note)?* If yes, describe:	Yes ☐ No ☐	Yes ☐ No ☐
Suicidal Behavior: Suicidal behavior was present during the assessment period?	Yes ☐ No ☐	Yes ☐ No ☐

Answer for Actual Attempts Only	Most Recent Attempt Date:	Most Lethal Attempt Date:	Initial/First Attempt Date:
Actual Lethality/Medical Damage: 0. No physical damage or very minor physical damage (e.g., surface scratches). 1. Minor physical damage (e.g., lethargic speech; first-degree burns; mild bleeding; sprains). 2. Moderate physical damage; medical attention needed (e.g., conscious but sleepy, somewhat responsive; second-degree burns; bleeding of major vessel). 3. Moderately severe physical damage; *medical* hospitalization and likely intensive care required (e.g., comatose with reflexes intact; third-degree burns less than 20% of body; extensive blood loss but can recover; major fractures). 4. Severe physical damage; *medical* hospitalization with intensive care required (e.g., comatose without reflexes; third-degree burns over 20% of body; extensive blood loss with unstable vital signs; major damage to a vital area). 5. Death	*Enter Code* _____	*Enter Code* _____	*Enter Code* _____
Potential Lethality: Only Answer if Actual Lethality=0 Likely lethality of actual attempt if no medical damage (the following examples, while having no actual medical damage, had potential for very serious lethality: put gun in mouth and pulled the trigger but gun fails to fire so no medical damage; laying on train tracks with oncoming train but pulled away before run over). 0 = Behavior not likely to result in injury 1 = Behavior likely to result in injury but not likely to cause death 2 = Behavior likely to result in death despite available medical care	*Enter Code* _____	*Enter Code* _____	*Enter Code* _____

APPENDIX C

Quick Inventory of Depressive Symptomatology–Adolescent Version Self-Report (QIDS-SR-17)

Please circle the one description for each question that best describes you for the past seven days.

1. Falling Asleep:

   0 I always fall asleep in less than 30 minutes.
   1 I take at least 30 minutes to fall asleep, less than half the time.
   2 I take at least 30 minutes to fall asleep, more than half the time.
   3 I take more than 60 minutes to fall asleep, more than half the time.

2. Sleep During the Night:

   0 I do not wake up at night.
   1 I toss and turn a lot on some nights.
   2 I wake up at least once in the middle of the night, but I go back to sleep easily.
   3 I wake up many times in the middle of the night and usually stay awake for 20 minutes or more on most nights.

3. Waking Up Too Early:

   0 Most of the time, I wake up no more than 30 minutes before I need to get up.
   1 More than half the time, I wake up more than 30 minutes before I need to get up.
   2 I almost always wake up at least one hour or so before I need or want to, but I go back to sleep eventually.
   3 I wake up at least one hour before I need or want to, and can't go back to sleep.

4. Sleeping Too Much:

   0 I sleep no longer than 7-8 hours each night, without napping during the day.
   1 I sleep no longer than 10 out of 24 hours a day including naps.
   2 I sleep no longer than 12 out of 24 hours a day including naps.
   3 I sleep longer than 12 out of 24 hours a day including naps.

5. Feeling Sad:

   0 I do not feel down, unhappy, sad, or miserable.
   1 I feel down, unhappy, sad, or miserable less than half the time.
   2 I feel down, unhappy, sad, or miserable more than half the time.
   3 I feel really down, unhappy, sad, or miserable pretty much all the time.

6. Feeling Irritable:

   0 I do not feel crabby, grouchy, or cranky.
   1 I feel crabby, grouchy, or cranky less than half the time.
   2 I feel crabby, grouchy, or cranky more than half the time.
   3 I feel crabby, grouchy, or cranky nearly all of the time.

APPENDIX C

Quick Inventory of Depressive Symptomatology–Adolescent Version Self-Report (QIDS-SR-17)

7. Decreased Appetite:

   0 There is no change from my normal appetite.
   1 I eat less often or smaller amounts of food than normal.
   2 I eat much less than normal and have to make myself eat.
   3 I hardly ever eat during a whole day, and then only after I push myself to eat or because other people make me eat.

8. Increased Appetite:

   0 There is no change from my normal appetite.
   1 I feel a need to eat more often than normal.
   2 I regularly eat more often and/or larger amounts of food than normal.
   3 I feel like I want to eat a lot more than normal during or between meals.

9. Decreased Weight (Within the Last Two Weeks):

   0 My weight has not changed.
   1 I think I've lost a little weight.
   2 I think I've lose 2 pounds or more in the past 2 weeks. My clothes are a little more loose than normal.
   3 I think I have lost 5 pounds or more in the past 2 weeks. My clothes are a lot more loose than normal.

10. Increased Weight (Within the Last Two Weeks):

    0 My weight has not changed.
    1 I think I've gained a little weight.
    2 I think I've gained 2 pounds or more in the past 2 weeks. My clothes are a little tighter than normal.
    3 I think I have gained 5 pounds or more in the last 2 weeks. My clothes are a lot tighter than normal.

11. Concentration/Decision Making:

    0 There is no change in my normal ability to pay attention or make up my mind.
    1 I have some problems paying attention or making up my mind.
    2 Most of the time, I have a lot of problems paying attention or making up my mind.
    3 My mind has wandered so much during the past week that I haven't been able to read or follow a TV show or make even little decisions.

12. View of Myself:

    0 I feel as worthwhile or good about myself as the people around me feel about themselves.
    1 I am harder on myself or more down on myself than normal.
    2 I blame myself for everything around me that goes wrong.
    3 I think a lot about my faults, both big and little.

APPENDIX C

Quick Inventory of Depressive Symptomatology–Adolescent Version Self-Report (QIDS-SR-17)

13. Thoughts of Death or Suicide:

0 I do not think of suicide or my own death.
1 I feel that life is empty or wonder if it's worth living.
2 I think of suicide or my own death several times a week for several minutes.
3 I think of suicide or my own death several times a day, or I have made plans or tried to commit suicide.

14. General Interest:

0 There is no change from normal in how interested I am in other people or activities.
1 I am less interested in things that used to be fun for me, like meeting with friends, hobbies, or sports.
2 I find I have interest in only one or two of my usual interests or activities.
3 I have no interest in any of the things that used to be fun.

15. Energy Level:

0 I have as much energy as usual for getting things done.
1 I get tired more easily than normal.
2 I have to push myself more than usual, or it takes more effort than usual to start and finish my normal activities.
3 I am so tired or worn out that I've just not been able to do most of my usual activities.

16. Feeling slowed down:

0 I think, speak, and move at my normal pace.
1 My thinking is slowed down or my voice sounds dull or flat.
2 My thoughts or speech are slowed down so that it sometimes takes me several seconds to answer when someone talks to me.
3 My thoughts and speech are so slow at times that I haven't been able to answer without a lot of encouragement from someone.

17. Feeling restless:

0 I do not feel squirmy, antsy, or restless.
1 I am a little squirmy, antsy, or restless so that sometimes I can't stay still easily.
2 I am often squirmy, antsy, or restless so that I often can't stay still easily.
3 I am so squirmy, antsy, or restless that I can't sit still at all.

APPENDIX D

Acquired Capability for Suicide Scale (ACSS)
ACSS-FAD scale includes items 7, 8, 10, 11, 13, 14, & 19 below

Please read each item below and indicate to what extent you feel the statement describes you. Rate each statement using the scale below and indicate your responses on your answer sheet.

0	1	2	3	4
Not at all like me				Very much like me

_____ 1. Things that scare most people do not scare me.

_____ 2. The sight of my own blood does not bother me.

_____ 3. I avoid certain situations (e.g., certain sports) because of the possibility of injury.

_____ 4. I can tolerate a lot more pain than most people.

_____ 5. People describe me as fearless.

_____ 6.The sight of blood bothers me a great deal.

_____ 7. The fact that I am going to die does not affect me.

_____ 8. The pain involved in dying frightens me.

_____ 9. Killing animals in a science course would not bother me.

_____10. I am very much afraid to die.

_____11. It does not make me nervous when people talk about death.

_____12. The sight of a dead body is horrifying to me.

_____13. The prospect of my own death arouses anxiety in me.

_____14.I am not disturbed by death being the end of life as I know it.

_____15. I like watching the aggressive contact in sports games.

_____16. The best parts of hockey games are the fights.

_____17. When I see a fight, I stop to watch.

_____18. I prefer to shut my eyes during the violent parts of movies.

_____19. I am not at all afraid to die.

_____ 20. I could kill myself if I wanted to. (Even if you have never wanted to kill yourself, please answer this question.)

APPENDIX E

The Inventory about Statements of Self-Injury (ISAS)

INVENTORY OF STATEMENTS ABOUT SELF-INJURY (ISAS) – SECTION I. BEHAVIORS

This questionnaire asks about a variety of self-harm behaviors. Please only endorse a behavior if you have done it intentionally (i.e., on purpose) and without suicidal intent (i.e., not for suicidal reasons).

1. Please estimate the number of times in your life you have intentionally (i.e., on purpose) performed each type of non-suicidal self-harm (e.g., 0, 10, 100, 500):

Cutting	____	Severe Scratching	____
Biting	____	Banging or Hitting Self	____
Burning	____	Interfering w/ Wound Healing (e.g., picking scabs)	____
Carving	____	Rubbing Skin Against Rough Surface	____
Pinching	____	Sticking Self w/ Needles	____
Pulling Hair	____	Swallowing Dangerous Substances	____
Other _____,	____		

****

***Important*: If you have performed one or more of the behaviors listed above, please complete the final part of this questionnaire. If you have not performed any of the behaviors listed above, you are done with this particular questionnaire and should continue to the next.**

****

APPENDIX E

The Inventory about Statements of Self-Injury (ISAS)

2. If you feel that you have a *main* form of self-harm, please circle the behavior(s) on the first page above that you consider to be your main form of self-harm.

3. At what age did you:

First harm yourself? _____ Most recently harm yourself? _____
(approximate date – month/date/year)

4. Do you experience physical pain during self-harm?

Please circle a choice: YES SOMETIMES NO

5. When you self-harm, are you alone?

Please circle a choice: YES SOMETIMES NO

6. Typically, how much time elapses from the time you have the urge to self-harm until you act on the urge?

Please circle a choice:

< 1 hour 1 - 3 hours 3 - 6 hours

6 - 12 hours 12 - 24 hours > 1 day

7. Do/did you want to stop self-harming?

Please circle a choice: YES NO

APPENDIX E

The Inventory about Statements of Self-Injury (ISAS)

INVENTORY OF STATEMENTS ABOUT SELF-INJURY (ISAS) – SECTION II. FUNCTIONS

Name:_____

Date:_____

Instructions
This inventory was written to help us better understand the experience of non-suicidal self-harm. Below is a list of statements that may or may not be relevant to your experience of self-harm. Please identify the statements that are most relevant for you:

- Circle **0** if the statement **not relevant** for you at all
- Circle **1** if the statement is **somewhat relevant** for you
- Circle **2** if the statement is **very relevant** for you

"When I self-harm, I am …	**Response**		
1. … calming myself down	0	1	2
2. … creating a boundary between myself and others	0	1	2
3. … punishing myself	0	1	2
4. … giving myself a way to care for myself (by attending to the wound)	0	1	2
5. … causing pain so I will stop feeling numb	0	1	2
6. … avoiding the impulse to attempt suicide	0	1	2
7. … doing something to generate excitement or exhilaration	0	1	2
8. … bonding with peers	0	1	2
9. … letting others know the extent of my emotional pain	0	1	2
10. … seeing if I can stand the pain	0	1	2
11. … creating a physical sign that I feel awful	0	1	2
12. … getting back at someone	0	1	2
13. … ensuring that I am self-sufficient	0	1	2
14. … releasing emotional pressure that has built up inside of me	0	1	2
15. … demonstrating that I am separate from other people	0	1	2
16. … expressing anger towards myself for being worthless or stupid	0	1	2

APPENDIX E

The Inventory about Statements of Self-Injury (ISAS)

"When I self-harm, I am …

17. … creating a physical injury that is easier to care for than my emotional distress	0	1	2
18. … trying to feel something (as opposed to nothing) even if it is physical pain	0	1	2
19. … responding to suicidal thoughts without actually attempting suicide	0	1	2
20. … entertaining myself or others by doing something extreme	0	1	2
21. … fitting in with others	0	1	2
22. … seeking care or help from others	0	1	2
23. ... demonstrating I am tough or strong	0	1	2
24. … proving to myself that my emotional pain is real	0	1	2
25. … getting revenge against others	0	1	2
26. … demonstrating that I do not need to rely on others for help	0	1	2
27. … reducing anxiety, frustration, anger, or other overwhelming emotions	0	1	2
28. … establishing a barrier between myself and others	0	1	2
29. … reacting to feeling unhappy with myself or disgusted with myself	0	1	2
30. … allowing myself to focus on treating the injury, which can be gratifying or satisfying	0	1	2
31. … making sure I am still alive when I don't feel real	0	1	2
32. … putting a stop to suicidal thoughts	0	1	2
33. … pushing my limits in a manner akin to skydiving or other extreme activities	0	1	2
34. … creating a sign of friendship or kinship with friends or loved ones	0	1	2
35. … keeping a loved one from leaving or abandoning me	0	1	2
36. … proving I can take the physical pain	0	1	2
37. … signifying the emotional distress I'm experiencing	0	1	2
38. … trying to hurt someone close to me	0	1	2
39. … establishing that I am autonomous/independent	0	1	2

APPENDIX E

The Inventory about Statements of Self-Injury (ISAS)

(Optional) In the space below, please list any statements that you feel would be more accurate for you than the ones listed above:

(Optional) In the space below, please list any statements you feel should be added to the above list, even if they do not necessarily apply to you:

ITEMS COMPRISING EACH OF 13 FUNCTIONS SCALES

Affect Regulation – 1, 14, 27

Interpersonal Boundaries – 2, 15, 28

Self-Punishment – 3, 16, 29

Self-Care – 4, 17, 30

Anti-Dissociation/Feeling-Generation – 5, 18, 31

Anti-Suicide – 6, 19, 32

Sensation-Seeking – 7, 20, 33

Peer-Bonding – 8, 21, 34

Interpersonal Influence – 9, 22, 35

Toughness – 10, 23, 36

Marking Distress – 11, 24, 37

Revenge – 12, 25, 38

Autonomy – 13, 26, 39

Scores for each of the 13 functions range from 0 to 6.

BIOGRAPHICAL SKETCH

Jacquelyn Deanna Matney
Jmatney91@gmail.com

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional*

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
The University of Texas Southwestern School of Allied Health Sciences	M.R.C	2015	Rehabilitation Counseling
Texas A&M University	B.A.	2012	Psychology

Positions and Employment

August 2013-Current UTSW Student Center
September 2014-Current Coaching for Academic Success

Clinical Experience

August 2014-February 2015 Children's Health Children's Medical Center Outpatient Intern
February 2015-August 2015 UTSW Supported Employment Services Intern

Presentations and Publications

2015 Served as the primary author of a poster entitled *Frequency, Versatility, and Duration of Nonsuicidal Self-Injury in Relation to Acquired Capability for Suicide among Adolescents* presented at the International Society for the Study of Self-Injury (ISSS) in Germany.

2015 Served as a coauthor of a poster entitled *Evaluating the Interpersonal Psychological Theory of Suicide in an adolescent clinical sample* presented at the World Congress of the International Association for Suicide Prevention in Montreal, Canada.

2015 Served as a coauthor of a poster entitled *Investigation of the Psychometric Properties of the Interpersonal Needs Questionnaire and the Acquired Capability for Suicide Scale in Adolescents* presented at the World Congress of the International Association for Suicide Prevention in Montreal, Canada.