

TESTS OF THE INTERPERSONAL PSYCHOLOGICAL THEORY OF  
SUICIDE AMONG ADOLESCENTS

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TESTS OF THE INTERPERSONAL PSYCHOLOGICAL THEORY OF  
SUICIDE AMONG ADOLESCENTS

by

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Self-injurious behaviors tend to first manifest during adolescence, marking this developmental period as an important context for suicide research. The lack of theory-driven research in this area has made it difficult to integrate scattered findings in a way that increases understanding of suicidal behaviors. The Interpersonal Psychological Theory of Suicide (IPTS; Joiner, 2005) aims to remedy this issue by offering an organizing framework that has many conceptual and practical merits. Although this theory has a growing base of evidence among adults, it has yet to be tested in adolescents using direct measures of its central constructs. The current study offers preliminary examinations of 1) psychometric properties of scales to assess key constructs in the IPTS: perceived burdensomeness and thwarted belongingness assessed by the Interpersonal Needs

Questionnaire (INQ), and acquired capability for suicide measured by the Acquired Capability for Suicide Scale-Fearlessness About Death (ACSS-FAD) and 2) hypotheses guided by the IPTS in an adolescent clinical sample. Participants were 147 adolescents on an inpatient psychiatric unit, who completed measures of key IPTS constructs, depression severity, hopelessness, severity of suicidal symptoms, and various constructs relevant to convergent and discriminant validity. Factor analyses and evidence for construct validity of the 15-item INQ and 7-item ACSS-FAD provided preliminary support for utilization of these scales in this population (Study 1). Study 2 findings were largely consistent with hypotheses derived from the IPTS: perceived burdensomeness, and at a marginal level, thwarted belongingness, were independently associated with current suicidal ideation. The thwarted belongingness by perceived burdensomeness interaction distinguished between adolescents with passive and active suicidal ideation. Acquired capability for suicide was associated with recent suicidal intent. IPTS constructs and their interactions were associated with suicidal symptom severity. This study offers strong, albeit preliminary, support of the IPTS in a clinical adolescent sample. Assessment of IPTS constructs may be useful in determining persistent risk for suicide attempts. Prospective tests of the theory, and extensions to intervention and prevention should be considered in future IPTS research.

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## **CHAPTER ONE**

### **Introduction**

#### **STATEMENT OF THE PROBLEM**

Suicide is the second leading cause of death among 15-24 year olds (National Center for Injury Prevention and Control, 2015). In addition to those who die by suicide, there are many more who make suicide attempts and/or experience suicidal ideation (National Center for Injury Prevention and Control, 2012). Adolescence represents a unique and important context for research on self-injurious behaviors because, cross-culturally, these phenomena first manifest during this period of development and then persist into adulthood.

Despite years of research on suicide risk factors, rates of death by suicide have not seen a significant decrease over the past 50 years (National Action Alliance for Suicide Prevention: Research Prioritization Task Force, 2014). The key challenge in suicide research, among adults and adolescents alike, is to determine who is at highest risk for making a suicide attempt, particularly a lethal attempt. An abundance of research exists in this area among adolescents, but the literature is characterized by scattered constructs, and studies that 1) investigate a few unrelated risk factors and 2) lump suicidal ideation and suicidal behaviors regardless of lethality together. The lack of theory-driven research makes it difficult to integrate these piecemeal and global findings in a way that increases our understanding of suicidal behaviors.

One of the most influential theories that identifies characteristics of those making suicide attempts is Joiner's (2005) Interpersonal-Psychological Theory of Suicide (IPTS). The IPTS posits that death by suicide occurs because individuals have both the desire to die (as indicated by high levels of thwarted belongingness and perceived burdensomeness) and the capability to do so (Joiner, 2005). An important characteristic of this theory is that it provides a framework to explain a number of phenomena for which other theories do not account, for example, that ideators and attempters may have different characteristics, that suicidal ideation can be active or passive, that nonsuicidal self-injury (NSSI) commonly, but not inevitably precedes and progresses to suicide attempt, and that suicide attempts can vary in degree of lethality. In the process of testing this theory among adults, Joiner and his group have developed measures of thwarted belongingness and perceived burdensomeness (subsumed in the Interpersonal Needs Questionnaire) and acquired capability for suicide (measured in the Acquired Capability for Suicide Scale).

This theory and its associated measures were developed among adults and have yet to be specifically tested among adolescents. If this theory is applicable to adolescents, we will be better able to integrate current research findings, we will gain a framework that may guide further testable hypotheses to identify who is at imminent risk for making a suicide attempt, and we will obtain information relevant to the development of preventive interventions for suicidal behaviors.



The purpose of this study was to 1) explore psychometric properties of the Interpersonal Needs Questionnaire and Acquired Capability for Suicide Scale and 2) test hypotheses guided by the IPTS in a sample of adolescent psychiatric inpatients.

## **CHAPTER TWO**

### **Review of the Literature**

#### **BACKGROUND**

##### **Self-Injurious Behaviors**

###### *Prevalence*

Self-injurious behaviors, regardless of intent, among adolescents are a major clinical and public health concern. Suicide is the second leading cause of death among 15-24 year olds (National Center for Injury Prevention and Control, 2015). Over the course of a year, 17.0% of high school students seriously consider attempting suicide, 13.6% make a suicide plan, 8.0% attempt suicide, and 2.7% make a suicide attempt that requires medical treatment (Kann et al., 2014). Approximately 13 – 23% of adolescents report engaging in nonsuicidal self-injury (NSSI), the purposeful injury of one's own body without the intent to die, at some point in their lives (Jacobson & Gould, 2007).

Adolescence represents a unique and important context for research on self-injurious behaviors. Cross culturally, death by suicide before puberty is rare, and compared to adults, self-injurious behaviors are reported to occur more frequently among adolescents (Nock, 2010; World Health Organization, 2012). After the onset of puberty, rates of suicide attempts increase in frequency, with a peak occurring between ages 16 and 18; this increased risk for suicidal behaviors persists into the early 20s (Gould et al., 2003; Kessler et al., 1999; Nock et al.,

2008).

In both adolescence and adulthood, women and girls are more likely to experience suicidal ideation and to make a suicide attempt; however, death by suicide occurs more frequently among men and boys (Gould et al., 2003; Kann et al., 2014; World Health Organization, 2012). Regarding differences in methods between sexes, firearms accounted for the greatest percentage of deaths by suicide among adolescent boys (56.3%), and poisoning accounted for the greatest percentage of deaths by suicide among adolescent girls (39.3%) from 2005 to 2009 in the United States (Centers for Disease Control and Prevention [CDC], 2014). Suicidal thoughts and behaviors are more common among Hispanic and Native American adolescents compared to both Caucasian and African American adolescents (Kann et al., 2014). Rates of death by suicide in adolescent boys nearly tripled from 1964 to 1988, plateaued until the mid 1990s, and then subsequently declined (Gould et al., 2003). Rates of death by suicide in African American adolescent boys have increased in recent decades from approximately six per 100,000 in 1988 to approximately ten per 100,000 in 2000 (Anderson, 2002; CDC, 2002; National Center for Health Statistics, 1999; Spirito & Esposito-Smythers, 2006). The rates of death by suicide among white adolescent boys have decreased from approximately 20 per 100,000 in 1988 to approximately 14 per 100,000 in 2000, decreasing the magnitude of the gap between African American and white adolescent boys death by suicide rates (Anderson, 2002;

CDC, 2002; National Center for Health Statistics, 1999; Spirito & Esposito-Smythers, 2006). Among high school students, rates of suicidal ideation have seen a recent increase while rates of suicide attempts have decreased (Kann et al., 2014).

### *Risk Factors*

Over 90% of adolescent suicide attempters meet diagnostic criteria for at least one psychiatric disorder (Gould et al., 2003). Depressive, substance use, and disruptive behavior disorders are the most prevalent among adolescent suicide attempters, although other disorders have been indicated (Apter, 2010; Brent et al., 1993; Gould et al., 2003; Marttunen et al., 1991; Shaffer et al., 1996;). Dual diagnosis of both an internalizing disorder and an externalizing disorder (heterotypic comorbidity) puts an adolescent at even greater risk for suicide attempt and death by suicide (Spirito & Esposito-Smythers, 2006).

Previous history of suicidal behavior places an adolescent at an 18-fold risk for a future suicide attempt and has been consistently found to be one of the strongest predictors for future suicide attempts and death by suicide (Lewinsohn, Rohde, & Seeley, 1994; Lewinsohn, Rohde, & Seeley, 1996; Shaffer et al., 1996). However, only 25% to 33% of adolescents who die by suicide have a history of previous suicide attempts, meaning that even one of the most robust of predictors for suicide attempt only applies to a minority of those who die by suicide (Shaffer

et al., 1996). Engaging in NSSI is widely reported as one of the strongest risk factors for suicidal behaviors (Hamza, Stewart, & Willoughby, 2012). Although suicidal behavior and NSSI can be differentiated, the two forms of self-injurious behavior often co-occur (Joiner, Ribeiro, & Silva, 2012). Little is known about why an individual who engages in NSSI is at higher risk for suicide attempt.

The strongest indicators for suicide risk among adolescents are demographic and diagnostic characteristics. Hopelessness, poor interpersonal problem solving skills, and impulsive aggression are also associated with suicidal behavior (Spirito & Esposito-Smythers, 2006). In a review of social and interpersonal risk factors for suicidality in adolescence, King & Merchant (2008) examined family and peer relationships, physical and sexual abuse, and peer victimization/bullying among community, clinical, and psychological autopsy samples. The findings from their review highlight the importance of family and peer relationships in the context of adolescent suicidality.

### **Limitations and Challenges in Self-Injury Research**

The key challenge in suicide research is to identify who is at imminent risk for making a suicide attempt, but knowledge of the subject is not yet to the point that allows clinicians to do this. This is partly due to practical limitations that make suicide an elusive topic for research. Individuals who have died by suicide, the population whose characteristics would provide the most information

about imminent risk for suicide attempt, are unavailable for careful study. Suicide attempts occur at a low base rate, so it is difficult to obtain adequate sample sizes for a prospective study capable of capturing individuals at the appropriate time to understand imminent risk (Prinstein, 2008). Therefore, researchers must frequently rely on retrospective information, which is subject to bias.

The stunted progress in this area may also be related to the fragmented approach researchers take in attempting to answer this question. The literature identifies numerous risk factors in a variety of domains (e.g., biological, psychological, social), but even the most robust risk factors are imprecise in their prediction of lethal suicide attempts (Van Orden et al., 2010). For example, the diagnosis of a psychiatric disorder and a history of previous suicide attempts are two of the strongest predictors for eventual death by suicide among adults (Christiansen & Jensen, 2007; Cavanagh et al., 2003). Yet, the majority of individuals diagnosed with a psychiatric disorder do not go on to die by suicide, and up to half of individuals who die by suicide do so on their first attempt (Bostwick & Pankratz, 2000; Rudd, Joiner, & Rajab, 1996). An organizing framework that accounts for how these individual risk factors interact to result in the progression from suicidal ideation to attempt would be welcomed to guide more studies that enhance understanding of how individuals proceed to high levels of risk.

### *Classification of Self-Injurious Ideation and Behaviors*

One potential issue that impedes our knowledge of self-injurious ideation and behaviors is that there is not always a clear delineation between different types of self-injurious behaviors (Prinstein, 2008). Research on suicide tends to focus on examining risk and protective factors for suicidal ideation and behaviors in general rather than differentiating between characteristics of ideators and attempters (Stack, 2013). Suicide-related phenomena fall on a continuum ranging from passive suicidal ideation to lethal suicide attempt, and researchers do not use a uniform method for classification of self-injurious behaviors (Prinstein, 2008). As phenomena related to suicide become more severe (i.e., the progression from passive suicidal ideation to active suicidal ideation to suicidal intent to suicide attempt), the prevalence rates of such behaviors begin to wane (Van Orden et al., 2010). There is some literature examining the overlap and differences between varying types of self-injurious behavior, but even these findings are difficult to integrate with confidence because the field lacks a simple, consistent approach to classification of such phenomena (Prinstein, 2008).

When all varying degrees of thoughts and behaviors on the self-injury continuum are combined into one inclusive construct, prediction of this broadly defined behavior becomes excessively sensitive at the cost of specificity (Van Orden et al., 2010). Sensitivity refers to the rate at which true positives (those at imminent risk for suicide attempt) are detected. Specificity refers to the rate at

which true negatives (those not at imminent risk for suicide attempt) are correctly identified as not being at risk. The current overcautious approach guarantees that the true positives are indeed identified, but with such a low threshold for risk, many false positives are identified as well (Prinstein, 2008). An overly specific approach has the potential to yield deadly consequences such that some individuals who truly are at risk for making a suicide attempt will not be identified (Prinstein, 2008). It is obvious why the overcautious approach to suicide prediction prevails. Since suicidal ideation is relatively common, in itself, information about suicidal ideation does not appear to be a practically useful indication of risk. For this reason, frameworks that can link, but not equate, the presence of suicidal ideation (a common occurrence) with behaviors such as suicide attempts (rare occurrences, but of greatest concern) are particularly promising.

### *NSSI and Suicide*

Although there is some controversy about the reliability of retrospective self-report, assessment of intent has been an important way to distinguish between NSSI and suicide attempts in clinical research (Kapur et al., 2013). Some theorists argue that it is not worthwhile to differentiate between these two behaviors, as there is so much overlap between the behaviors and both occur with such low frequency; however, there is little empirical evidence to support either side of the



argument (Linehan, 1997; Muehlenkamp & Gutierrez, 2004). Obfuscation of boundaries between NSSI and suicide attempts impedes accurate prevalence estimates (Shaffer & Jacobson, 2009). Klonsky, May, and Glenn (2013, p. 232) warn that it can also result in potentially detrimental outcomes such as:

“unnecessary and potentially iatrogenic hospitalizations, inaccurate case conceptualizations and treatment planning, and misallocation of valuable emergency resources. At the same time, a perspective that overemphasizes the behaviors’ independence and ignores potential comorbidity between NSSI and attempted suicide could mean ignoring a valuable indicator of suicide risk”.

### *Suicidal Ideation and Suicide Attempts*

Most individuals who experience suicidal ideation do not go on to actually make a suicide attempt (World Health Organization, 1998). Furthermore, for every lethal adolescent suicide attempt in the U.S, there are 100 – 200 non-lethal adolescent suicide attempts (Moskos, Achilles, & Gray, 2004). The literature suggests differences among individuals who have suicidal ideation alone versus those who make a suicide attempt. One commonly observed demographic difference is that while girls are more likely to have suicidal ideation or make a suicide attempt, boys are more likely to die by suicide (Gould et al., 2003; Spirito & Esposito-Smythers, 2006; World Health Organization, 2012). The mechanisms

that underlie these sex differences are not known.

One study that utilized a large, nationally representative sample of adults found that suicide ideators and attempters could be differentiated based on aggression (fighting) and marital status (Gunn et al., 2011). Adult suicide attempters have also been found to report more negative life events and history of suicide attempts relative to adult suicide ideators (Joiner et al., 2009). Findings are mixed regarding differences in depression between adult ideators and attempters (DeJong, Overholser, & Stockmeier, 2010; Gunn et al., 2011; Joiner et al., 2009). Adult attempters and ideators have been found to be indistinguishable with regard to substance abuse, hopelessness, sex, recklessness, social withdrawal, symptoms of bipolar disorder or borderline personality disorder, or family history of depression and suicide (Gunn et al., 2011; Joiner et al., 2009). Compared to adults who survive a suicide attempt, adults who die by suicide are more likely to leave behind a suicide note, use drugs or alcohol immediately prior to the suicide attempt, and experience job loss or financial stress (DeJong et al., 2010).

Relative to adolescent suicide ideators, adolescent suicide attempters are more likely to engage in violent behaviors (i.e., physical fighting that results in injury, dating violence, carrying a weapon), have poorer physical health, be male, and have made suicide plans at some time in their life (Paluszny et al., 1991; Stack, 2013; Wetzler et al., 1996). Adolescent suicide attempters and ideators do

not tend to differ in regard to psychiatric diagnosis, hopelessness, impulsivity, academic performance, substance use, anger/aggression, romantic relationship problems, or life events (Paluszny et al., 1991; Stack, 2013; Wetzler et al., 1996). On the basis of psychopathology alone, Wetzler and colleagues (1996) could not differentiate between adolescents with suicidal ideation, adolescents who made non-medically serious suicide attempts, and adolescents who made medically serious suicide attempts.

In summary, some work has been done on the characteristic differences between suicide ideators and attempters and even between attempters and those who die by suicide. Inconsistent findings, small and unrepresentative samples, and the examination of a limited number of differentiating variables suggest that more work needs to be done in this area. A more nuanced theoretical framework that differentiates between suicidal ideation and attempt, and between low lethal and high lethal suicide attempts may be particularly useful because suicidal ideation is so common, suicide attempt is less so, and fatal suicide attempts are still fortunately rare.

### **Suicide in a Theoretical Context**

In comparison to the large knowledge base with regard to distal risk factors and psychiatric diagnoses associated with self-injurious behaviors, very little is known about the process through which these aforementioned risk factors

contribute to an individual's choice to engage in self-injurious behaviors (Prinstein, 2008). In the midst of conflicting findings and heterogeneity of research methods, the need for an organizing framework that accounts for how individual and environmental risk factors interact to explain how individuals proceed to high levels of risk has been emphasized (King & Merchant, 2008; Prinstein, 2008).

Despite the lack of theory-driven research, there is no shortage of theories from many diverse perspectives that aim to explain suicide. One of the earliest theories of suicide was developed based on the observation that higher levels of social integration (e.g., via marriage, religious involvement) were inversely related to rates of death by suicide (Durkheim, 1897). Other theories also point to the importance of interpersonal environments in the development of suicidal phenomena. Sabbath's (1969) theory of suicidal behavior, specific to adolescents, posits that suicidal behavior results from an adolescent's interpretation of parental attitudes that the adolescent is a burden and that the family would be better off if the adolescent were dead. Marsha Linehan (1993) suggests that, in the context of borderline personality disorder, emotionally invalidating social environments can exacerbate distress experienced by individuals who are already biologically predisposed to experience difficulty regulating emotion. As a result, the individual does not learn how to tolerate these strong emotional reactions and maladaptively copes with them via self-harm (Linehan, 1993).

Psychodynamic theories emphasize the role that severe psychological pain plays in suicide (Baumeister, 1990; Shneidman, 1993). Baumeister (1990) conceptualizes suicide as an escape from overwhelming, negative cognitions and emotions, resultant from an individual's falling short of expectations. Shneidman (1993) suggests that an individual engages in suicidal acts to resolve agitation, emotional upset, and "psychache", a psychological state that occurs when individual-specific psychological needs are unmet. Cognitive behavioral theorists suggest the importance of cognitions characterized by hopelessness in suicidal ideation and attempt (Beck, Brown, & Steer, 1989).

These theories focus on how key risk factors in a variety of areas come together to put an individual at risk for suicide, broadly speaking. Historically the question of why one feels suicidal has become synonymous with the question of why one acts on suicidal thoughts (Klonsky & May, 2013). This is a problematic approach because both questions must be answered in order to determine who is at imminent risk for making a suicide attempt. Additionally, these theories do not always specify what exactly they are predicting: suicidal ideation, suicide attempt, or both (Ribeiro et al., 2013). This conflation impedes understanding of how one progresses from thinking about suicide to engaging in a suicidal act.

### **The Interpersonal-Psychological Theory of Suicide**

The Interpersonal-Psychological Theory of Suicide (IPTs) posits that an

individual will die by suicide only if they have the desire to die and the capability to do so (Joiner, 2005). An important characteristic of this theory is that it provides a more nuanced framework intended to explain a number of phenomena for which other theories do not account. Specifically these phenomena are: the majority of people who experience suicidal ideation do not actually act on these thoughts, that ideators and attempters may have different characteristics, that suicidal ideation can be active or passive, that nonsuicidal self-injury (NSSI) commonly, but not inevitably precedes and progresses to suicide attempt, and that suicide attempts can vary in degree of lethality.

According to the IPTS, the desire to die, or suicidal ideation, is the result of two dynamic interpersonal states: thwarted belongingness, which refers to the psychological state in which the human need to belong is not met, and perceived burdensomeness, which refers to the perception that one is a burden to all others in their life (Van Orden et al., 2010). It proposes four hypotheses relevant to the underlying mechanisms that contribute to varying levels of suicidality. The experience of either thwarted belongingness or perceived burdensomeness is proximal and sufficient cause for passive suicidal ideation (IPTS Hypothesis One; Van Orden et al., 2010), while the simultaneous experience of both states (and hopelessness about this experience) is suggested to result in active suicidal ideation (IPTS Hypothesis Two; Van Orden et al., 2010).

Joiner and his group argue that to purposely inflict harm on oneself is a painful and frightening act, which requires that humans overcome inherent taboos against such actions (Ohman & Mineka, 2001; Van Orden et al., 2010). A third construct, acquired capability for suicide, is central to the progression from suicidal ideation to suicide attempt (Van Orden et al., 2010). Acquired capability for suicide, comprised of fearlessness about death and increased physical pain tolerance, is developed by repeated exposure to any experiences involving exposure to physical pain and/or fear (Van Orden et al., 2010). Fearlessness about death in combination with both thwarted belongingness and perceived burdensomeness results in suicidal intent, or “the level of suicidal desire that is most likely to translate into behavior” (IPTS Hypothesis Three; Van Orden et al., 2010, p. 590). The addition of increased pain tolerance to these conditions allows an individual to translate suicidal intent to suicidal behavior, resulting in a lethal or near lethal suicide attempt (IPTS Hypothesis Four; Van Orden et al., 2010). An important theoretical strength relevant to this arrangement of risk factors is that it explains the relatively lower frequency of more severe levels of suicidality (such as suicide attempts and death by suicide) compared to less severe levels (such as passive suicidal ideation). Combinations of the constructs required to move from passive to active suicidal ideation and from suicidal ideation to suicide attempt are less likely to be present compared to manifestations of any single construct alone.

### *Thwarted Belongingness*

Many empirically supported predictors of suicidal ideation or suicide attempts, such as having few social supports or loss through death or divorce, are related to social connectedness (Agerbo, Nordentoft, & Mortenson, 2002; Cantor & Slater, 1995; Heikkinen, Aro, & Lönnqvist, 1994; Van Orden et al., 2010). These social connectedness variables are proposed to put an individual at risk for suicide because they are observable indicators of a thwarted need to belong (Van Orden et al., 2010). The construct of thwarted belongingness is based on Baumeister and Leary's human psychological need to belong, a "powerful, fundamental, and extremely pervasive motivation" (Baumeister & Leary, 1995, p.1; Van Orden et al., 2010). Thwarted belongingness, in the context of the IPTS, refers to psychological state in which this need to belong is not met (Van Orden et al., 2010). It is a multidimensional, latent construct comprised of two latent facets: 1) loneliness and 2) the absence of reciprocally caring relationships (Van Orden et al., 2010). Empirically supported risk factors such as self-reported loneliness, seasonal variation (relatively fewer social interactions in the spring), living alone, having few social supports, and a non-intact family are proposed to be associated with suicide because they are measurable reflections of the loneliness facet of thwarted belongingness (Cantor & Slater, 1995; Chew & McCleary, 1995; Gove & Hughes, 1980; Heikkinen, Aro, & Lönnqvist, 1994; Roberts, Roberts, & Chen, 1998; Van Orden et al., 2010). Factors such as pulling together after positive



community events (e.g., winning the Super Bowl), caring letters prevention (intervention aimed to increase social connectedness via long-term follow-up), marriage, number of children in marriage, and having close friends are proposed to be protective against suicide by means of protecting against the loneliness factor of thwarted belongingness (Donald et al., 2006; Høyer & Lund, 1993; Joiner, Holler, & Van Orden, 2006; Motto & Bostrom, 2001; Van Orden et al., 2010).

Relevant to the second facet of thwarted belongingness, social withdrawal, living in a single jail cell, domestic violence, loss through death or divorce, childhood abuse, and family conflict are proposed to be associated with suicide because they are measurable indicators of the absence of reciprocal care (Agerbo, Nordentoft, & Mortenson, 2002; Appleby et al., 1999; Cantor & Slater, 1995; Devries et al., 2011; Fazel et al., 2008; Plunkett et al., 2011; Van Orden et al., 2010; Waern, Rubenowitz, & Wilhelmson, 2003). As thwarted belongingness is a dynamic state, it is probable that most people experience this state at some point. Chronic, pervasive thwarted belongingness, as opposed to acute thwarted belongingness, is posited to be the level of thwarted belongingness relevant to the theory (Van Orden et al., 2010).

#### *Perceived Burdensomeness*

Negative life events such as family conflict, physical illness, and

unemployment are consistently shown to be associated with suicide (Kaplan et al., 2007; Kposowa, 2001; Wagner et al., 2003). These negative life events are proposed to be associated with suicide because individuals are likely to develop perceptions that they are a burden to close others in the midst of these experiences (Van Orden et al., 2010). Perceived burdensomeness, in the context of the IPTS, is the perception that one is a burden to all others in their life. It is a dynamic, multidimensional, latent construct comprised of two latent facets: 1) “beliefs that the self is so flawed as to be a liability on others” and 2) “affectively laden cognitions of self-hatred” (Van Orden et al., 2010, p. 583). Empirically documented risk factors for suicide such as homelessness, incarceration, unemployment, physical illness, feelings of expendability or being unwanted, and a belief that one is a burden on their family, are posited to be measurable reflections of the liability facet of perceived burdensomeness (Barak, Cohen, & Aizenberg, 2004; Fazel et al., 2008; Kaplan et al., 2007; Kposowa, 2001; Sabbath, 1969; Van Orden et al., 2010; Woznica & Shapiro, 1990). Similarly, robust risk factors such as low self-esteem, self-blame, shame, and agitation are proposed to be associated with suicide because they are measurable indicators of the self-hate facet of perceived burdensomeness (Chatard, Selimbegović, & Konan, 2009; Fawcett et al., 1990; Foster, 2003; Van Orden et al., 2010). As is the case with thwarted belongingness, most individuals will perceive that they are a burden to others at some point in their lives. The combination of perceptions of being a

burden to *all* significant others and feelings of self-hatred related to these perceptions represents the level of perceived burdensomeness necessary for suicidal ideation (Van Orden et al., 2010).

*Suicidal Desire: Evidence for Hypothesis One and Hypothesis Two among Adults*

In support of Hypothesis One, perceived burdensomeness was found to predict current suicidal ideation in samples of adult outpatients, older adults, and Mexican and Mexican American women and to mediate the relationship between depression and suicidal ideation among older adults (Cukrowicz et al., 2011; Garza & Pettit, 2010; Jahn et al., 2011; Van Orden et al., 2006). Lower levels of current thwarted belongingness were found to linearly decrease the chance of an individual having a lifetime history of suicide attempts in an adult medical sample seeking treatment for opiate dependence (Conner, Britton, Sworts, & Joiner, 2007). Contrary to expectation, such significant findings were not observed for perceived burdensomeness (Conner et al., 2007). Current levels of thwarted belongingness were found to better predict both lifetime history of suicidal ideation and attempts compared to other indicators of social connectedness (i.e., interpersonal conflict, living alone, perceived social support) among adults with substance use disorders (You, Van Orden, & Conner, 2011). More indicators of perceived burdensomeness were present in the content of suicide notes of adults who attempted and died by suicide compared to individuals who attempted and

survived, suggesting that a perception of liability to significant others is implicated in death by suicide (Joiner, Pettit, et al., 2002). In a study of Chinese university students (age 17-24), thwarted belongingness and perceived burdensomeness were both strongly correlated with current suicidal ideation, providing some support for cross-cultural applicability of the IPTS (Zhang et al., 2013). Zhang and colleagues found that perceived burdensomeness was consistently predictive of current suicidal ideation, but the predictive ability of thwarted belongingness varied depending on the regression model used (2013).

In support of Hypothesis Two, the interaction between thwarted belongingness and perceived burdensomeness was found to predict more severe suicidal ideation in an adult sample (Van Orden et al., 2008). Among young adults, the interaction between low family support (proxy for thwarted belongingness) and perceptions that one does not matter (proxy for perceived burdensomeness) was found to predict current suicidal ideation after controlling for depression (Joiner et al., 2009). However, this finding only provides limited support for Hypothesis Two because key constructs were measured by proxy, and may in fact reflect several other potentially confounding factors.

Studies completed during the infancy of the IPTS and before specific causal hypotheses had been spelled out demonstrated the associative roles of thwarted belongingness and perceived burdensomeness with various suicide-related outcomes. These studies were completed with diverse samples, suggesting

the universal applicability of the constructs of the IPTS. However, the cross-sectional and retrospective designs of these studies do not yet allow for the demonstration of the causal roles that thwarted belongingness and perceived burdensomeness are theorized to play in the progression of suicidal ideation and behavior. Because these studies were completed while the constructs and hypotheses were still being developed, not every factor of the IPTS, as it is currently known, was measured. After years of research developing the theory, Joiner and colleagues spelled out specific interactive, causal hypotheses as an invitation for others to test the IPTS. Prospective and comprehensive studies are still needed to test the causal hypotheses of the IPTS.

#### *Acquired Capability for Suicide*

Suicidal desire alone is not sufficient cause for an individual to purposely harm himself or herself. Instead, the IPTS suggests that an individual must also develop acquired capability for suicide in order to make a suicide attempt. Acquired capability for suicide is a multidimensional, latent construct that is comprised of two latent facets: 1) lowered fear of death and 2) increased physical pain tolerance. Acquired capability for suicide is developed via repeated exposure to painful and provocative events (Van Orden et al., 2010). Painful and provocative events (PPE) are any experiences involving exposure to physical pain and/or fear such as NSSI, shoplifting, promiscuous sex, involvement in contact

sports, shooting a gun, hurting animals on purpose, engaging in physical fights, jumping from high places, physical abuse, getting a tattoo, and intravenous drug use (Bender et al, 2011; Joiner, 2005; Joiner et al., 2012). According to the IPTS, a previous suicide attempt represents the most direct pathway to the development of acquired capability for suicide. PPE, such as engagement in NSSI, contribute to acquired capability for suicide via more indirect pathways (Van Orden et al., 2010).

PPE are more predictive of acquired capability for suicide than general negative life events, suggesting that it is the exposure and consequent desensitization to physical pain and/or fear that contributes to an individual's capacity to make a suicide attempt (Smith et al., 2010). Several empirically-supported behavioral risk factors for suicide including impulsivity, exposure to suicidality, combat exposure, past suicide attempt, and childhood maltreatment are suggested to be associated with suicide because they contribute to acquired capability for suicide via habituation and strengthening of opponent processes (Beautrais 2002; Beautrais, 2001; Brent, Johnson, et al., 1994; Exeter & Boyle, 2007; Kang & Bullman, 2008; Van Orden et al., 2010).

The IPTS accounts for the relationship between NSSI and suicidal behavior in that NSSI contributes to acquired capability for suicide via increased pain tolerance (Joiner et al., 2012). Non-significant correlations between psychophysiological data and self-reports of pain insensitivity and fearlessness

point to the importance of an individual's perceptions about their own fearlessness and pain insensitivity in acquired capability for suicide (Smith et al., 2010). Compared to suicide ideators, suicide attempters have been found to report higher levels of pain insensitivity and fearlessness in an adult sample (Smith et al., 2010). Interestingly, there were no significant differences in acquired capability for suicide scores between suicide attempters and controls, supporting the notion that acquired capability for suicide develops separate from desire for death (Smith et al., 2010). This has also been found cross-culturally. In a sample of young Chinese adults, there was a negligible relationship between acquired capability for suicide and current suicidal ideation (Zhang et al., 2013). Number of past suicide attempts and sex (male), both observed risk factors for eventual death by suicide, have also been shown to significantly predict acquired capability for suicide scores (Van Orden et al., 2008).

*Suicidal Intent and Attempt: Evidence for Hypothesis Three and Hypothesis Four among Adults*

Interactions between current perceived burdensomeness and acquired capability for suicide (thwarted belongingness was not measured), but neither alone, were found to predict clinician-rated risk for suicide in an adult sample (Van Orden et al., 2008). These findings emphasize the importance of the presence of both suicidal ideation and acquired capability for suicide for the

outcome of suicidal behavior. In military samples, perceived burdensomeness, acquired capability for suicide, and their interaction term also significantly predicted lifetime suicidal behavior and likelihood of a future suicide attempt (Bryan, Morrow, Anestis, & Joiner, 2010; Bryan, Clemans, & Hernandez, 2012). In these studies, thwarted belongingness did not significantly predict lifetime history of suicidal behavior or likelihood of a future attempt, neither alone nor in the context of perceived burdensomeness and acquired capability for suicide (Bryan et al., 2012; Bryan et al., 2010). Bryan and colleagues (2010) point out that thwarted belongingness may be more of an acute risk indicator of current suicidal behavior, as lifetime suicidal behavior is often the criterion of interest in these studies.

Studies that have examined all three aspects of the IPTS simultaneously in adult samples are few, and the results have been contradictory. Using direct measures of IPTS constructs in an adult (ages 18 to 24) non-clinical military sample, Bryan and colleagues (2010) found that the thwarted belongingness by perceived burdensomeness by acquired capability for suicide interaction was not associated with suicidal history. Monteith, Menefee, Pettit, Leopoulos, and Vincent (2013) tested the three-way interaction of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide among military psychiatric inpatients with a mean age of 38 years using direct measures. However, they did not find that the three-way interaction predicted number of



lifetime suicide attempts. In contrast, Joiner and colleagues (2009) found that the three-way interaction of IPTS constructs, using proxy measures, distinguished between suicide ideators and attempters in a young adult clinical sample with an average age of 22 years.

Research supporting the final hypotheses of the IPTS is just in its beginning stages. The specific hypotheses of the IPTS were only just recently published in 2010 (Van Orden et al., 2010). Early studies have demonstrated the validity of acquired capability for suicide as a construct and illuminated the role of pain and fear in negative life events that are consistently shown to be associated with suicide. Via acquired capability for suicide, the IPTS accounts for associations and differences between NSSI and suicide and also explains why a history of previous suicide attempts and being a man are strong predictors for eventual death by suicide. As was the case with early studies demonstrating the validity of thwarted belongingness and perceived burdensomeness, not every factor of the IPTS, as it is currently known, was measured in studies on acquired capability for suicide. Comprehensive, prospective studies are still needed to test the interactive role of acquired capability for suicide in the progression of suicidal behavior.

#### *Summary of the IPTS Among Adults*

Research among adults suggests that thwarted belongingness and

perceived burdensomeness are associated with suicidal ideation and suicide attempts, and acquired capability for suicide has also been shown to differentiate between suicide ideators and attempters. Findings are less consistent regarding how the interactions between these constructs explain the progression from suicidal ideation to suicide attempt. Support for IPTS hypotheses relevant to the development of suicidal ideation among adults is promising, but many studies are not designed to test the specific temporal hypotheses of the theory. Specifically, most studies examine cross-sectional associations among these variables, and there is an absence of prospective longitudinal data that demonstrate the interplay of these variables. Results in support of IPTS hypotheses relevant to suicidal intent and suicide attempts are mixed due to study designs that test only narrow components of the theory (e.g., measuring thwarted belongingness without perceived burdensomeness) and use of proxies for measurement of key constructs. Yet, when proxies are used to measure the constructs central to IPTS, the interactive hypotheses are supported. The current status of the IPTS literature could suggest that constructs themselves or the interactive hypotheses are still in need of revision. Regardless of which aspects of the IPTS need fine tuning, the common avenue for achieving this task would be through more research guided by the tenets of the IPTS.

### *Building upon Previous Theoretical Perspectives*

The IPTS is consistent with and builds upon previous theoretical perspectives on suicide. While there is some overlap between theories with regard to the roles emotional pain and hopelessness play in suicidality, the IPTS differs in that it yields predictions for specific forms of suicidal behavior as opposed to only predicting death by suicide (Ribeiro et al., 2013). The IPTS also specifies the role of hopelessness in the development of suicidal ideation; it is hopelessness specifically about the simultaneous experience of thwarted belongingness and perceived burdensomeness that leads to active suicidal ideation. Based on the logic of other theories, the only difference between those who think about suicide and those who die by suicide is the level of suicidal ideation they possess. The IPTS suggests that, because of the frightening and painful nature of self-injurious behaviors, there must be another factor, acquired capability for suicide, which allows the transition from suicidal ideation to suicide attempt (Ribeiro et al., 2013).

### **The IPTS in Adolescence**

There are few studies in the adolescent literature designed to test components of the IPTS. The constructs central to the IPTS are posited to be applicable across the lifespan, so it is reasonable to hypothesize that the IPTS will also apply to adolescents (Joiner, 2005). However, adolescence is a period of

great physical, cognitive, emotional, social, and behavioral change distinct from adulthood (American Psychological Association, 2002).

### *Differences Between Adult and Adolescent Suicidality*

Some research suggests that adult suicide attempters differ from adolescent suicide attempters with regard to psychiatric diagnosis, severity of intent, and level of certainty that their actions would result in death (Parellada et al., 2008). Given basic developmental and suicide-specific differences in adults and adolescents, it cannot be assumed that, in the earlier developmental stage, IPTS constructs will interact in ways consistent with what the IPTS hypothesizes in adults.

Adolescence is often characterized by impulsivity, but the actual role of impulsivity in suicidal behavior is an area of debate (Muehlenkamp & Gutierrez, 2004). While some may argue that impulsive individuals are at risk because they are more likely to make a suicide attempt impulsively, others suggest that impulsivity indirectly puts an adolescent at risk for suicide attempt via increased exposure to PPE, which in turn, contribute to an individual's acquired capability for suicide (Parellada et al., 2008; Witte et al., 2008). Witte and colleagues (2008) found that planned suicide attempts among adolescents were more medically serious than unplanned (i.e., "spur of the moment") suicide attempts. Additionally, only 10% of their sample attempted without planning, suggesting

that impulsive suicide attempts may not be typical among adolescents (Witte et al., 2008). Those who planned a suicide attempt tended to engage in more impulsive behaviors (i.e., risky sexual behaviors, substance use) than those who attempted without planning (Witte et al., 2008). However, the medically serious suicide attempts themselves were not a result of an impulsive decision. Rather, impulsivity played a role in that these adolescents were more likely to be exposed to PPE. The exposure and habituation to the fear and pain associated with PPE put these adolescents at higher risk for suicide attempt by contributing to their acquired capability for suicide (Witte et al., 2008).

#### *Evidence By Proxy Among Adolescents*

Measurable indicators, or proxies, of thwarted belongingness (e.g., self-reported loneliness), perceived burdensomeness (e.g., self-reported feelings of expendability), and acquired capability for suicide (e.g., lifetime history of suicide attempt) and their associations with suicidal ideation and suicide attempt are frequently studied among adolescents. The IPTS offers a useful framework to explain results from these studies. To date, exploration of the IPTS in adolescence has been limited to use of proxy variables as measures of key constructs. No study has utilized specific measures of the theory's central constructs to examine the applicability of the IPTS among adolescents (Timmons et al., 2011).

*Thwarted Belongingness*

Proxies for thwarted belongingness such as paternal attachment, family cohesion, and family adaptability distinguished between those with and without lifetime history of suicide attempt in a sample of adolescents with a history of inpatient psychiatric care (Sheftall et al., 2013). Timmons and colleagues (2011) found that belonging, a proxy for thwarted belongingness, mediated the relationship between parental displacement (e.g., divorce, abandonment, death of parent) and suicide attempt among a community sample of young adults (age 18-23). In a second study, they found that loneliness, one of the facets of thwarted belongingness, interacted with parental displacement to predict suicide attempts among young adults in the community (Timmons et al., 2011). Timmons and colleagues (2011) did not control for depression severity in their studies.

When Lasgaard and colleagues controlled for depression severity in their study of high school students, they found that loneliness was no longer associated with suicidal ideation (2011). Jones, Schinka, van Dulmen, Bossarte, and Stewart (2011) also found that the relationship between peer-specific loneliness and suicidal ideation and behavior was mediated by depression severity and externalizing behaviors. On the other hand, Lewinsohn, Rohde, and Seeley (1994) found that the significant relationship between low family social support and future suicide attempt remained even after controlling for depression. For some Asian-American adolescents, strong school and peer relationships were actually

predictive of, rather than protective from, suicide attempts, which raises questions regarding the cross cultural applicability of the IPTS (Wong & Maffini, 2011).

### *Perceived Burdensomeness*

Constructs related to perceived burdensomeness are relatively less frequently studied among adolescents engaging in suicidal behaviors. Proxies for perceived burdensomeness among adolescents tend to be primarily examined in the context of the adolescent's family rather than in a more pervasive sense (i.e., extending to all relationships) as the IPTS suggests. Feelings of expendability, specifically a sense of being a burden on one's family, are more likely to occur among adolescents experiencing suicidal ideation or behavior (Woznica & Shapiro, 1990).

### *Thwarted Belongingness and Perceived Burdensomeness*

Some studies utilized one proxy variable to represent both thwarted belongingness and perceived burdensomeness. Cero and Sifers (2013a) found that self-esteem, a proxy for thwarted belongingness and perceived burdensomeness, mediated the relationship between physical abuse and suicide attempts. Involvement in community service activities, suggested to be protective against perceived burdensomeness and thwarted belongingness, moderated the aforementioned relationship (Cero & Sifers, 2013a). Contrary to expectation, out

of home placement, a proxy for both thwarted belongingness and perceived burdensomeness, was found to be associated with lower levels of suicidal ideation in a sample of adjudicated adolescent delinquents (Krestchmar & Flannery, 2011). Reviews suggest that suggest that childhood sexual abuse, physical abuse, emotional abuse, and neglect are associated with suicidal ideation and suicide attempts in adolescence by means of contributing to thwarted belongingness and perceived burdensomeness (King and Merchant, 2008; Miller, Esposito-Smythers, Weismoore, & Renshaw, 2013).

#### *Acquired Capability for Suicide*

Research also suggests that there is a relationship between increased acquired capability for suicide and suicide attempts among adolescents. In a sample of adolescents with a lifetime history of injectable substance use and clinical levels of depression, injection substance use, as opposed to painless methods of substance use, was associated with lifetime suicide attempt but not with suicidal ideation or suicide plan (Liu et al., 2014). Liu and colleagues (2014) suggested that substance injection served to habituate the adolescents to physical pain, thus increasing their acquired capability for suicide. In cross-sectional studies with adolescent psychiatric inpatients, other proxies for acquired capability for suicide such as lifetime frequency of NSSI (Klonsky et al., 2013), longer history of NSSI, greater number of NSSI methods used, and self-reported



absence of physical pain experienced during NSSI (Nock et al., 2006) were associated with lifetime history of suicide attempt. Longitudinally, NSSI and history of suicide attempt (both proxies for acquired capability for suicide) demonstrated associations with post-discharge suicide attempts in adolescent psychiatric inpatient samples (Czyz, Berona, & King, 2014; Prinstein et al., 2008).

Adolescent suicide attempters have been found to be more likely to engage in violent behaviors (i.e., physical fighting that results in injury, dating violence, carrying a weapon) relative to suicide ideators (Stack, 2013). In the context of the IPTS, violent behaviors can be conceptualized as PPE. These PPE indirectly contribute to an adolescent's increased risk for suicide attempt by contributing to acquired capability for suicide. In addition to its associations with thwarted belongingness and perceived burdensomeness, childhood abuse can also contribute to acquired capability for suicide. Childhood abuse via more painful methods is associated with a greater likelihood of suicide attempt relative to abuse via less painful methods (Bryant & Range, 1997; Stepakoff, 1998). In the framework of the IPTS, the aforementioned factors are associated with suicide attempts because the experience of these painful and fear-inducing events increases an adolescent's acquired capability for suicide, thus enabling them to act on suicidal ideation.

### *Interactions*

To our knowledge, only one study has examined the three-way thwarted belongingness by perceived burdensomeness by acquired capability for suicide interaction in an adolescent sample (Czyz et al., 2014). Using proxy measures for key constructs, Czyz and colleagues (2014) found that the three-way interaction of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide did not longitudinally predict suicide attempts among a sample of adolescent psychiatric inpatients.

### *Sex Differences*

Adult studies suggest that women are more susceptible to experiencing higher levels of thwarted belongingness and perceived burdensomeness, while men are more likely to develop acquired capability for suicide because they are typically exposed to more painful and fear-inducing situations (e.g., violent sports) and have higher pain and fear tolerance (Berkley, 1997; Crossley & Langridge, 2005; Nolen-Hoeksema, Larson, & Grayson, 1999; Van Orden et al., 2010). Parenting studies show that parental support, mediated by self-esteem, is protective against suicide attempts for adolescent girls but not for adolescent boys (Cero & Sifers, 2013b). Increased parental support may be protective against suicide attempts for girls because it protects against feelings of thwarted belongingness and perceived burdensomeness, cognitive-affective states to which

adolescent girls are already more susceptible (Cero & Sifers, 2013b). In the same study, boundary setting (i.e. preventing exposure to painful and fear-inducing experiences), mediated by violence exposure, is protective against suicide attempts for adolescent boys but not adolescent girls (Cero & Sifers, 2013b). This type of boundary setting may be protective against suicide attempts for adolescent boys because it prevents opportunities that contribute to acquired capability for suicide, the aspect of the IPTS boys are more likely to develop. Additional sex differences in the context of the IPTS were revealed in a longitudinal study by Czyz and colleagues (2014). The investigators found that, for girls who were hospitalized in an inpatient psychiatric setting, low acquired capability for suicide and high thwarted belongingness were predictive of suicide attempts at 3-months post-discharge; for boys, high acquired capability for suicide and high perceived burdensomeness were predictive of suicide attempts at 3 months post-discharge (Czyz et al., 2014).

#### *Summary of the IPTS Among Adolescents*

Overall, these results are promising for support of the constructs of IPTS among adolescents. Measurable indicators for thwarted belongingness, perceived burdensomeness, and acquired capability for suicide have been shown to be associated with suicidal ideation and suicide attempts among adolescents. However, the studies discussed in this section were limited by their narrow

application of the IPTS. Measurable indicators of thwarted belongingness and perceived burdensomeness were found to be associated with both suicidal ideation and suicide attempts among adolescents. According to the hypotheses of IPTS, these indicators should only be associated with suicide attempts in the context of sufficient acquired capability for suicide, which was not measured in these studies. Indicators of acquired capability for suicide were only found to be associated with suicide attempts (and not suicidal ideation), which initially may seem to be consistent with the hypotheses of the IPTS. However, acquired capability for suicide should only contribute to suicide attempts in the context of high levels of thwarted belongingness and perceived burdensomeness, which were not measured in these studies. Research directly testing the constructs specific to the IPTS among adolescents, would provide useful information regarding the applicability of the interactive nature of the IPTS to adolescents.

Inconsistent findings regarding interpersonal factors in the context of adolescent suicidality may be due to “differing samples, measurement instruments, study time spans, and conceptualizations of important constructs for assessment” (King & Merchant, 2008, p. 10). Findings were inconsistent regarding the roles of family support and peer support in adolescent suicidality, which could suggest that the experience of thwarted belongingness need not be pervasive (i.e., extending to all relationships) for it contribute to suicidal ideation in adolescence. However, lack of social support is just one possible pathway to

thwarted belongingness. In terms of study design, the use of proxies as measures of the constructs central to the IPTS is not inherently problematic because these proxy variables are, in fact, how in the real world individuals develop thwarted belongingness, perceived burdensomeness, and acquired capability for suicide. The problems with using these naturally occurring situations are that: 1) there may be other factors associated with the event that present a confound and 2) there are many paths to thwarted belongingness, perceived burdensomeness, and acquired capability for suicide. By using a proxy variable, only a small portion of those who experience the construct of interest will be captured because there are actually many pathways that lead to that construct. By utilizing instruments specifically designed to measure the constructs central to the IPTS among adolescents, more of the pathways that lead to the development of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide will be captured, and the interactive hypotheses can be better tested with a reduced chance of inconsistent findings.

In addition to offering an organizing framework for existing findings, the IPTS would be particularly useful if it is also able to explain variance in suicidality beyond that of known risk factors. However, well-known risk factors for suicidal ideation and suicide attempts such as depression and hopelessness are not consistently controlled in studies of the IPTS (for example, Cero & Sifers, 2013a; Nock et al., 2006; Sheftall et al., 2013; Timmons et al., 2011). In studies

that do include such covariates, relationships between proxies for IPTS constructs and suicidal phenomena were no longer significant after controlling for depression severity (Jones et al., 2011; Lasgaard et al., 2011). Thwarted belongingness and perceived burdensomeness are examples of distorted cognitive states that are known to be elevated in depression. Thus, the results may be driven by depression severity. Additionally, hopelessness is another well-known risk factor for suicidal ideation and suicide attempt (Beck, Brown, & Steer, 1989). Without consistent statistical control of depression severity and hopelessness, it is difficult to draw conclusions about the additive utility of the IPTS.

### *Implications*

If this parsimonious and increasingly influential theory applies in adolescence, the IPTS will provide a useful framework to guide further research with this population. Additionally, it could provide information about whether there is continuity in the relationships among these variables and suicidality from adolescence to adulthood. Additionally, the applicability of the IPTS in adolescence would have significant clinical implications regarding early detection of risk and the development of intervention and prevention strategies. Despite knowledge of risk factors, the field still lacks empirically validated interventions that effectively prevent reattempts among adolescents (Brent et al., 2013). Other self-injury phenomena, such as suicidal ideation or NSSI, are rarely the focus of

intervention and are often regarded as mediators for treatment failure or misclassified as suicide attempts (Spirito & Esposito-Smythers, 2006; Klonsky et al., 2013). According to Joiner's theory, the therapeutic needs of an individual experiencing passive suicidal ideation would differ from the needs of an individual who possesses intent to engage in a suicidal act. Interventions could be tailored to meet the needs of the individual based on where they fall in the model.

### **Primary Aims and Hypotheses**

Aims were organized into two studies. Study 1 aimed to validate the use of IPTS-specific measures in this population. Study 2 aimed to test hypotheses generated from the IPTS.

Study 1: Aim I: Preliminary analysis of psychometric properties of the Interpersonal Needs Questionnaire (INQ) and Acquired Capability for Suicide Scale (ACSS) among adolescents. *These scales were examined as originally published. As stronger psychometric properties have been reported for the 15-item INQ and 7-item ACSS, factors for the shorter scales were examined when the factor structures for the original scales were uninterpretable.*

Hypothesis I: The INQ and the ACSS obtained from adolescents will demonstrate internal reliability with parallel factors to those derived in adults.

Hypothesis II: There will be evidence for construct validity of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide with the following hypothesized associations:



- (a) Thwarted belongingness and perceived burdensomeness will be strongly correlated with each other with weaker but significant correlations with acquired capability.
- (b) All three IPTS variables will be associated with lifetime suicide attempt variables.
- (c) Thwarted belongingness and perceived burdensomeness, but not acquired capability for suicide, will be associated with depression.
- (d) Thwarted belongingness (but not perceived burdensomeness or acquired capability) will be negatively associated with global social support.
- (e) Perceived burdensomeness (but not thwarted belongingness or acquired capability) will be positively associated with guilt.
- (f) Acquired capability (but not thwarted belongingness or perceived burdensomeness) will be positively associated with NSSI frequency and suicide attempt lethality.

(g) In the event of cross-construct relationships, controlling for the confound of the other construct(s) will diminish these unexpected relationships.

Study 2: Aim II: To test the hypotheses generated from the IPTS.

Hypothesis III: Thwarted belongingness and perceived burdensomeness will differentiate between adolescents with and without suicidal ideation.

Hypothesis IV: The interaction of thwarted belongingness and perceived burdensomeness will distinguish between adolescents with passive suicidal ideation and active suicidal ideation.

Hypothesis V: Acquired capability for suicide will differentiate between adolescents with and without suicidal intent.

Hypothesis VI: The interaction of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide will be associated with severity of suicidal symptoms.

Hypothesis VII: Increasing levels of acquired capability for suicide scores will be observed as severity of self-injurious behavior increases among three groups: 1) adolescents with a negative history of both suicide attempt and NSSI, 2) adolescents with a history of NSSI only, and 3) adolescents with a history of suicide attempt regardless of NSSI history.

Hypothesis VIII: Acquired capability for suicide among attempters with medically serious suicide attempts will be higher than that of suicide attempters with less serious suicide attempts.

## **CHAPTER THREE**

### **Method**

#### **PARTICIPANTS**

The final sample of participants consisted of 147 adolescents ages 12 to 17 who presented for inpatient psychiatric services at Children's Medical Center. The sample was primarily girls and non-Hispanic Caucasian. Sample characteristics are presented in Table 1. Participants were recruited from a pool of 489 consecutive admissions to an inpatient psychiatric unit; 268 (54.8%) met eligibility criteria. Sixty six percent of those eligible ( $n = 176$ ) were approached for recruitment. The primary reason that the remaining 34% of eligible admissions were not approached was due to limited availability of a part-time research assistant. Of those approached, 85% ( $n = 150$ ) consented to participation, with the most common reason for non-participation being parent/guardian concern that participation would interfere with their child's engagement in treatment (65% of those who refused consent). Other reasons for non-participation included concern that completing study materials would be time-consuming (19%), adolescents not wanting to disclose further information about self-harm history (8%), parent/guardian not wanting their child's medical record accessed by research personnel (4%), or parent/guardian choosing to discharge their child from the facility (4%). Adolescents recruited for the study ( $n = 150$ ) did not significantly differ from adolescents who were eligible but not recruited ( $n = 118$ ) on

demographic characteristics such as age,  $t(266) = .74, p = .46$ , sex,  $\chi^2(1, n = 268) = .37, p = .54$ , and race/ethnicity,  $\chi^2(1, n = 268) = 1.14, p = .77$ . Missing data on key variables for three participants resulted in a final sample of 147.

### **Inclusion and Exclusion Criteria**

#### *Inclusion*

- 1) Age 12 – 17 and attending school
- 2) May be receiving any medication(s), other treatment(s), or none
- 3) English-speaking participants and their parents

#### *Exclusion*

- 1) Concurrent intellectual disability, active psychosis, neurological disorders that would impact ability to complete questionnaires.
- 2) Concurrent acute substance/alcohol intoxication
- 3) Delayed more than 2 years from age-appropriate grade level

### **PROCEDURES**

Participants were recruited during their inpatient stay at Children's Medical Center. They were asked to complete self-report questionnaires. These questionnaires were comprised of validated measures to assess their depressive symptoms (Quick Inventory of Depressive Symptomology-SR-A-17),

hopelessness (Hopelessness Scale for Children), perceived social support, (Multidimensional Scale of Perceived Social Support), NSSI frequency (Inventory of Statements About Self-Injury), thwarted belongingness and perceived burdensomeness (Interpersonal Needs Questionnaire), and acquired capability for suicide (Acquired Capability for Suicide Scale). Suicidality data was gathered by investigator interview and review of records (Columbia-Suicide Severity Rating Scale). In addition to basic demographic information, psychiatric and abuse history were gathered from chart review.

### **Study 1 Measures**

#### *Thwarted Belongingness and Perceived Burdensomeness*

***Thwarted belongingness*** and ***perceived burdensomeness*** were measured using the Interpersonal Needs Questionnaire (INQ, Van Orden, Cukrowicz, Witte, & Joiner, 2012). The INQ in its original form, developed by Joiner's research group, is a 25-item self-report measure intended to assess a respondent's current feelings of thwarted belongingness and perceived burdensomeness. Prior to the publication of psychometric properties of the INQ, various versions of this scale of differing length (i.e., as short as 12 items) were used in adult research. Joiner's research group developed the items based on the hypotheses of the IPTS. Item content for the thwarted belongingness subscale came from Baumeister and

Leary's (1995) "need to belong" and a self-report instrument measuring a similar construct, Inclusionary Status (Leary, Terdal, Tambor, & Downs, 1995). Content of items in the Mattering to Others Questionnaire (Marshall, 2001) contributed to the development of perceived burdensomeness items. The INQ has a Flesch-Kincaid grade reading level of 3.2.

In adult samples, the thwarted belongingness and perceived burdensomeness subscales were found to correlate as expected with assessments of negative affect and depressive symptoms (Bryan et al., 2012; Bryan et al., 2010; Van Orden et al., 2008). Among young adults and older adults, convergent validity has been demonstrated for both the thwarted belongingness (i.e., associated with loneliness and social support) and perceived burdensomeness (i.e., associated with social worth) subscales (Van Orden et al., 2012).

Findings regarding divergent validity in adult samples have been mixed. Adequate divergent validity was demonstrated for both subscales among older adults (Van Orden et al., 2012). However, results among younger adults suggested inadequate divergent validity, as thwarted belongingness was associated with constructs hypothesized to be related to perceived burdensomeness and vice versa (Van Orden et al., 2012). Consistent with the IPTS' hypotheses, these two subscales were also found to predict current and past suicidal ideation and suicide attempt more effectively than other known risk factors for suicide (Bryan et al., 2010; Van Orden et al., 2008).

Among adult samples, internal consistencies of both scales were found to be good ( $\alpha \geq .75$ ; Bryan et al., 2010; Bryan et al., 2012; Hill et al., 2014; Van Orden et al., 2008). Exploratory factor analyses have shown that use of a subset of items from the INQ (nine thwarted belongingness and six perceived burdensomeness) allowed for more precise measurement of thwarted belongingness and perceived burdensomeness (Van Orden et al., 2012). Given the lack of existing reports of psychometric properties of the INQ among adolescents, all 25 of the original items were utilized in this study.

On the 25-item INQ utilized in this study, ten items measured thwarted belongingness, and fifteen items measured perceived burdensomeness. Each item consisted of a statement relevant to either thwarted belongingness (e.g., “These days other people care about me”) or perceived burdensomeness (e.g., “These days I feel like a burden on the people in my life”). The respondent was instructed to rate each statement on a Likert scale from 1 (“not at all true of me”) to 7 (“very true for me”), where a higher score on each item represented higher levels of its respective construct.

#### *Acquired Capability for Suicide*

***Acquired capability for suicide*** was measured using the Acquired Capability for Suicide Scale (ACSS; Bender et al., 2007; Ribeiro et al., 2014; Van Orden et al., 2008). The original ACSS, also developed by Joiner’s research



group, is a 20-item self-report measure intended to assess a respondent's fearlessness of death, perceived pain tolerance, and exposure to PPE. Similar to the INQ, versions of the ACSS of varying lengths (i.e., as short as 7 items) have been used over the years.

Unlike the INQ, the ACSS does not yield two subscale scores for the two proposed facets of acquired capability for suicide. Consistent with the IPTS, the ACSS was found to negatively correlate with the Fear of Suicide subscale of the Reasons for Living Inventory ( $r = -.48, p < .0001$ ; Linehan, Goodstein, Nielsen, & Chiles, 1983) and positively correlate ( $r = .79, p = .007$ ) with an item from the Beck Scale for Suicide Ideation (BSS; Beck & Steer, 1991) that asks about courage to kill oneself in adult samples (Bender et al., 2007; Van Orden et al., 2008).

Consistent with the theory that acquired capability for suicide develops separately from current distress or depressive symptoms, this construct has not been found to correlate with mood (Bryan et al., 2010). The scale was not correlated with suicidality ( $r = .09, p = .35$ ; Bender et al., 2007; Van Orden et al., 2008) or depression severity ( $r = -.11, p = .24$ ; Bender et al., 2007; Van Orden et al., 2008) in adult samples. This 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). Recently, results from confirmatory factor analyses in adult samples have suggested the use of a seven-item version of the scale, the Acquired Capability for Suicide Scale – Fearlessness about Death

(ACSS-FAD; Ribeiro et al., 2014) intended to solely measure the fearlessness about death component of acquired capability for suicide. Given that the ACSS has never been used or validated among adolescents, all 20 of the original items were utilized in this study.

On the 20-item ACSS used in this study, each item consisted of a statement that taps one of the aforementioned relevant aspects of acquired capability for suicide (e.g., "I can tolerate a lot more pain than most people"). The respondent was instructed to rate each statement on a Likert scale from 0 ("not at all like me") to 4 ("very much like me"). A higher score on each item represented a higher level of acquired capability for suicide. The ACSS has a Flesch-Kincaid grade reading level of 2.8.

### *Depression Severity and Guilt*

***Depression severity*** 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), a 17-item self-report instrument intended to assess severity of the nine core symptoms of Major Depressive Disorder as defined by the DSM-IV-TR (APA, 2000). The adolescent version was adapted from the original 16-item QIDS by adding a 17<sup>th</sup> item measuring irritability to reflect the DSM-IV-TR diagnostic criteria of disturbed mood in children and

adolescents presenting as either sadness or irritability (APA, 2000; Moore et al., 2007; Rush et al., 2003).

The QIDS-A-SR-17 has been found to demonstrate a strong correlation with the Children's Depression Rating Scale Revised (CDRS-R, Poznanski & Mokros, 1996), a gold standard measure of adolescent depression ( $r=.63$ ; Haley et al., 2009; Hughes et al., 2009). The QIDS-A-SR-17 has demonstrated strong internal consistency ( $\alpha = .84$ ) and acceptable reliability ( $\alpha = .78$ ; Haley et al., 2009). The 16-item QIDS-SR has been found to be equally as reliable as a clinician-rated measure of depression ( $\alpha \geq 0.8$ ) and particularly effective at discriminating moderate levels of depression (Bernstein et al., 2010). Results from classical test theory analyses suggested that the addition of the irritability item did not significantly reduce reliability on the QIDS-SR-A-17 (Haley et al., 2009). As it is closely related to shame, the item on the QIDS intended to measure **guilt** was utilized in Study I analyses of convergent and divergent validity of IPTS measures.

### *Suicidal Behavior*

Lifetime suicidal behavior and medical severity of suicide attempts were measured using the Columbia Suicide Severity Rating Scale (C-SSRS; Posner et al., 2008). The C-SSRS, which was designed to better differentiate between varying domains of suicidal ideation and behavior, measures four

constructs: severity of ideation, intensity of ideation, suicidal behavior, and lethality. Among adolescents and adults, the C-SSRS has been found to have good convergent and divergent validity with other assessments of suicidal ideation and behaviors (Posner, Brown, Stanley, et al., 2011). The C-SSRS demonstrated 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, Brown, Stanley, et al., 2011).

The ideation and suicidal behavior subscales were found to be sensitive to change over time, and the ideation intensity portion of the measure was found to have moderate to strong internal consistency (Posner, Brown, Stanley, et al., 2011). Among adolescent suicide attempters, the worst-point lifetime suicidal ideation as measured by the C-SSRS was predictive of suicide attempt during the course of participation in a research study while the Scale for Suicide Ideation did not demonstrate equivocal efficacy in predicted suicide attempts (Posner, Brown, Stanley, et al., 2011). Participants with the two highest levels of ideation severity (intent or intent with plan) at baseline had higher odds for attempting suicide during the study (Posner, Brown, Stanley, et al., 2011).

In Study 1, the Suicidal Behavior portion of the C-SSRS was utilized to assess *lifetime history of actual suicide attempts* (yes/no; defined as a “potentially self-injurious act committed with at least some intent to die”), *number of lifetime actual suicide attempts, number of lifetime aborted attempts*

(“when a person begins to take steps toward making a suicide attempt, but stops themselves before they have engaged in any self-destructive behavior”), ***number of lifetime interrupted attempts*** (“when the person is interrupted [by an outside circumstance] from starting the potentially self-injurious act”), and ***lethality/medical damage*** of each participant’s most lethal lifetime suicide attempt rated on a scale of 0 (no physical damage) to 5 (death). Although the C-SSRS measures medical severity data for three attempts (i.e., first attempt, most lethal attempt, and most recent attempt), the decision to utilize medical severity for the most lethal lifetime attempt was based on the assumption that there would be more fear and pain associated with a more medically severe attempt, thus contributing more to acquired capability for suicide. In the case of multiple attempters, their most recent attempt or first attempt may not have been their most medically severe attempt. If medical severity of the most recent attempt or first attempt were utilized, the impact of the most lethal attempt would have not been properly accounted for and may have subsequently added noise to analyses.

A composite score, ***total attempts of any kind***, was computed based on the combined total number of lifetime actual suicide attempts, aborted attempts, and interrupted attempts. Square root transformations were used to correct for non-normality of total attempts of any kind, number of lifetime actual suicide attempts, number of lifetime aborted attempts, and number of lifetime interrupted attempts.

### *NSSI Frequency*

***NSSI frequency*** was measured using the Behaviors section of the Inventory of Statements About Self-Injury (ISAS; Klonsky & Glenn, 2009), which assesses the number of times a respondent has engaged in different types of NSSI methods in their lifetime. A total NSSI frequency score was computed based on the sum of all responses for each method (i.e., cutting, biting, burning) in this section. A square root transformation was used to correct for non-normality of NSSI frequency scores.

### *Social Support*

The Multidimensional Scale of Perceived Social Support (MSPSS; Zimet, Dahlem, Zimet, & Farley, 1988), a 12-item self-report instrument, was used to assess perceptions regarding the availability and adequacy of ***social support*** (i.e., from family, friends, and a significant other). Validity, reliability, and factor structure of the MSPSS have been examined and found to be consistent with the construct in adolescents (Canty-Mitchell & Zimet, 2000). Each of the three sources of social support was measured by four statements. Participants were instructed to rate each statement on a scale of one (“very strong disagree”) to seven (“very strong agree”) with higher scores indicating greater levels of

perceived social support. Responses for all 12 items were averaged to compute a global social support score.

## Study 2 Measures

*Thwarted belongingness, perceived burdensomeness, and acquired capability for suicide* were measured by the INQ and ACSS, as described in Study 1. Means for these variables were calculated using the 15-item INQ and 7-item ACSS-FAD. **Depression severity** was also assessed using the QIDS, as described in Study 1.

### *Hopelessness*

**Hopelessness** was measured using the Hopelessness Scale for Children (HSC; Kazdin, Rodgers, & Colbus, 1986), a 17-item true/false self-report inventory intended to measure hopelessness or negative expectations for the future. Among a psychiatrically diverse sample of adolescents, the HSC was found to have good internal consistency ( $\alpha = .84$ ) among suicide attempters and acceptable internal consistency ( $\alpha = .69$ ) among controls (Spirito et al., 1988). Adolescent suicide attempters scored significantly higher on the HSC than both control and outpatient peers (Spirito et al., 1988). Suicide attempters' scores on the HSC have been found to be positively correlated with depression and a depressive attributional style (Spirito et al., 1988). These findings suggest that the

HSC is a useful research tool among adolescent suicide attempters (Spirito et al., 1988).

Nine of the items on the HSC are statements that endorse hopelessness and eight of the items are statements that do not endorse hopelessness (these items are reverse scored). A total hopelessness score was calculated based on the sum of responses to the 17 items. A higher score on the HSC reflected a greater level of hopelessness.

#### *Suicidal Ideation and Behavior*

In addition to the C-SSRS, an additional strategy to assess suicidality was used to ensure that the hypotheses specified could be tested. In Study 2, suicidal symptoms were measured by an item intended to assess severity of suicidal ideation in the past week from the Quick Inventory of Depressive Symptomatology – Adolescent Version Self-Report (QIDS-A-SR-17; Rush et al., 2003; Rush et al., 2006). Possible responses were:

“0 - I do not think of suicide or my own death” (no suicidal ideation)

“1 - I feel that life is empty or wonder if it’s worth living” (passive suicidal ideation)

“2 - I think of suicide or my own death several times a week for several minutes” (active suicidal ideation)



“3 - I think of suicide or my own death several times a day, or I have made plans or tried to commit suicide” (suicidal intent)

In Hypothesis III analyses, responses of 0 were coded as signifying the *absence of suicidal ideation*. Responses of 1 and above were coded as signifying the *presence of suicidal ideation*. For Hypothesis IV analyses, responses of 1 were coded as signifying *passive suicidal ideation*. Responses of 2 were coded as signifying the presence of *active suicidal ideation*. Participants with responses of 0 or 3 were excluded from Hypothesis IV analyses. In Hypothesis V analyses, responses of 0 – 2 were coded as signifying the *absence of recent suicidal intent*. Responses of 3 were coded as signifying the *presence of recent suicidal intent*. In Hypothesis VI analyses, *suicidal symptom severity* was measured on a continuum and assessed using the QIDS suicide item previously described. Scores ranged from 0 (denial of thoughts of suicide or own death) to 3 (acknowledgment of frequent thoughts of suicide and/or a plan or attempt). When suicide-related variables that were measured by the QIDS suicide item were used in any analysis that also included depression, the total on the QIDS was adjusted to remove the contribution from this item.

For Hypothesis VII analyses, *lifetime history of actual suicide attempts* (yes/no) was assessed using the Suicidal Behavior portion of the C-SSRS as previously described for Study 1. *Lifetime NSSI history* (yes/no; “a potentially self-injurious act committed purely for other reasons / without ANY intention of

killing themselves [like to relieve stress, feel better, get sympathy, or something else to happen]”) was also measured by the Suicidal Behavior portion of the C-SSRS. In Hypothesis VIII analyses, *lethality/medical damage* of each participant’s most lethal lifetime suicide attempt was measured utilizing the C-SSRS, as described in Study 1.

### **Power analyses**

Based on literature suggesting that five subjects per each item are required for factor analyses (Bryant and Yarnold, 1995; Gorsuch, 1983; MacCallum, Widaman, Zhang & Hong, 1999; Everitt, 1975; Arrindell & van der Ende, 1985; Gorsuch, 1974), 125 participants were required for validation of the INQ and the ACSS (Study 1).

Analyses for Study 2 were powered for the hypotheses relevant to differentiation between adolescents with and without suicidal ideation and differentiation between adolescents with and without suicidal intent. Estimates were based on the reported literature that indicates medium to large effect sizes for the relationship between key IPTS constructs and suicidal ideation and suicide attempt (Van Orden et al., 2008). To detect a difference of a medium to large effect size, 13-51 participants were required in each group.

## **CHAPTER FOUR**

### **Study 1 Results**

#### **Aim I: Preliminary analysis of psychometric properties of the Interpersonal Needs Questionnaire (INQ) and Acquired Capability for Suicide Scale (ACSS) among adolescents.**

These scales were examined as originally published. As stronger psychometric properties have been reported for the 15-item INQ and 7-item ACSS, factors for the shorter scales were examined when the factor structures for the original scales are uninterpretable.

**Hypothesis I: The INQ and the ACSS obtained from adolescents will demonstrate internal reliability with parallel factors to those derived in adults.**

#### *INQ Factor Analyses*

The 25 items of the INQ were subjected to exploratory factor analysis (EFA) using maximum likelihood (Tables 3 and 4). EFA revealed the presence of four components with eigenvalues exceeding 1, explaining 52.10%, 7.42%, 5.08% and 4.89% of the variance respectively. Four reverse scored thwarted belongingness items (e.g., “These days, other people care about me”) loaded onto

the first factor. Eight perceived burdensomeness items (e.g., “These days the people in my life would be better off if I were gone”) strongly loaded onto the second factor (above .4; Pallant, 2010). Three thwarted belongingness items loaded onto the third factor. However, this factor had fewer indicators than is recommended (i.e., four) in order to be interpreted as a stable and viable factor (Muthen & Muthen, 2008). Five perceived burdensomeness items and one reverse scored thwarted belongingness item loaded onto the fourth factor. The remaining four items (one thwarted belongingness, one reverse scored thwarted belongingness, two reverse scored perceived burdensomeness) did not adequately load onto any of the four factors. The distribution of items on the INQ did not appear optimal to balance the theoretical framework with subscales. Thus, alternative factor solutions were examined.

Given that the IPTS theoretically predicts a two-factor structure for the INQ (i.e., thwarted belongingness), a forced two-factor oblimin analysis was run using maximum likelihood (Tables 5 and 6). Factor one explained 52.10% and factor two explained 7.42% of the variance. The 13 reverse scored items (seven perceived burdensomeness, six thwarted belongingness) and one thwarted belongingness item loaded onto factor one. All ten of the items that loaded onto factor two were forward scored items (eight perceived burdensomeness, two thwarted belongingness). One thwarted belongingness item did not clearly load onto either factor (TB6; .38 on factor one, -.38 on factor two). Factor analyses of

the original 25-item INQ did not yield interpretable factors. Thus, the decision was made to examine the factor structure of the 15-item INQ (Van Orden et al., 2012).

The 15 items of the INQ were subjected to EFA using maximum likelihood and oblimin rotation (Tables 7 and 8). EFA revealed the presence of two components with eigenvalues exceeding 1, explaining 54.28% and 9.42% respectively. All 15 items clearly loaded onto factor one. One item (TB4) adequately loaded onto factor two (.42) but had a stronger loading onto factor one (.54).

As the 15-item INQ consists of three types of items (i.e., perceived burdensomeness, thwarted belongingness, and reverse-scored thwarted belongingness), a three-factor confirmatory factor analysis (CFA) was conducted (Tables 9 and 10). The three-factor solution resulted in the six perceived burdensomeness items loading onto one factor (perceived burdensomeness factor), two thwarted belongingness items loading onto the second factor (thwarted belongingness factor), and six reverse-scored thwarted belongingness items loading onto the third factor (thwarted belongingness reverse factor). One thwarted belongingness item did not adequately load on any factor. The thwarted belongingness factor had fewer than the four items recommended (Muthen & Muthen, 2008) to indicate stability of the factor. However, the two thwarted belongingness factors demonstrated an association of large effect size with one

another. Examination of the structure matrix (Table 10) revealed that the one thwarted belongingness item that did not adequately load on any factors was correlated with the thwarted belongingness reverse factor, which contained the majority of the thwarted belongingness items ( $r$  for TB3 = .49). These findings provide preliminary support for a factor structure consistent with the IPTS in psychiatrically hospitalized adolescents. In the current sample using the 15-item INQ, internal consistency was excellent for perceived burdensomeness ( $\alpha = .93$ ) and good for thwarted belongingness ( $\alpha = .89$ ).

#### *ACSS Factor Analyses*

The 20 items of the ACSS were subjected to EFA using maximum likelihood (Tables 11 and 12). EFA revealed the presence of six components with eigenvalues exceeding 1, explaining 31.31%, 10.42%, 7.63%, 6.60%, 6.11%, and 5.15% of the variance respectively. Six items clearly loaded onto factor one. Of these six items, five overlapped with the ACSS-FAD. The two remaining ACSS-FAD items (AC11 and AC13) had stronger loadings on factors six and five, respectively. Factors two, three, four, and five had too few indicators in order to be interpreted as a stable and viable factor (Muthen & Muthen, 2008). The four items loading onto factor six were uninterpretable. One item (AC3) did not clearly load onto any of the six factors. These analyses did not suggest interpretable factors. Thus, the decision was made to examine the factor structure of the more

psychometrically sound seven-item scale intended to solely measure fearlessness about death, the ACSS-FAD (Ribeiro et al., 2014).

The seven items of the ACSS-FAD were subjected to EFA using maximum likelihood with oblimin rotation (Tables 13 and 14). EFA revealed the presence of two components with eigenvalues exceeding 1, explaining 51.77% and 14.48%, of the variance respectively. All seven items clearly loaded onto one factor. Two items, FAD5 and FAD6, also adequately loaded onto the second factor with loadings of -.42 and .43, respectively. However, both items had stronger loadings on the first factor (.64 and .51, respectively).

To mirror adult studies of the ACSS-FAD (Ribeiro et al., 2014), a forced one-factor confirmatory factor analysis (CFA) was run using the seven ACSS-FAD items (Table 15). All of these items clearly loaded onto one factor, explaining 51.77% of the variance. Internal reliability for the ACSS-FAD was good in the current sample ( $\alpha = .84$ ).

**Hypothesis II: There will be evidence for construct validity of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide.**

*Convergent and Discriminant Validity*

Means for thwarted belongingness, perceived burdensomeness, and acquired capability for suicide were calculated based on the 15-item INQ and seven-item ACSS-FAD. Specific hypotheses relevant to construct validity were guided both by the IPTS and by the nature of the clinical sample of adolescents, many of whom were suicide attempters. The IPTS proposes distinct pathways for the development of thwarted belongingness and perceived burdensomeness on the one hand, and acquired capability on the other. Thus it was hypothesized that thwarted belongingness and perceived burdensomeness would be strongly correlated with each other with weaker but significant correlations with acquired capability, because all three would be expected to be elevated in the case of suicide attempts (Hypothesis IIa). Furthermore, it was expected that all three IPTS variables would be associated with lifetime suicide attempt variables (Hypothesis IIb). It was also hypothesized that as thwarted belongingness and perceived burdensomeness are manifestations of depressive cognitions, they would correlate with depression, but acquired capability for suicide would not (Hypothesis IIc). Thwarted belongingness (but not perceived burdensomeness or acquired



capability) would be negatively associated with global social support (Hypothesis II<sub>d</sub>), perceived burdensomeness (but not thwarted belongingness or acquired capability) would be positively associated with guilt (Hypothesis II<sub>e</sub>), acquired capability (but not thwarted belongingness or perceived burdensomeness) would be positively associated with NSSI frequency and suicide attempt lethality (Hypothesis II<sub>f</sub>). It was expected that some cross-construct relationships would be found (for example, acquired capability might correlate with depression) because of possible confounds that might result from the simultaneous elevations of all IPTS variables in suicidal adolescents. Thus, where results were found that did not follow the pattern predicted by the IPTS delineated above, it was proposed that controlling for the confound of the other construct(s) would diminish these unexpected relationships (Hypothesis II<sub>g</sub>).

Correlations between all Study 1 measures are presented in Table 16. As expected, there was a large association between thwarted belongingness and perceived burdensomeness. Relative to the strength of this relationship, acquired capability showed weaker associations with both thwarted belongingness ( $z = -3.59, p < .001$ ) and perceived burdensomeness ( $z = -3.70, p < .001$ ). Consistent with hypotheses, all three constructs demonstrated significant relationships with lifetime suicide attempt status and total attempts of any kind, and thwarted belongingness and perceived burdensomeness both demonstrated associations of large effect size with depression severity. Additionally, thwarted belongingness

demonstrated a negative association of small effect size with global social support, perceived burdensomeness demonstrated a positive association of large effect size with guilt, and acquired capability demonstrated a medium association with NSSI frequency and a small association with attempt lethality.

Seemingly contradictory to discriminant validity, acquired capability demonstrated a medium relationship with depression severity. As predicted, after controlling for thwarted belongingness and perceived burdensomeness, the relationship between acquired capability and depression severity was significantly weaker than the strength of relationships between depression severity and both thwarted belongingness ( $z = -6.94, p < .001$ ) and perceived burdensomeness ( $z = -5.67, p < .001$ ). Other unexpected findings included relationships between guilt and both thwarted belongingness and acquired capability. After controlling for perceived burdensomeness, thwarted belongingness ( $z = -3.67, p < .001$ ) and acquired capability ( $z = -5.58, p < .001$ ) both demonstrated significantly weaker relationships with guilt relative to perceived burdensomeness. The small association of perceived burdensomeness with NSSI frequency was also unexpected. After controlling for acquired capability, this relationship was marginally weaker than the relationship between acquired capability and NSSI frequency ( $z = -1.95, p = .05$ ). Also unexpected were the comparable strengths of effect sizes of relationships of all three IPTS constructs with global social support. However, after controlling for thwarted belongingness, effect sizes for perceived

burdensomeness ( $z = 1.20, p = .23$ ) and acquired capability ( $z = 1.03, p = .30$ ) were not significantly weaker than the strength of the relationship between thwarted belongingness and global social support.

## **CHAPTER FIVE**

### **Study 1 Discussion**

Study 1 provides preliminary findings of psychometric properties of the INQ and ACSS in an adolescent psychiatric inpatient sample. Factor analyses of the original 25-item INQ and 20-item ACSS were uninterpretable. Thus, factor structures of the 15-item INQ and seven-item ACSS-FAD, reported to be psychometrically sound in adult samples, were examined. Means for these shorter scales were also utilized in tests of construct validity. Both scales were internally consistent within the adolescent sample studied. Conceptually, a three-factor solution (perceived burdensomeness, thwarted belongingness, thwarted belongingness reverse) was the most interpretable for the INQ notwithstanding appropriate cautions regarding the viability of the third factor. The high degree of correlation between the two thwarted belongingness factors supports their combination into the single theoretically proposed subscale. CFA supported a one-factor structure for the ACSS-FAD. Despite significant associations between all IPTS constructs, findings were supportive of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide as three distinct constructs.

In the initial EFA of the 15-item INQ, all thwarted belongingness and perceived burdensomeness items loaded onto the first factor. This finding may have been influenced by the clinical characteristics of our study sample. Most

participants (75%) endorsed suicidal ideation or a suicide attempt in the past week, and 56% reported a lifetime history of suicide attempt. Thwarted belongingness and perceived burdensomeness, according to the IPTS, are reflections of the negative cognitions that lead to suicidality. The experience of both constructs may be more intertwined in this sample relative to what might be observed in a community sample of adolescents.

Despite the close relationship between thwarted belongingness and perceived burdensomeness in our sample, there was evidence of distinction between these two constructs. A forced three-factor solution revealed a clear separation of one perceived burdensomeness and two thwarted belongingness factors on the INQ. Although thwarted belongingness items loaded onto two separate factors depending on the way in which they were worded (i.e., forward versus reverse scored), the two thwarted belongingness factors were strongly correlated with one another. Previous research with other scales unrelated to the IPTS has pointed to the potential pitfalls in accurate measurement of a scale's factor structure when utilizing reverse-scored items (Rodebaugh, Woods, & Heimberg, 2007). The finding of a viable one-factor structure of the ACSS-FAD is consistent with findings in diverse adult samples (Ribeiro et al., 2014).

In support of convergent validity, there were significant associations in expected directions between thwarted belongingness and global social support, between perceived burdensomeness and guilt, and between acquired capability for

suicide and NSSI frequency and attempt lethality. In line with the hypotheses of the IPTS and findings from adult literature, all three constructs demonstrated independent associations with lifetime suicide attempt status and total attempts of any kind (Conner, Britton, Sworts, & Joiner, 2007; Smith, Cukrowicz, Poindexter, Hobson, & Cohen, 2010; Van Orden, Lynam, Hollar, & Joiner, 2006). The finding of large associations between both thwarted belongingness and perceived burdensomeness with depression severity, also common in suicidality, is consistent with previous research with clinical samples (Monteith et al., 2013; Van Orden et al, 2008).

Given the nature of the sample and multiple elevations of IPTS expected in suicidal individuals, confounded associations between each IPTS construct with conceptually-unrelated constructs were expected. The use of partial correlations in these cross-construct relationships allowed for a clearer examination of discriminant validity. Lack of or diminished associations between thwarted belongingness and guilt, NSSI frequency, and attempt lethality provided support of discriminant validity for thwarted belongingness. There was support of discriminant validity for perceived burdensomeness in this construct's diminished associations with constructs conceptually-related to acquired capability for suicide. Evidence of discriminant validity for acquired capability for suicide was supported by its relatively weaker associations with guilt and depression severity, constructs proposed to be more closely related to one or both of the other two

IPTS constructs. Additionally, relative to the strength of relationship between thwarted belongingness and perceived burdensomeness, the weaker strengths of association between acquired capability for suicide and both thwarted belongingness and perceived burdensomeness provided further evidence not only for discriminant validity of acquired capability for suicide but also for the notion that acquired capability for suicide develops separately from the other two IPTS constructs.

The strengths of relations with global social support were comparable among all three IPTS constructs, contrary to expectation. Van Orden and colleagues (2012) hypothesized that since the need for belongingness is so fundamental and pervasive (Baumeister & Leary, 1995), there are likely very few psychological constructs unrelated to thwarted belongingness, thus making discriminant relations among thwarted belongingness and perceived burdensomeness difficult to find. In this sample, the lack of discriminant relations for global social support may also be related to range restriction of global social support. Average social support in this sample was low relative to other adolescent samples ( $t [219] = 6.70, p < .001$ ; Zimet, Powell, Farley, Werkman, & Berkoff, 1990). Even if the uniquely strong association between global social support and thwarted belongingness exists in the population, this lack of variability may have presented a statistical obstacle to detecting it.

Another possible explanation may be that acquired capability for suicide is indeed related to social support. Although the IPTS hypothesizes that acquired capability for suicide develops separate from thwarted belongingness and perceived burdensomeness, it is plausible to hypothesize that death may become less fear-inducing for an individual as life less becomes less attractive. That is, they have less to live for. It is possible that in the presence of a lack of reasons for living, contributors to suicidal ideation, such as thwarted belongingness, perceived burdensomeness, depression, or hopelessness, may also have an amplifying impact on acquired capability for suicide.



## **CHAPTER SIX**

### **Study 2 Results**

#### **Aim II: To test the hypotheses generated from the IPTS.**

Mean scores for thwarted belongingness, perceived burdensomeness, and acquired capability for suicide were generated using the 15-item INQ and 7-item ACSS-FAD. Age, sex, depression severity, and hopelessness were included as covariates in all analyses unless otherwise noted.

#### **Hypothesis III: Thwarted belongingness and perceived burdensomeness will differentiate between adolescents with and without suicidal ideation.**

Logistic regression was performed to assess the association of thwarted belongingness and perceived burdensomeness with the likelihood that adolescents would ( $n = 107$ ) versus would not ( $n = 40$ ) report current *suicidal ideation* and to assess whether the data are consistent with the IPTS' prediction that the effects of depression and hopelessness on suicidal ideation would be mediated by perceived burdensomeness and thwarted belongingness (Table 17). In the final model, perceived burdensomeness was significantly associated with suicidal ideation, such that for every one-point increase in perceived burdensomeness score, adolescents were 3.62 times more likely to report suicidal ideation. The association of thwarted belongingness and suicidal ideation approached significance.

**Hypothesis IV: The interaction of thwarted belongingness and perceived burdensomeness will distinguish between adolescents with passive suicidal ideation and active suicidal ideation.**

Hierarchical logistic regression was performed to assess if the interaction of thwarted belongingness and perceived burdensomeness distinguished between adolescents with *passive* ( $n = 40$ ) and *active* ( $n = 25$ ) *suicidal ideation* (Table 18). The two-way thwarted belongingness by perceived burdensomeness interaction term, but neither thwarted belongingness nor perceived burdensomeness alone, significantly distinguished between adolescents with passive and active suicidal ideation. For every one point increase in the thwarted belongingness and perceived burdensomeness interaction term, adolescents were 1.49 times more likely to endorse active rather than passive suicidal ideation. A median split on thwarted belongingness and logistic regressions with each group (i.e., low thwarted belongingness and high thwarted belongingness) were conducted to examine the nature of the two-way interaction of thwarted belongingness and perceived burdensomeness. There were no significant findings in follow-up analyses, likely influenced by the small sample size. However, odds ratio values suggested that the interaction was as expected. When thwarted belongingness was low, the odds ratio value suggested that perceived burdensomeness decreased the likelihood that an adolescent would report active suicidal ideation in the model (OR [95% CI] = .68 [.38, 1.23],  $p = .20$ ). When thwarted belongingness was high,

the odds ratio value suggested that perceived burdensomeness increased the likelihood that an adolescent would be classified as having active suicidal ideation (OR [95% CI] = 1.30 [.48, 3.54].  $p = .61$ ).

**Hypothesis V: Acquired capability for suicide will differentiate between adolescents with and without suicidal intent.**

Logistic regression analysis was performed to examine whether acquired capability for suicide distinguished between adolescents who did ( $n = 42$ ) and did not ( $n = 105$ ) report *recent suicidal intent* (Table 19). Acquired capability for suicide and depression were the only significant main effects in the final model. For every one-point increase in acquired capability for suicide score, adolescents were 2.10 times more likely to report recent intent.

**Hypothesis VI: The interaction of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide will be associated with severity of suicidal symptoms.**

Hierarchical multiple regression was performed to assess whether thwarted belongingness, perceived burdensomeness, acquired capability for suicide, and their interactions were associated with increasing *severity of suicidal symptoms* (Table 20). All predictor variables were centered as recommended in equations where interaction terms are included (Cohen, Cohen, West, & Aiken,

2013). Covariates (age, sex, depression severity, and hopelessness) were entered at step one. IPTS constructs and their interactions were entered at step two. The second step accounted for an additional 15% of variance in suicidal symptom severity, and the two-way interaction of thwarted belongingness and perceived burdensomeness and the three-way interaction of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide were both significantly associated with increasing suicidality.

A median split on thwarted belongingness and multiple regressions with each group (i.e., low thwarted belongingness and high thwarted belongingness) were conducted to examine the nature of the two-way interaction of thwarted belongingness and perceived burdensomeness. Contrary to expectation, perceived burdensomeness was more strongly associated with suicidal symptom severity when thwarted belongingness was low (Table 21) relative to when thwarted belongingness was high (Table 22). Similar analyses were performed with a perceived burdensomeness median split. Thwarted belongingness was strongly associated with suicidal symptom severity when perceived burdensomeness was low (Table 23) relative to when perceived burdensomeness was high (Table 24). Separate regression lines were plotted for all combinations of high and low thwarted belongingness and perceived burdensomeness to help elucidate the nature of the interaction (Figure 1). High levels of either thwarted belongingness

or perceived burdensomeness were each associated with greater severity of suicidal symptoms. In the presence of high thwarted belongingness, high levels of perceived burdensomeness were not associated with increases in suicidal symptom severity. Similarly, in the presence of high perceived burdensomeness, high levels of thwarted belongingness were not associated with greater suicidal symptom severity.

Simple slopes analyses were conducted to examine the nature of the three-way interaction of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide (Dawson & Richter, 2006). Four separate regression lines and their association with suicidal symptom severity as a function of thwarted belongingness were plotted for all combinations of high and low perceived burdensomeness and acquired capability for suicide (Figure 2). The slopes of regression lines for high perceived burdensomeness/high acquired capability for suicide and low perceived burdensomeness/high acquired capability for suicide significantly differed,  $t(135) = 3.07, p < .005$ . When perceived burdensomeness was low and acquired capability for suicide was high, suicidal symptom severity greatly increased as thwarted belongingness increased. When both perceived burdensomeness and acquired capability for suicide were high, suicidal symptom severity did not vary greatly as a function of thwarted belongingness. The two-way thwarted belongingness by perceived

burdensomeness interaction effect previously described was maintained and became exaggerated in the presence of high acquired capability for suicide. In the presence of low acquired capability for suicide, the thwarted belongingness by perceived burdensomeness interaction effect disappeared.

**Hypothesis VII: Increasing levels of acquired capability for suicide scores will be observed as severity of self-injurious behavior increases among three groups: 1) adolescents with a negative history of both suicide attempt and NSSI, 2) adolescents with a history of NSSI only, and 3) adolescents with a history of suicide attempt regardless of NSSI history.**

*Lifetime suicide attempt history* (yes/no) and *lifetime NSSI history* (yes/no) were utilized to create groups for Hypothesis VII. One-way analysis of variance was conducted to explore differences in acquired capability for suicide scores between three groups of adolescents: 1) those with a negative history of both suicide attempts and NSSI ( $n = 21$ ), 2) those with a history of NSSI only ( $n = 45$ ), and 3) those with a history of suicide attempt regardless of NSSI history ( $n = 83$ ). Although the group sizes were variable, the assumption of homogeneity of variances was not violated,  $F(2, 146) = .06, p = .94$ . There was a significant difference in acquired capability for suicide scores for the three groups,  $F(2, 146) = 3.44, p = .04$ . Tukey post hoc analyses revealed a marginally significant

difference ( $p = .056$ ) in means between adolescents with a history of NSSI only ( $M = 2.03$ ,  $SD = 1.04$ ) and adolescents with a history of suicide attempt ( $M = 2.47$ ,  $SD = 1.03$ ). It is relevant to note that, although the negative history of NSSI and suicide attempt group ( $M = 2.02$ ,  $SD = 1.05$ ) and suicide attempt group did not significantly differ in post hoc analyses, the difference in means between these two groups (difference = .45) was comparable to the marginally significant difference observed between the NSSI group and suicide attempt group (difference = .44). The relatively smaller group size of adolescents with negative history of NSSI and suicide attempt may have prevented further detection of significant differences in post hoc analyses.

When age, sex, depression severity, and hopelessness were added as covariates, group differences in acquired capability scores were no longer significant,  $F(2, 140) = 2.40$ ,  $p = .095$ . As scores seemed to differ with regard to suicide attempt history, and not NSSI history, exploratory logistic regressions were conducted using *lifetime suicide attempt history* (yes/no) as the outcome in order to examine which of these covariates may possibly be mediating the relationship between suicide attempt status and acquired capability for suicide (Tables 25 – 30). On its own, acquired capability for suicide was significantly associated with lifetime suicide attempt status. Though neither of these predictors was significant, the addition of depression severity and hopelessness to the model, made for the greatest decrease in acquired capability for suicide's statistical

prediction ability. Acquired capability for suicide was not a significant predictor in the full model containing all four covariates.

**Hypothesis VIII: Acquired capability for suicide among attempters with medically serious suicide attempts will be higher than that of suicide attempters with less serious suicide attempts.**

Of the 84 participants who endorsed a lifetime history of suicide attempt, information about *attempt lethality/medical damage* of their most lethal suicide attempt was available for 55 participants. A median split was performed so that the low lethality group ( $n = 19$ ) was comprised of participants whose most lethal attempt severity as measured by the C-SSRS was “1 - minor physical damage (e.g., lethargic speech; first-degree burns; mild bleeding; sprains)” or less. The high lethality group ( $n = 36$ ) consisted of participants whose most lethal attempt severity as measured by the C-SSRS was “2 - moderate physical damage; medical attention needed (e.g., conscious but sleepy, somewhat responsive, 2nd-degree burns; bleeding of a major vessel)”. The low lethality ( $M = 2.19$ ,  $SD = .99$ ) and high lethality ( $M = 2.47$ ,  $SD = 1.09$ ) groups did not differ on acquired capability for suicide mean scores,  $t(53) = .92$ ,  $p = .34$ .

Other cut points for medical severity were utilized in exploratory analyses. When a lethality cut point of 1 was used, low lethality ( $n = 10$ ,  $M = 1.77$ ,  $SD = .81$ ) and high lethality groups ( $n = 45$ ,  $M = 2.51$ ,  $SD = 1.07$ ) differed significantly



on acquired capability for suicide scores,  $t(53) = 2.04, p = .046$ . No significant differences in mean acquired capability for suicide scores between the low lethality ( $n = 45, M = 2.26, SD = 1.04$ ) and high lethality group ( $n = 10, M = 2.89, SD = 1.02$ ) emerged when a lethality cut point of 3 was utilized,  $t(53) = 1.73, p = .09$ .

To summarize, the main finding from Hypothesis VIII was that differences in acquired capability for suicide scores were only detected when adolescents with suicide attempts resulting in little to no physical damage were compared to adolescents with suicide attempts resulting in minor physical damage and beyond. Of note, examination of group means and correlations ( $r = .28; p = .04$ ) suggested that acquired capability for suicide mean scores generally increased as medical severity of most lethal attempt increased. Smaller group sizes relative to other Study 2 analyses may have influenced these generally statistically insignificant findings.

## **CHAPTER SEVEN**

### **Study 2 Discussion**

Results from Study 2 demonstrated that perceived burdensomeness, and at a marginal level, thwarted belongingness, independently distinguished between adolescents with and without current suicidal ideation. The interaction of thwarted belongingness and perceived burdensomeness, but neither construct alone, distinguished between adolescents with passive and active suicidal ideation. Additionally, in this sample, acquired capability for suicide distinguished between adolescents with and without recent suicidal intent. Acquired capability for suicide also demonstrated associations with lifetime history of suicide attempt and medical severity of attempt. In analyses, the IPTS constructs mediated the association between hopelessness and suicidal phenomena. Depression's effect was mediated by thwarted belongingness and perceived burdensomeness for suicidal ideation, but not for suicidal intent. In examining all three IPTS constructs simultaneously, as predicted, there was a main effect of each construct (with a marginal effect of thwarted belongingness), and interaction effects for thwarted belongingness by perceived burdensomeness, and thwarted belongingness by perceived burdensomeness by acquired capability for suicide in association with suicidal symptom severity. These findings largely supported the IPTS and included the rigorous step of controlling for depression

severity and hopelessness. They offer strong, but preliminary, evidence regarding the relevance of the IPTS to adolescent suicidality.

The IPTS has strong appeal because it offers organizing hypotheses relevant to understanding suicidality. Several of these hypotheses were tested in Study 2. First, the framework postulates that although there are many risk factors for suicidality, the core variables, thwarted belongingness and perceived burdensomeness, mediate the effects of other risk factors on suicidal ideation. Findings from Study 2 support that thwarted belongingness and perceived burdensomeness may be underlying proximal causes for suicidal ideation. They were found to mediate the independent associations of two important variables, depression and hopelessness, with suicidal ideation.

Second, the IPTS offers a mechanism by which passive thoughts of death become an active desire for suicide. Although the concept that suicidal ideation moves from passive to active when both perceived burdensomeness and thwarted belongingness are present was originally hypothesized by Joiner's group (Van Orden et al., 2010), there are no apparent reports in the literature that confirm this proposal. In this study, the thwarted belongingness by perceived burdensomeness interaction, but neither construct alone, distinguished between adolescents who endorsed passive versus active suicidal ideation. This finding is consistent with previous research suggesting that high levels of both thwarted belongingness and perceived burdensomeness are associated with more severe levels of suicidal

symptoms after controlling for depression severity among undergraduates (Van Orden, Witte, Gordon, et al., 2008) and in a young adult community sample (Joiner et al., 2009). This study takes these findings a step further by specifying the nature of the increase in suicidal ideation (i.e., progression from passive suicidal ideation to active suicidal ideation as predicted by the IPTS).

Third, one of the most significant problems in the literature is the absence of frameworks to understand how an individual progresses from thinking about suicide to intending to act on those thoughts. An important strength of the IPTS is that it offers a testable hypothesis with regard to this progression in proposing that acquired capability for suicide is an essential requirement before ideation is converted to intent. In this study, as predicted, acquired capability for suicide was associated with suicidal intent after controlling for depression severity and hopelessness. Acquired capability for suicide mediated the relationship between hopelessness and suicidal intent. Although depression severity's relationship with suicidal ideation was mediated by thwarted belongingness and perceived burdensomeness, it maintained an independent association with suicidal intent. One interpretation of this finding is that thwarted belongingness and perceived burdensomeness represent distorted cognitive states and are more closely associated with depression severity. Furthermore, the IPTS suggests that acquired capability for suicide develops independently from thwarted belongingness and

perceived burdensomeness, and also possibly from depression severity (Van Orden et al., 2010).

Joiner (2005) proposed that the presence of all three IPTS constructs was necessary to enhance risk to the point of attempt. Few studies have examined all constructs at the same time in a sample that has a high likelihood of attempt (exceptions are Czyz et al., 2014; Joiner et al., 2009; Monteith et al., 2013). The results have been contradictory, possibly because widely differing methodologies have been used to capture increasing intent. These studies also vary with regard to how key constructs are measured (i.e., proxy vs. direct measures). Significant main effects of perceived burdensomeness and acquired capability were found to be associated with severity of suicidal symptoms. Interactions central to the IPTS, the two-way thwarted belongingness by perceived burdensomeness interaction and the three-way thwarted belongingness by perceived burdensomeness by acquired capability for suicide interaction, were significant. However, the results for the three-way interaction were not exactly as expected. Although the combination of all three variables results in sharply increased suicidality risk over combinations of low levels of all three variables or low acquired capability for suicide, the risk appears equally high in the presence of high acquired capability for suicide and either thwarted belongingness or perceived burdensomeness. This finding seems to contradict Joiner's hypothesis that the combination of high levels of all three IPTS constructs confers the most sharply enhanced risk for high levels

of suicidality. However, these findings may be specific to clinical samples in that the linear relationships among the variables may become distorted because both thwarted belongingness and perceived burdensomeness tend to be high. Mean scores for thwarted belongingness and perceived burdensomeness in the present sample were 3.75 ( $SD = 1.53$ ) and 3.58 ( $SD = 1.84$ ) respectively. In contrast, mean scores of thwarted belongingness and perceived burdensomeness in a non-clinical adult sample were 2.18 ( $SD = 1.15$ ) and 1.70 ( $SD = .94$ ) (Van Orden, Witte, Gordon, et al., 2008). The three-way combination may be more apparent in community or even outpatient samples that manifest more variability in their perceived burdensomeness and thwarted belongingness scores. Thus, it is possible that the limited variability in the perceived burdensomeness and thwarted belongingness scores, likely related to the high depression reported in this hospitalized clinical sample, may have contributed to the interchangeability of these two variables.

Although not directly relevant to study aims, it is important to note that sex, specifically being a boy, was associated with active suicidal ideation (Hypothesis IV), suicidal intent (Hypothesis V), and increasing suicidal symptom severity (Hypothesis VI). In the general population, girls are more likely to experience suicidal ideation and make an attempt and boys are more likely to die by suicide. However, this clinical inpatient sample is likely not representative of the general population. The makeup of the primarily suicidal sample was

approximately 75% girls, consistent with what would be expected given the aforementioned statistics. One explanation for why being a boy puts an adolescent at higher risk for active suicidal ideation, in addition to the thwarted belongingness by perceived burdensomeness interaction, is that boys may have greater reactivity to feelings of thwarted belongingness and perceived burdensomeness. That is, they may have a lower threshold of suicidal action response when faced with emotional distress. Czyz and colleagues (2014) offered this as an explanation for why they found a significant perceived burdensomeness by acquired capability for suicide interaction for boys but not for girls in predicting suicide attempt at 3 months post-hospital discharge. This is also in line with previous research suggesting that for hospitalized males, there is a stronger relationship between heightened negative affect sensitivity/reactivity with suicidal ideation (Selby, Yen, & Spirito, 2013).

For Hypothesis V, being a boy was found to put an adolescent at greater risk for experiencing suicidal intent. The IPTS suggests that boys are at higher risk for more dangerous forms of suicidal phenomena via being more susceptible to developing acquired capability for suicide. Thus, it would be expected that acquired capability for suicide, but not sex, would be associated with suicidal intent. However, both sex and acquired capability for suicide contributed to the prediction of suicidal intent. Acquired capability for suicide may not completely explain the "gender paradox" of suicide (i.e., that females are more likely to desire

and attempt suicide, but males are more likely to die by suicide; Canetto & Sakinofsky, 1998). Some of the other explanations of the "gender paradox" (e.g., pressure associated with traditional Western gender roles) may further explain why male sex contributes independent variance in our findings.

Hypotheses VII and VIII allowed for further exploration of the nature of acquired capability for suicide, the most novel component of the IPTS, in a sample theoretically at high risk for developing this construct. As expected, adolescents with a history of suicide attempt had marginally higher acquired capability for suicide scores relative to adolescents with a history of NSSI. This finding is in support of Van Orden and colleagues' (2010) hypothesis that a previous suicide attempt is the most potent form of a PPE. The lack of a significant difference in acquired capability for suicide scores between adolescents with a negative history of both NSSI and suicide attempt and adolescents with a history of suicide attempt may have been due to small size of the negative history group. Contrary to expectation, mean acquired capability for suicide scores did not differ between adolescents with a negative history of both NSSI and suicide attempt and adolescents with a history of NSSI. One explanation for this finding may be that only comparing groups with and without NSSI did not capture other pathways to acquired capability for suicide. NSSI is just one potential pathway to the development of acquired capability for suicide. According to the IPTS, although adolescents in the negative history of NSSI and



suicide attempt group have not developed acquired capability for suicide via engagement in these behaviors, they may have developed acquired capability for suicide through other means (e.g., being a victim of childhood maltreatment, engagement in contact sports, physical fighting).

Previous history of suicide attempt is one of the most robust risk factors for future suicide attempt among adults and adolescents alike. The IPTS accounts for this pattern by suggesting that a non-lethal suicide attempt offers the most direct pathway to the development of acquired capability for suicide. Thus, individuals who have a history of suicide attempt are at higher risk for eventual death by suicide because they have developed higher levels of acquired capability for suicide. An individual can also develop acquired capability for suicide via less direct routes of repeated exposure to experiences that induce pain and/or fear (e.g., engagement in NSSI). Consistent with the IPTS, results from Hypothesis VII suggested that suicide attempters possessed higher levels of acquired capability for suicide relative to adolescents who engaged in NSSI. Although a history of suicide attempt confers greater risk for the development of acquired capability for suicide, this does not equate to a previous history of suicide attempt being a more robust risk factor for suicide relative to engagement in NSSI. Acquired capability for suicide alone, in the absence of indicators of suicidal desire, does not put an individual at risk for suicide attempt.

Asarnow and colleagues (2011) found that, relative to a previous history of suicide attempt, NSSI was a stronger predictor of future suicide attempts among depressed adolescents. Although acquired capability for suicide would theoretically be lower among adolescents who engage in NSSI (versus those with a history of suicide attempt), the IPTS offers a useful framework for understanding why this may occur. In the context of the IPTS, NSSI has been termed “double trouble” (Klonsky, May, & Glenn, 2013; B. Walsh, personal communication, April 22, 2010) as it is associated with factors that confer risk for both suicidal desire (i.e., interpersonal distress [Klonsky, Oltmanns, & Turkheimer, 2003]) and the capability for suicide (i.e., increased physical pain tolerance [Nock et al., 2006]). As some adolescents utilize NSSI as a method of coping with interpersonal distress, engagement in NSSI may be indicative of the experiences of thwarted belongingness and perceived burdensomeness that result in the development of suicidal desire. Furthermore, Joiner, Ribeiro, and Silva (2012) theorize that NSSI contributes to acquired capability for suicide specifically via increased pain tolerance, the aspect of acquired capability for suicide that differentiates between those with suicidal intent and those who make suicide attempts. Acquired capability for suicide, as it was measured in the current study, did not include a measure of pain tolerance. Thus, NSSI’s potential contributions to acquired capability for suicide were not adequately captured by the use of a measure that assesses solely the fearlessness about death facet of

acquired capability for suicide. NSSI may not have received as much attention in the original development of the IPTS because the theory was developed among adults. Given the relatively higher prevalence rates among adolescents, engagement in NSSI is a more salient issue in the younger developmental group, and future studies should further clarify the role NSSI plays in the IPTS.

Exploratory analyses suggested that the relationship between acquired capability for suicide and lifetime suicide attempt status was weakened after the addition of covariates, particularly depression and hopelessness. One explanation for this finding is that both active suicidal ideation, as indicated by high levels of thwarted belongingness and perceived burdensomeness, *and* acquired capability for suicide provide the conditions in which an individual is most likely to make a suicide attempt. Depression severity (which is closely related to thwarted belongingness and perceived burdensomeness) and hopelessness may be accounting for the variance in the level of suicidal ideation, in combination with acquired capability for suicide, that is needed to make a suicide attempt.

Multiple lethality cut points were utilized to determine differences in acquired capability for suicide scores between adolescents with high lethality attempts and adolescents with low lethality attempts. Significant differences only emerged when comparing adolescents whose lifetime most lethal suicide attempt resulted in “no physical damage, or very minor physical damage (e.g., surface scratches)” (rated as a 0 on the C-SSRS) to adolescents whose lifetime most lethal

suicide attempt resulted in minor to severe physical damage (rated as 1 to 4 on the C-SSRS). Given the range of possible lethality ratings, these findings suggest that the threshold of medical severity of attempt for a statistically notable increase in acquired capability for suicide scores is relatively low in the study sample.

However, examination of group means and correlations suggested that acquired capability for suicide mean scores generally increased as medical severity of most lethal attempt increased. More nuanced differences may have emerged with a larger sample size. As these analyses were cross-sectional, it is unknown whether pre-existing higher levels of acquired capability for suicide allowed adolescents to make suicide attempts of higher medical severity or if acquired capability for suicide increased as a result of a medically severe suicide attempt.

## **CHAPTER EIGHT**

### **Conclusions and Recommendations**

Study 1 provides preliminary findings of adequate psychometric properties of the INQ and ACSS-FAD in an adolescent psychiatric inpatient sample. Study 2 fills a gap in the literature by examining the key constructs relevant to the IPTS in relation to suicidal symptoms in a clinical sample of adolescents.

#### **APPLICABILITY OF THE IPTS IN ADOLESCENCE**

Consistent with Joiner's (2005) hypothesis regarding the applicability of thwarted belongingness, perceived burdensomeness, and acquired capability across the lifespan, findings from these two studies are largely in support of the validity of IPTS constructs in adolescence. Consistent with what would be expected in a sample comprised in part by suicidal adolescents, close relationships between thwarted belongingness and perceived burdensomeness were observed across both studies. Despite these associations, the INQ factor structure, convergent and discriminant relations (Study 1), and each construct's independent explanations of variance in suicidality variables (Study 2) suggested that thwarted belongingness and perceived burdensomeness are indeed two distinct constructs relevant to suicidality among adolescents. Additionally, the ACSS-FAD factor structure, convergent and discriminant relations (Study 1), and association with

suicidal intent (Study 2) suggested that the construct of acquired capability for suicide is also applicable to adolescents.

While there is clear support for applicability of each individual IPTS construct among adolescents, some questions still remain regarding the interactive nature of theory. In line with the IPTS, a regression model suggested that the combination of high levels of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide sets the stage for increasingly severe suicidal symptoms. The prediction of equally severe suicidal symptoms in the presence of acquired capability and either thwarted belongingness or perceived burdensomeness was unexpected based on the IPTS hypotheses. This unexpected finding, however, fits with the growing body of studies demonstrating inconsistent findings with regard to the three-way interaction central to the IPTS (Czyz et al., 2014; Joiner et al., 2009; Monteith et al., 2013). The current state of literature on the interactive nature of the IPTS is characterized by heterogeneity of methods (e.g, samples studied, direct versus indirect measures of IPTS constructs, outcome variables). It is possible that the three-way interactive IPTS hypothesis may require revision particularly with regard to relative weights of each construct in suicide risk. Until more research on the interactive nature of the theory using homogeneous methods is completed, it remains unknown if the IPTS hypotheses require revisions at large, specifically in clinical populations, or specifically

among adolescents because of the confounds presented by the use of such heterogeneous methods in the existing small body of literature on the topic.

### **CLINICAL IMPLICATIONS**

IPTS constructs differentiated between adolescents with and without suicidal ideation and between adolescents with and without suicidal intent after controlling for sex, age, depression severity, and hopelessness. Among groups who are at high risk for suicide such as adolescent psychiatric patients, clinicians may find assessment of IPTS constructs useful in determining persistent risk for suicidal ideation and suicide attempt. It is important for clinicians to assess for both thwarted belongingness and perceived burdensomeness, particularly among adolescents with high acquired capability for suicide, as only one is necessary to result in more severe suicidal symptoms according to the Hypothesis VI regression model. Additionally, it will be important to address both thwarted belongingness and perceived burdensomeness during treatment, as these findings do not support the idea that the presence of only one (either thwarted belongingness or perceived burdensomeness) can be “lifesaving” (Van Orden, 2010, p. 589). Finally, high acquired capability for suicide may be a very important indicator for significant persistent risk even in the absence of current perceived burdensomeness and thwarted belongingness (which may be reflected in depressive cognitions), as the latter are state-dependent and can become

elevated as a result of perceptions and interpretations of external events.

Therapeutic approaches that assess level of acquired capability for suicide, target perceived burdensomeness and thwarted belongingness, and enhance patients' and families' awareness of their role in suicidality may be helpful, and quite consistent with psycho-education and cognitive behavior therapy models.

### **RELATIONS OF THE IPTS WITH DEPRESSION AND HOPELESSNESS**

The IPTS has proven its conceptual merit by offering investigators and clinicians a useful framework for organizing constellations of empirically supported risk factors for suicide. However, given that suicide is a growing public health problem for which we are relatively unequipped to predict occurrence, the IPTS would be of great practical relevance if it can provide information about risk for suicide above and beyond known risk factors such as depression and hopelessness. The IPTS suggests that distal risk factors, such as depression, are associated with suicide because they lead to the development of the more proximal risk factors outlined by the theory.

Study 2 attempted to shed light on this issue by controlling for depression and hopelessness, two well-known risk factors for suicidal ideation and attempt, in all analyses related to statistical prediction of suicidal phenomena. In support of IPTS variables being proximal risk factors for suicidal ideation, it was found that independent associations between depression severity and hopelessness with



suicidal ideation were mediated by thwarted belongingness and perceived burdensomeness (Hypothesis III). With regard to the differentiation between passive and active suicidal ideation, depression severity and the thwarted belongingness by perceived burdensomeness interaction term each contributed unique variance to the model (Hypothesis IV). Hopelessness did not differentiate between passive and active suicidal ideation. In this case, IPTS variables and depression severity were equally proximal to the differentiation between passive and active suicidal ideation.

Acquired capability for suicide mediated the relationship between hopelessness and suicidal intent but not depression and suicidal intent (Hypothesis V). Again, acquired capability for suicide and depression severity were non-competing sources of variance in the statistical model. This is not greatly surprising as acquired capability for suicide and depression severity are not conceptually related. Rather, depression severity is more closely related to thwarted belongingness and perceived burdensomeness. Similarly, associations between hopelessness, but not depression severity, with suicidal symptom severity were mediated by IPTS variables and their interactions.

Consistently weaker performance of hopelessness across statistical models may be explained by hopelessness' high sensitivity but low specificity in predicting suicidal behavior. In a meta-analytic review among adults, 80% of fatal suicide attempters endorsed Beck Hopelessness Scale scores (BHS; Beck,

Weissman, Lester, & Trexler, 1974) above the cut-off score of 9, suggesting high sensitivity (McMillan, Gilbody, Beresford, & Neilly, 2007). However, in the same study, 58% of those who did not make a suicide attempt also endorsed BHS scores above this cut-off, suggesting low specificity. The experience of hopelessness is relatively common, suggesting that most who experience this state will not attempt suicide.

Findings from Study 2 are suggestive of thwarted belongingness and perceived burdensomeness as more proximal risk factors for suicidal ideation, broadly speaking, relative to both depression severity and hopelessness. With regard to differentiation between passive and active suicidal ideation, association with suicidal intent, and association with suicidal symptom severity, IPTS variables were no more proximal than depression severity. Relative to IPTS variables and depression severity, hopelessness was the most distal of all risk factors in Study 2.

Despite its more distal status in these analyses, hopelessness is theorized to play a role in the IPTS. Hopelessness *specifically* about one's simultaneous experience of thwarted belongingness and perceived burdensomeness is theorized to push an individual from passive suicidal ideation to active suicidal ideation. This particular confluence of factors has yet to be examined in adults and was not tested in the present study. Rather, consistent with adult studies, a measure of global hopelessness was utilized in Study 2 and treated as covariate. Methods for

measuring hopelessness specific to the experiences of thwarted belongingness and perceived burdensomeness will be essential to a more comprehensive test of this aspect of the IPTS.

There is an interesting parallel between the IPTS ingredients for active suicidal ideation and Beck's (1970) cognitive triad of depression (negative thoughts about self, others, and the future). Thoughts consistent with the experience of thwarted belongingness are essentially a specific type of negative thought about others (e.g., "These days, other people care about me" *reverse*; Van Orden et al., 2012). Thoughts suggestive of perceived burdensomeness are specific negative thoughts about the self (e.g., "These days, I feel like a burden to the people in my life"; Van Orden et al., 2012). Hopeless cognitions about the unchangeability of current experiences of thwarted belongingness and perceived burdensomeness are specific negative thoughts about the future (e.g., "This will never change"; Van Orden et al., 2010). According to cognitive behavioral theory, these types of cognitions contribute to depression. According to the IPTS, the more specific types of these cognitions also contribute to the development of suicidal ideation. This conceptualization offers an explanation for why thwarted belongingness and perceived burdensomeness mediated the relationship between depression severity and suicidal ideation.

### **FUTURE DIRECTIONS**

This study's preliminary findings are in support of the use of the 15-item INQ and seven-item ACSS-FAD in clinical inpatient adolescent samples.

Utilization of a uniform method of measurement of IPTS constructs among adolescents will be essential to smooth integration of research findings among this population. Additionally, the use of the same INQ and ACSS-FAD scales across adolescent and adult populations will be greatly advantageous to longitudinal study of suicidal behaviors during this key developmental transition. More sophisticated tests of structural models with larger and more demographically- and diagnostically-diverse samples are needed to draw conclusions regarding the generalizability of these findings. Furthermore, the eventual development of normative data for the INQ and ACSS-FAD among community and clinical adolescent samples will be of great relevance both in research and clinical settings. Average scores for all three IPTS constructs in this sample appeared to be greater than scores observed in an adult community sample (Van Orden et al., 2008). However, without normative data, it is unknown whether a specific individual's high score is actually clinically meaningful.

Studies of test-retest reliability and short- and long-term stability of the IPTS constructs are also needed because, although thwarted belongingness and perceived burdensomeness are proposed to be dynamic and acquired capability for suicide relatively stable (Van Orden et al., 2010), little is actually known about

how these constructs fluctuate over time. Another assumption made by the IPTS that warrants further exploration is the notion of acquired capability for suicide developing separate from constructs that confer risk for suicidal ideation. One task for future study is clarifying the nature of the relationship between acquired capability for suicide and risk factors for suicidal ideation via moderation analyses. For example, reasons for living is one possible moderator that may enhance the relationship between acquired capability for suicide and factors that contribute to suicidal ideation.

Further exploration of the most novel component of the IPTS, acquired capability for suicide, is particularly warranted. Thwarted belongingness and perceived burdensomeness are both dynamic states reflective of depressive cognitions. Effective treatments for addressing these types of negative thoughts already exist (e.g., cognitive behavioral therapy). Acquired capability for suicide, on the other hand, may perhaps be the most dangerous aspect of the model in that 1) the most deadly outcome, a suicide attempt, only theoretically occurs in the presence of this construct, and 2) relative to the two dynamic states that contribute to suicidal ideation, its development is proposed to be somewhat irreversible. Acquired capability for suicide is proposed to develop via exposure to PPE (pain and/or fear-inducing experiences). A limited number of these experiences were examined in relation to acquired capability for suicide in this study. Findings were suggestive of relationships between acquired capability for suicide with a

previous suicide attempt (Study 1 and Study 2) and, to a lesser degree, NSSI frequency (Study 1). Correlations were not suggestive of relationships between histories of physical or sexual abuse with acquired capability for suicide in this sample. Findings are in line with the IPTS' suggestion that a previous suicide attempt represents that most potent form of a PPE. Future research should examine whether other PPE carry differing weights of contribution to acquired capability for suicide. Such research can inform efforts aimed at preventing exposure to experiences that might increase acquired capability for suicide. For example, participation in contact sports, body piercings, and, to an unfortunately increasing degree, engagement in NSSI, are all common among adolescents. It is unreasonable for a caregiver to be able to prevent their adolescent's exposure to all PPE. Information which PPE are particularly dangerous can help in this regard. Additionally, methods for measuring acquired capability for suicide's second component, increased physical pain tolerance (e.g., physiological measures, development of a self-report measure), are necessary to test the IPTS hypothesis most relevant to suicide attempts.

Although these cross-sectional findings provide preliminary support for the IPTS among adolescents, the ultimate test of the model will depend upon its utility in predicting and managing suicidal behavior. Longitudinal studies that examine the ebb and flow of suicidal phenomena and their confluence in relationship to IPTS variables are lacking. Most studies have involved only part of

the model, focusing on perceived burdensomeness and/or thwarted belongingness alone, or on acquired capability for suicide. Large-scale epidemiological studies may be useful to determine how the three constructs interact and how they are weighted in determining suicidality. It is not yet known whether the model will be useful in guiding the development of interventions to decrease suicidality. An important and rigorous test of the utility of the theory would be a demonstration that the INQ constructs change as a response to intervention, and mediate changes in suicidality.

The question of imminent risk is not adequately explained by the model, and may involve additional extraneous variables such as overarousal, sleep disturbance, some aspects of impulsivity (i.e., negative urgency), or acute substance intoxication. Depression and hopelessness are two other variables that will be important in future refinements of the IPTS. Given the close theoretical and observed relationships between depression and hopelessness with IPTS variables relevant to suicidal ideation, thwarted belongingness and perceived burdensomeness, future studies should further tease out the roles that depression and hopelessness play in the IPTS.

### **LIMITATIONS**

This study was limited primarily by the nature of the sample. First, sample size prevented utilization of more sophisticated methods of structure modeling in

Study 1. Although a strength of Study 1 is that it provides support for use of the INQ and ACSS-FAD in adolescent inpatient psychiatric samples, it is not known whether these findings are generalizable to outpatient clinical or community adolescent samples. Given the elevation of all three IPTS constructs as would be predicted in the suicidal subgroup in this inpatient psychiatric sample, discriminant relationships may have been less easily detected. Furthermore, as the sample was predominantly girls and all participants were recently hospitalized, it is not known whether results from Study 2 generalize to other clinical groups or community adolescents. By selecting only those at the severe end of the psychiatric spectrum, some of the linear relationships that have been proposed and found in broader samples may be obscured.

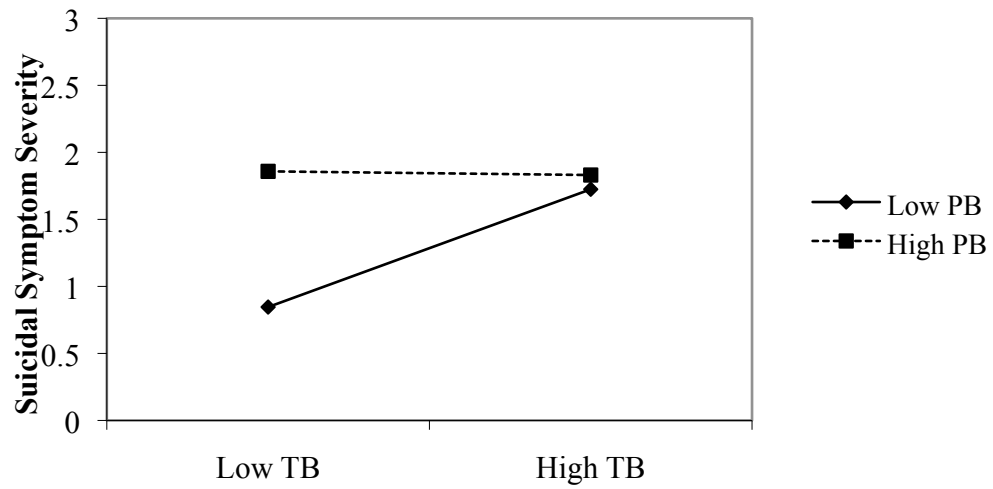
Although the theory postulates that suicidal ideation and suicidal intent follow high levels of perceived burdensomeness, thwarted belongingness, and acquired capability for suicide, the cross-sectional nature of the study did not allow for temporal arrangement of the key constructs. The sample size was small when subgroups such as passive and active suicide ideators and high lethality and low lethality attempters were examined. It is also relevant to note that this study did not include a measure of pain tolerance. Thus, the IPTS' final hypothesis, which differentiates between those with suicidal intent and those who make a lethal or near lethal suicide attempt, could not be comprehensively tested.



## **CONCLUSIONS**

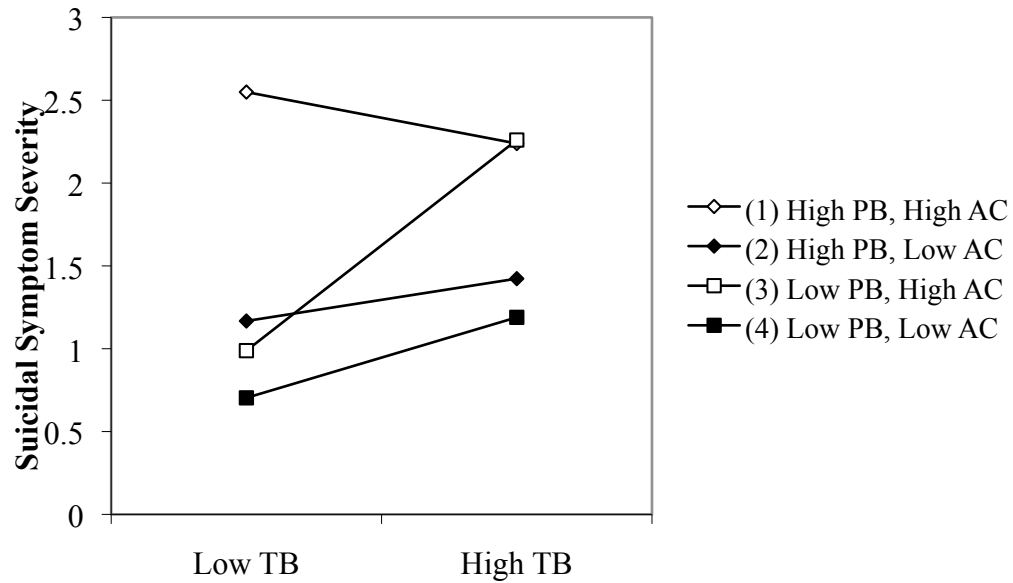
These findings contribute to growing support for the IPTS. In addition to providing preliminary evidence for reliable use of the INQ and ACSS-FAD among adolescents, this study adds to the literature by utilizing a clinical sample of adolescents, using specific measures of the IPTS constructs, and examining all three core variables simultaneously. The challenge to the field at this time is to extend this theory into prevention and treatment efforts.

Figure 1. Interaction of thwarted belongingness (TB) and perceived burdensomeness (PB) in prediction of suicidal symptom severity



Note. TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

Figure 2. Interaction of thwarted belongingness (TB), perceived burdensomeness (PB), and acquired capability for suicide – fearlessness about death (AC) in prediction of suicidal symptom severity



Note. TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

Table 1  
*Sample Demographics and Clinical Characteristics*

Variables	Total Sample ( <i>n</i> =147)	Adolescents with SI ( <i>n</i> =107)	Adolescents with Suicidal Intent ( <i>n</i> =42)
Age	14.72 (1.42)	14.67 (1.45)	14.74 (1.43)
Female	112 (76.2%)	84 (78.5%)	32 (76.2%)
Ethnicity			
Caucasian, Non-Hispanic	104 (70.7%)	78 (72.9%)	30 (71.4%)
Caucasian, Hispanic	17 (11.6%)	12 (11.2%)	1 (2.4%)
African American	15 (10.2%)	9 (8.4%)	4 (9.5%)
Other	11 (7.5%)	8 (7.5%)	7 (16.7%)
Admitting Diagnosis			
Major Depressive Disorder	102 (69.4%)	82 (76.6%)	33 (78.6%)
Mood Disorder NOS	19 (12.9%)	12 (11.2%)	4 (9.5%)
Depressive Disorder NOS	18 (12.2%)	9 (8.4%)	4 (9.5%)
Bipolar Disorder	4 (2.8%)	2 (1.8%)	1 (2.4%)
Other <sup>1</sup>	4 (2.8%)	2 (1.8%)	0 (0.0%)
Physical Abuse	25 (16.7%)	19 (17.8%)	8 (19.0%)
Sexual Abuse	28 (18.7%)	15 (14.0%)	7 (16.7%)
Depression <sup>2</sup>	12.36 (5.76)	14.26 (4.72)	16.24 (3.81)
Hopelessness	6.33 (4.62)	7.83 (4.43)	9.31 (3.87)
PB	3.62 (1.86)	4.33 (1.59)	4.74 (1.54)
TB	3.78 (1.51)	4.35 (1.25)	4.75 (1.01)
AC	2.27 (1.06)	2.55 (.95)	2.92 (.87)
Guilt	1.78 (1.11)	2.14 (.91)	2.52 (.74)
Social Support	4.32 (1.54)	4.31 (1.38)	4.19 (1.38)
Lifetime Suicide Attempt	84 (56%)	66 (61.7%)	29 (69.0%)

*Note.* TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

<sup>1</sup>Diagnoses categorized in “Other” were Obsessive Compulsive Disorder (*n* = 1), Post-Traumatic Stress Disorder (*n* = 1), Adjustment Disorder (*n* = 1), and Generalized Anxiety Disorder (*n* = 1).

<sup>2</sup>Calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

<sup>3</sup>Raw means reported.

Table 1 Continued  
*Sample Demographics and Clinical Characteristics*

Variables	Total Sample ( <i>n</i> =147)	Adolescents with SI ( <i>n</i> =107)	Adolescents with Suicidal Intent ( <i>n</i> =42)
Total Attempts Any Kind <sup>3</sup>	3.69 (16.58)	4.90 (19.45)	9.83 (30.49)
Suicide Attempts <sup>3</sup>	2.40 (10.86)	3.15 (12.75)	6.48 (19.97)
Aborted Attempts <sup>3</sup>	.49 (1.04)	.69 (1.18)	.79 (1.29)
Interrupted Attempts <sup>3</sup>	1.00 (8.79)	1.36 (10.44)	3.38 (17.12)
NSSI Frequency <sup>3</sup>	291.81 (1867.68)	379.31 (2201.11)	787.00 (3483.00)
Suicidal Ideation	107 (71.3%)	107 (100.0%)	42 (100.0%)
Suicidal Intent	42 (28.0%)	42 (39.3%)	42 (100.0%)
Active Suicidal Ideation	25 (16.7%)	25 (23.4%)	0 (0.0%)
Passive Suicidal Ideation	40 (26.7%)	40 (37.4%)	0 (0.0%)

*Note.* TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

<sup>1</sup>Diagnoses categorized in “Other” were Obsessive Compulsive Disorder (*n* = 1), Post-Traumatic Stress Disorder (*n* = 1), Adjustment Disorder (*n* = 1); and Generalized Anxiety Disorder

<sup>2</sup>Calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

<sup>3</sup>Raw means reported.

Table 2  
*Intercorrelations Among All Measures*

Variable	1	2 <sup>a</sup>	3 <sup>a</sup>	4 <sup>a</sup>	5	6	7
1. Age	—						
2. Sex <sup>a</sup>	-.01	—					
3. Physical Abuse (Y/N) <sup>a</sup>	.10	.18*	—				
4. Sexual Abuse (Y/N) <sup>a</sup>	.04	-.19*	.16	—			
5. Depression	.08	-.24**	-.01	-.08	—		
6. Depression <sup>b</sup>	.10	-.26**	-.02	-.07	.99**	—	
7. Guilt	.14	-.13	.01	-.05	.77**	.75**	—
8. Hopelessness	.08	-.15	.10	-.01	.60**	.58**	.57**
9. Social Support	-.01	-.07	-.12	-.03	-.04	-.03	.001
10. Special Person	.02	-.04	-.10	-.05	.04	.05	.05
11. Family	.09	-.02	-.04	.13	-.10	-.10	-.05
12. Friends	-.10	-.07	-.13	-.01	-.04	-.03	-.01
13. TB	.06	-.13	.02	-.14	.72**	.70**	.56**
14. PB	-.003	-.14	.02	-.10	.64**	.61**	.59**
15. ACSS-FAD	.02	-.13	.12	.004	.41**	.36**	.27**
16. SI (Y/N) <sup>ac</sup>	-.04	-.09	.03	-.18*	.60**	.53**	.51**
17. Active SI (Y/N) <sup>ac</sup>	-.08	.16	-.02	-.10	.11	.03	.02
18. Intent (Y/N) <sup>ac</sup>	.01	.001	.04	-.02	.55**	.44**	.43**
19. Suicidality <sup>c</sup>	-.02	-.03	.04	-.13	.68**	.56**	.55**
20. Suicide Attempt (Y/N) <sup>ad</sup>	.05	-.15	.19*	-.09	.16*	.14	.22**
21. Attempts Any Kind <sup>d</sup>	.06	-.09	.21*	.02	.28**	.26**	.24**
22. Suicide Attempts <sup>d</sup>	-.01	-.16*	.24**	.09	.26**	.24**	.22**
23. Interrupted Attempts <sup>d</sup>	-.03	-.03	.18*	.13	.11	.10	.08
24. Aborted Attempts <sup>d</sup>	.06	-.08	-.05	-.07	.31**	.29**	.28**
25. NSSI Frequency <sup>d</sup>	-.04	-.28**	.05	.03	.29**	.27**	.25**
26. Most Recent Lethality	.09	-.20	.22	-.08	.15	.12	.13
27. Most Lethal Lethality	.11	-.31*	.23	-.09	.20	.18	.13
28. First Attempt Lethality	.03	-.27	.10	-.17	-.05	-.05	.06

*Note.* Girl = 0; TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

\* $p < .05$ . \*\* $p < .01$ . <sup>a</sup>Spearman's rho reported.

<sup>b</sup>Calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

<sup>c</sup>Recent. <sup>d</sup>Lifetime.

Table 2 Continued  
*Intercorrelations Among All Measures*

Variables	8	9	10	11	12	13	14
8. Hopelessness	—						
9. Social Support	.20*	—					
10. Special Person	.18*	.90**	—				
11. Family	.21*	.73**	.55**	—			
12. Friends	-.12	.83**	.65**	.32**	—		
13. TB	.65**	-.17*	-.05	-.19*	-.18*	—	
14. PB	.70**	-.14	-.10	-.17*	-.09	.72**	—
15. ACSS-FAD	.46**	-.12	-.11	-.16	-.03	.45**	.44**
16. SI (Y/N) <sup>ac</sup>	.53**	-.04	.001	-.08	-.02	.62**	.66**
17. Active SI (Y/N) <sup>ac</sup>	-.20	-.16	-.22	-.01	-.18	-.10	-.16
18. Intent (Y/N) <sup>ac</sup>	.41**	-.06	.001	-.08	-.07	.42**	.39**
19. Suicidality <sup>c</sup>	.48**	-.08	-.01	-.10	-.09	.57**	.56**
20. Suicide Attempt (Y/N) <sup>ad</sup>	.16	-.04	-.004	-.09	.001	.21*	.25**
21. Attempts Any Kind <sup>d</sup>	.26**	-.06	-.05	-.03	-.06	.19*	.26**
22. Suicide Attempts <sup>d</sup>	.23**	-.06	-.06	-.03	-.06	.19*	.26**
23. Interrupted Attempts <sup>d</sup>	.16	.002	.01	-.02	.01	-.01	.07
24. Aborted Attempts <sup>d</sup>	.26**	-.10	-.07	-.03	-.14	.29**	.33**
25. NSSI Frequency <sup>d</sup>	.29**	-.02	.01	-.11	.03	.15	.22**
26. Most Recent Lethality	.08	.14	.14	.01	.15	-.09	-.11
27. Most Lethal Lethality	.20	.05	.08	-.09	.09	-.01	-.05
28. First Attempt Lethality	.13	.18	.14	.04	.26	-.13	-.19

Note. Girl = 0; TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

\* $p < .05$ . \*\* $p < .01$ . <sup>a</sup>Spearman's rho reported.

<sup>b</sup>Calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

<sup>c</sup>Recent. <sup>d</sup>Lifetime.

Table 2 Continued  
*Intercorrelations Among All Measures*

Variable	15	16 <sup>a</sup>	17 <sup>a</sup>	18 <sup>a</sup>	19	20 <sup>a</sup>	21
15. ACSS-FAD	—						
16. SI (Y/N) <sup>ac</sup>	.41**	—					
17. Active SI (Y/N) <sup>ac</sup>	.15	—	—				
18. Intent (Y/N) <sup>ac</sup>	.39**	.39**	—	—			
19. Suicidality <sup>c</sup>	.49**	.80**	1.00**	.81**	—		
20. Suicide Attempt (Y/N) <sup>ad</sup>	.21**	.19*	-.08	.17*	.20*	—	
21. Attempts Any Kind <sup>d</sup>	.33**	.30*	-.03	.25**	.30**	.77*	—
22. Suicide Attempts <sup>d</sup>	.30**	.25**	-.09	.27**	.30**	.91**	.94**
23. Interrupted Attempts <sup>d</sup>	.22**	.001	-.24	.14	.14	.18*	.76**
24. Aborted Attempts <sup>d</sup>	.29**	.37**	.08	.18*	.31**	.22*	.51**
25. NSSI Frequency <sup>d</sup>	.31**	.30**	-.03	.28**	.26**	.19*	.64**
26. Most Recent Lethality	.18	.10	.16	.16	.19	.11	.22
27. Most Lethal Lethality	.28*	.12	.07	.16	.20	.11	.31*
28. First Attempt Lethality	.06	-.07	-.04	.06	.004	.06	-.12

*Note.* Girl = 0; TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

\* $p < .05$ . \*\* $p < .01$ . <sup>a</sup>Spearman's rho reported.

<sup>b</sup>Calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

<sup>c</sup>Recent. <sup>d</sup>Lifetime.



Table 2 Continued  
*Intercorrelations Among All Measures*

Variable	22	23	24	25	26	27	28
22. Suicide Attempts <sup>d</sup>	—						
23. Interrupted Attempts <sup>d</sup>	.58**	—					
24. Aborted Attempts <sup>d</sup>	.32**	.29**	—				
25. NSSI Frequency <sup>d</sup>	.50**	.79**	.33**	—			
26. Most Recent Lethality	.20	.28*	-.05	.25*	—		
27. Most Lethal Lethality	.26	.37**	.15	.33*	.96**	—	
28. First Attempt Lethality	-.16	-.001	-.07	.03	.76**	.79**	—

*Note.* Girl = 0; TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

\* $p < .05$ . \*\* $p < .01$ . <sup>a</sup>Spearman's rho reported.

<sup>b</sup>Calculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

<sup>c</sup>Recent. <sup>d</sup>Lifetime.

Table 3  
*25-item INQ EFA Factor Loadings*

Item	Factor			
	1	2	3	4
These days, the people in my life would be better off if I were gone (PB1).	.21	<b>-.79</b>	-.03	-.03
These days, the people in my life would be happier without me (PB3).	.27	<b>-.88</b>	.05	-.12
These days, I think I have failed the people in my life (PB4).	-.16	<b>-.66</b>	-.32	.11
These days, I think I am a burden on society (PB6).	-.11	<b>-.54</b>	-.24	.28
These days, I think my death would be a relief to the people in my life (PB9).	.09	<b>-.77</b>	.21	.21
These days, I feel like a burden on the people in my life (PB11).	-.11	<b>-.66</b>	-.23	.19
These days, I think the people in my life wish they could be rid of me (PB12).	.07	<b>-.80</b>	-.06	-.04
These days, I think I make things worse for the people in my life (PB14).	-.11	<b>-.70</b>	-.17	.08
These days, I rarely interact with people who care about me (TB3).	.36	-.18	-.06	.04
These days, I feel disconnected from other people (TB5).	.21	-.21	<b>-.48</b>	.13
These days, I often feel like an outsider in social gatherings (TB6).	.26	-.08	<b>-.70</b>	.06
These days, I feel unwelcome in most social situations (TB8).	.14	-.22	<b>-.62</b>	.08
These days, I think I give back to society (PB2).	.00	.06	.03	<b>.72</b>
These days, I think people in my life would miss me if I went away (PB5).	.35	-.32	.09	.27
These days, I think I am an asset to the people in my life (PB7).	.12	-.03	.04	<b>.67</b>

Table 3 Continued  
*25-item INQ EFA Factor Loadings*

Item	Factor			
	1	2	3	4
These days, I think my ideas, skills, or energy make a difference (PB8).	-.10	-.15	-.03	<b>.73</b>
These days, I think I contribute to the well-being of the people in my life (PB10).	.21	.05	-.18	<b>.63</b>
These days, I think I contribute to my community (PB13).	-.02	-.02	-.07	<b>.70</b>
These days, I think I matter to the people in my life (PB15).	.39	-.30	.18	.38
These days, other people care about me (TB1).	<b>.52</b>	-.14	.05	.29
These days, I feel like I belong (TB2).	.22	-.19	-.17	<b>.44</b>
These days, I am fortunate to have many caring and supportive friends (TB4).	<b>.64</b>	.10	-.21	.08
These days, I feel that there are people I can turn to in times of need (TB7).	<b>.63</b>	-.21	-.04	.01
These days, I am close to other people (TB9).	<b>.61</b>	.00	-.14	.12
These days, I have at least one satisfying interaction every day (TB10).	.29	-.02	-.05	.39

Table 4  
*25-item INQ EFA Item-Factor Correlations*

Item	Factor			
	1	2	3	4
These days, the people in my life would be better off if I were gone (PB1).	.57	-.88	-.43	.58
These days, the people in my life would be happier without me (PB3).	.60	-.91	-.37	.54
These days, I think I have failed the people in my life (PB4).	.30	-.79	-.61	.55
These days, I think I am a burden on society (PB6).	.37	-.77	-.56	.64
These days, I think my death would be a relief to the people in my life (PB9).	.51	-.84	-.24	.64
These days, I feel like a burden on the people in my life (PB11).	.38	-.83	-.57	.63
These days, I think the people in my life wish they could be rid of me (PB12).	.44	-.84	-.42	.51
These days, I think I make things worse for the people in my life (PB14).	.31	-.77	-.48	.51
These days, I rarely interact with people who care about me (TB3).	.49	-.40	-.26	.38
These days, I feel disconnected from other people (TB5).	.51	-.60	-.69	.57
These days, I often feel like an outsider in social gatherings (TB6).	.53	-.55	-.84	.54
These days, I feel unwelcome in most social situations (TB8).	.46	-.61	-.79	.54
These days, I think I give back to society (PB2).	.37	-.36	-.24	.67
These days, I think people in my life would miss me if I went away (PB5).	.62	-.60	-.26	.62
These days, I think I am an asset to the people in my life (PB7).	.50	-.47	-.28	.73

Table 4 Continued  
*25-item INQ EFA Item-Factor Correlations*

Item	Factor			
	1	2	3	4
These days, I think my ideas, skills, or energy make a difference (PB8).	.39	-.56	-.36	.78
These days, I think I contribute to the well-being of the people in my life (PB10).	.60	-.51	-.48	.80
These days, I think I contribute to my community (PB13).	.40	-.46	-.35	.73
These days, I think I matter to the people in my life (PB15).	.70	-.63	-.22	.71
These days, other people care about me (TB1).	.73	-.53	-.27	.65
These days, I feel like I belong (TB2).	.61	-.64	-.50	.75
These days, I am fortunate to have many caring and supportive friends (TB4).	.69	-.34	-.38	.47
These days, I feel that there are people I can turn to in times of need (TB7).	.75	-.53	-.31	.51
These days, I am close to other people (TB9).	.72	-.42	-.36	.53
These days, I have at least one satisfying interaction every day (TB10).	.53	-.41	-.30	.58
Factor Correlations				
Factor 1	—			
Factor 2	-.47	—		
Factor 3	-.28	.45	—	
Factor 4	.57	-.61	-.41	—

Table 5  
*25-item INQ Two Factor Solution Factor Loadings*

Item	Factor	
	1	2
These days, the people in my life would be better off if I were gone (PB1).	.15	<b>-.76</b>
These days, the people in my life would be happier without me (PB3).	.12	<b>-.78</b>
These days, I think I have failed the people in my life (PB4).	-.10	<b>-.91</b>
These days, I think I am a burden on society (PB6).	.11	<b>-.74</b>
These days, I think my death would be a relief to the people in my life (PB9).	.20	<b>-.65</b>
These days, I feel like a burden on the people in my life (PB11).	.02	<b>-.86</b>
These days, I think the people in my life wish they could be rid of me (PB12).	-.03	<b>-.85</b>
These days, I think I make things worse for the people in my life (PB14).	-.10	<b>-.87</b>
These days, I rarely interact with people who care about me (TB3).	<b>.41</b>	-.12
These days, I feel disconnected from other people (TB5).	.36	<b>-.42</b>
These days, I often feel like an outsider in social gatherings (TB6).	.38	-.38
These days, I feel unwelcome in most social situations (TB8).	.26	<b>-.51</b>
These days, I think I give back to society (PB2).	<b>.63</b>	.06
These days, I think people in my life would miss me if I went away (PB5).	<b>.56</b>	-.20
These days, I think I am an asset to the people in my life (PB7).	<b>.69</b>	-.01
These days, I think my ideas, skills, or energy make a difference (PB8).	<b>.53</b>	-.21
These days, I think I contribute to the well-being of the people in my life (PB10).	<b>.80</b>	.00
These days, I think I contribute to my community (PB13).	<b>.59</b>	-.08

Table 5 Continued

*25-item INQ Two Factor Solution Factor Loadings*

Item	Factor	
	1	2
These days, I think I matter to the people in my life (PB15).	<b>.69</b>	-.13
These days, other people care about me (TB1).	<b>.76</b>	-.01
These days, I feel like I belong (TB2).	<b>.61</b>	-.26
These days, I am fortunate to have many caring and supportive friends (TB4).	<b>.74</b>	.13
These days, I feel that there are people I can turn to in times of need (TB7).	<b>.64</b>	-.10
These days, I am close to other people (TB9).	<b>.75</b>	.07
These days, I have at least one satisfying interaction every day (TB10).	<b>.65</b>	.02

Table 6  
*25-item INQ Two Factor Solution Item-Factor Correlations*

Item	Factor	
	1	2
These days, the people in my life would be better off if I were gone (PB1).	.69	-.86
These days, the people in my life would be happier without me (PB3).	.68	-.86
These days, I think I have failed the people in my life (PB4).	.55	-.84
These days, I think I am a burden on society (PB6).	.64	-.81
These days, I think my death would be a relief to the people in my life (PB9).	.67	-.80
These days, I feel like a burden on the people in my life (PB11).	.63	-.87
These days, I think the people in my life wish they could be rid of me (PB12).	.59	-.83
These days, I think I make things worse for the people in my life (PB14).	.53	-.80
These days, I rarely interact with people who care about me (TB3).	.49	-.41
These days, I feel disconnected from other people (TB5).	.66	-.68
These days, I often feel like an outsider in social gatherings (TB6).	.65	-.65
These days, I feel unwelcome in most social situations (TB8).	.63	-.70
These days, I think I give back to society (PB2).	.59	-.39
These days, I think people in my life would miss me if I went away (PB5).	.70	-.60
These days, I think I am an asset to the people in my life (PB7).	.70	-.51
These days, I think my ideas, skills, or energy make a difference (PB8).	.68	-.59
These days, I think I contribute to the well-being of the people in my life (PB10).	.80	-.58
These days, I think I contribute to my community (PB13).	.65	-.51



Table 6 Continued

*25-item INQ Two Factor Solution Item-Factor Correlations*

Item	Factor	
	1	2
These days, I think I matter to the people in my life (PB15).	.78	-.63
These days, other people care about me (TB1).	.77	-.56
These days, I feel like I belong (TB2).	.80	-.70
These days, I am fortunate to have many caring and supportive friends (TB4).	.65	-.40
These days, I feel that there are people I can turn to in times of need (TB7).	.71	-.56
These days, I am close to other people (TB9).	.70	-.47
These days, I have at least one satisfying interaction every day (TB10).	.64	-.45
Factor Correlations		
Factor 1	—	
Factor 2	-.72	—

Table 7  
*15-item INQ EFA Factor Loadings*

Item	Factor	
	1	2
These days, the people in my life would be better off if I were gone (PB1).	<b>.89</b>	-.26
These days, the people in my life would be happier without me (PB2).	<b>.91</b>	-.31
These days, I think I am a burden on society (PB3).	<b>.76</b>	-.12
These days, I think my death would be a relief to the people in my life (PB4).	<b>.83</b>	-.34
These days, I think the people in my life wish they could be rid of me (PB5).	<b>.81</b>	-.32
These days, I think I make things worse for the people in my life (PB6).	<b>.74</b>	-.25
These days, other people care about me (TB1).	<b>.68</b>	.23
These days, I feel like I belong (TB2).	<b>.76</b>	.21
These days, I rarely interact with people who care about me (TB3).	<b>.49</b>	.07
These days, I am fortunate to have many caring and supportive friends (TB4).	<b>.53</b>	.42
These days, I feel disconnected from other people (TB5).	<b>.70</b>	.12
These days, I often feel like an outsider in social gatherings (TB6).	<b>.66</b>	.16
These days, I feel that there are people I can turn to in times of need (TB7).	<b>.69</b>	.27
These days, I am close to other people (TB8).	<b>.62</b>	.37
These days, I have at least one satisfying interaction every day (TB9).	<b>.55</b>	.19

*Table 8*  
*15-item INQ EFA Item-Factor Correlations*

Item	Factor	
	1	2
These days, the people in my life would be better off if I were gone (PB1).	.86	-.16
These days, the people in my life would be happier without me (PB2).	.87	-.21
These days, I think I am a burden on society (PB3).	.75	-.03
These days, I think my death would be a relief to the people in my life (PB4).	.79	-.24
These days, I think the people in my life wish they could be rid of me (PB5).	.78	-.22
These days, I think I make things worse for the people in my life (PB6).	.71	-.16
These days, other people care about me (TB1).	.71	.31
These days, I feel like I belong (TB2).	.79	.29
These days, I rarely interact with people who care about me (TB3).	.50	.13
These days, I am fortunate to have many caring and supportive friends (TB4).	.58	.48
These days, I feel disconnected from other people (TB5).	.71	.20
These days, I often feel like an outsider in social gatherings (TB6).	.68	.24
These days, I feel that there are people I can turn to in times of need (TB7).	.72	.35
These days, I am close to other people (TB8).	.66	.44
These days, I have at least one satisfying interaction every day (TB9).	.57	.26
Factor Correlations		
Factor 1	—	
Factor 2	.12	—

Table 9

*15-item INQ Three Factor Solution Factor Loadings*

Item	Factor		
	1	2	3
These days, the people in my life would be better off if I were gone (PB1).	<b>.79</b>	.09	-.10
These days, the people in my life would be happier without me (PB2).	<b>.87</b>	.13	.04
These days, I think I am a burden on society (PB3).	<b>.53</b>	.04	-.32
These days, I think my death would be a relief to the people in my life (PB4).	<b>.88</b>	.09	.12
These days, I think the people in my life wish they could be rid of me (PB5).	<b>.80</b>	.01	-.05
These days, I think I make things worse for the people in my life (PB6).	<b>.66</b>	-.09	-.25
These days, other people care about me (TB1).	.15	<b>.68</b>	.04
These days, I feel like I belong (TB2).	.18	<b>.46</b>	-.31
These days, I rarely interact with people who care about me (TB3).	.19	.35	-.03
These days, I am fortunate to have many caring and supportive friends (TB4).	-.17	<b>.74</b>	-.13
These days, I feel disconnected from other people (TB5).	.12	.10	<b>-.74</b>
These days, I often feel like an outsider in social gatherings (TB6).	.08	.18	<b>-.64</b>
These days, I feel that there are people I can turn to in times of need (TB7).	.10	<b>.78</b>	.07
These days, I am close to other people (TB8).	-.05	<b>.77</b>	-.05
These days, I have at least one satisfying interaction every day (TB9).	.11	<b>.53</b>	-.01

Table 10

*15-item INQ Three Factor Solution Item-Factor Correlations*

Item	Factor		
	1	2	3
These days, the people in my life would be better off if I were gone (PB1).	.89	.64	-.58
These days, the people in my life would be happier without me (PB2).	.92	.65	-.51
These days, I think I am a burden on society (PB3).	.73	.56	-.63
These days, I think my death would be a relief to the people in my life (PB4).	.86	.57	-.41
These days, I think the people in my life wish they could be rid of me (PB5).	.84	.54	-.50
These days, I think I make things worse for the people in my life (PB6).	.74	.47	-.57
These days, other people care about me (TB1).	.56	.75	-.44
These days, I feel like I belong (TB2).	.64	.75	-.67
These days, I rarely interact with people who care about me (TB3).	.43	.49	-.34
These days, I am fortunate to have many caring and supportive friends (TB4).	.36	.71	-.46
These days, I feel disconnected from other people (TB5).	.59	.60	-.86
These days, I often feel like an outsider in social gatherings (TB6).	.54	.60	-.79
These days, I feel that there are people I can turn to in times of need (TB7).	.56	.81	-.44
These days, I am close to other people (TB8).	.46	.77	-.47
These days, I have at least one satisfying interaction every day (TB9).	.45	.60	-.38
Factor Correlations			
Factor 1	—		
Factor 2	.63	—	
Factor 3	-.55	-.59	—

Table 11  
*20-item ACSS EFA Factor Loadings*

Item	Factor					
	1	2	3	4	5	6
Things that scare most people do not scare me (AC1).	-.01	.10	.09	-.10	.07	<b>.51</b>
The sight of my own blood does not bother me (AC2).	.16	<b>.82</b>	.03	-.05	-.06	-.09
I avoid certain situations (e.g., certain sports) because of the possibility of injury (AC3).	-.02	.12	.08	-.25	.32	-.14
I can tolerate a lot more pain than most people (AC4).	.00	.24	.03	-.25	.04	<b>.41</b>
People describe me as fearless (AC5).	.10	-.05	.12	<b>-.78</b>	-.04	.21
The sight of blood bothers me a great deal (AC6).	-.11	<b>.93</b>	-.05	.10	-.01	.09
The fact that I am going to die does not affect me (AC7).	<b>.77</b>	.03	.06	-.15	-.02	-.07
The pain involved in dying frightens me (AC8).	<b>.40</b>	.07	-.02	.17	.38	.08
Killing animals in a science course would not bother me (AC9).	-.02	.02	.25	.09	.01	<b>.42</b>
I am very much afraid to die (AC10).	<b>.68</b>	.02	-.01	-.08	.31	.08
It does not make me nervous when people talk about death (AC11).	.19	.02	-.08	-.08	.01	<b>.42</b>
The sight of a dead body is horrifying to me (AC12).	.18	.16	.12	.20	<b>.41</b>	.14

Table 11 Continued  
*20-item ACSS EFA Factor Loadings*

Item	Factor					
	1	2	3	4	5	6
The prospect of my own death arouses anxiety in me (AC13).	.26	.05	-.20	-.15	<b>.57</b>	.20
I am not disturbed by death being the end of life as I know it (AC14).	<b>.60</b>	.07	.03	.12	-.35	.21
I like watching the aggressive contact in sports games (AC15).	-.14	.08	<b>.72</b>	-.13	.04	-.03
The best parts of hockey games are the fights (AC16).	.05	.02	<b>.79</b>	-.04	-.07	.08
When I see a fight, I stop to watch (AC17).	.18	-.05	<b>.63</b>	.04	.00	.00
I prefer to shut my eyes during the violent parts of movies (AC18).	.02	.07	.28	.18	<b>.44</b>	.24
I am not at all afraid to die (AC19).	<b>.80</b>	.05	.03	-.09	.11	-.01
I could kill myself if I wanted to. (Even if you have never wanted to kill yourself, please answer this question) (AC20).	<b>.60</b>	.09	.10	.16	.04	.09

Table 12  
*20-item ACSS EFA Item-Factor Correlations*

Item	Factor					
	1	2	3	4	5	6
Things that scare most people do not scare me (AC1).	.28	.35	.30	-.14	.22	.58
The sight of my own blood does not bother me (AC2).	.36	.83	.27	-.15	.26	.28
I avoid certain situations (e.g., certain sports) because of the possibility of injury (AC3).	.05	.23	.14	-.31	.38	-.03
I can tolerate a lot more pain than most people (AC4).	.27	.44	.26	-.29	.23	.51
People describe me as fearless (AC5).	.20	.18	.24	-.78	.13	.28
The sight of blood bothers me a great deal (AC6).	.21	.90	.23	-.01	.27	.37
The fact that I am going to die does not affect me (AC7).	.76	.28	.18	-.16	.21	.32
The pain involved in dying frightens me (AC8).	.55	.33	.14	.10	.50	.34
Killing animals in a science course would not bother me (AC9).	.21	.23	.38	.06	.10	.49
I am very much afraid to die (AC10).	.80	.37	.19	-.13	.51	.44
It does not make me nervous when people talk about death (AC11).	.37	.22	.10	-.09	.13	.49
The sight of a dead body is horrifying to me (AC12).	.41	.42	.29	.11	.52	.39



Table 12 Continued  
*20-item ACSS EFA Item-Factor Correlations*

Item	Factor					
	1	2	3	4	5	6
The prospect of my own death arouses anxiety in me (AC13).	.48	.36	.03	-.23	.67	.37
I am not disturbed by death being the end of life as I know it (AC14).	.63	.21	.15	.15	-.15	.46
I like watching the aggressive contact in sports games (AC15).	.01	.27	.73	-.20	.16	.18
The best parts of hockey games are the fights (AC16).	.21	.28	.82	-.10	.10	.35
When I see a fight, I stop to watch (AC17).	.26	.19	.64	.00	.12	.26
I prefer to shut my eyes during the violent parts of movies (AC18).	.30	.37	.43	.08	.53	.43
I am not at all afraid to die (AC19).	.84	.35	.20	-.13	.35	.40
I could kill myself if I wanted to. (Even if you have never wanted to kill yourself, please answer this question) (AC20).	.70	.33	.25	.12	.23	.43
Factor Correlations						
Factor 1	—					
Factor 2	.31	—				
Factor 3	.17	.30	—			
Factor 4	-.01	-.13	-.08	—		
Factor 5	.26	.34	.16	-.14	—	
Factor 6	.46	.37	.32	-.02	.16	—

Table 13  
*7-item ACSS-FAD EFA Factor Loadings*

Item	Factor	
	1	2
The fact that I am going to die does not affect me (FAD1).	<b>.73</b>	.21
The pain involved in dying frightens me (FAD2).	<b>.61</b>	-.23
I am very much afraid to die (FAD3).	<b>.88</b>	-.13
It does not make me nervous when people talk about death (FAD4).	<b>.40</b>	.11
The prospect of my own death arouses anxiety in me (FAD5).	<b>.64</b>	-.42
I am not disturbed by death being the end of life as I know it (FAD6).	<b>.51</b>	.43
I am not at all afraid to die (FAD7).	<b>.84</b>	.07

Table 14  
*7-item ACSS-FAD EFA Item-Factor Correlations*

Item	Factor	
	1	2
The fact that I am going to die does not affect me (FAD1).	.74	.24
The pain involved in dying frightens me (FAD2).	.61	-.20
I am very much afraid to die (FAD3).	.88	-.10
It does not make me nervous when people talk about death (FAD4).	.40	.12
The prospect of my own death arouses anxiety in me (FAD5).	.62	-.39
I am not disturbed by death being the end of life as I know it (FAD6).	.53	.45
I am not at all afraid to die (FAD7).	.85	.11
Factor Correlations		
Factor 1	—	
Factor 2	.04	—

Table 15

*7-item ACSS-FAD One Factor Solution Factor Loadings*

	Factor 1
The fact that I am going to die does not affect me (FAD1).	<b>.73</b>
The pain involved in dying frightens me (FAD2).	<b>.61</b>
I am very much afraid to die (FAD3).	<b>.87</b>
It does not make me nervous when people talk about death (FAD4).	<b>.40</b>
The prospect of my own death arouses anxiety in me (FAD5).	<b>.62</b>
I am not disturbed by death being the end of life as I know it (FAD6).	<b>.51</b>
I am not at all afraid to die (FAD7).	<b>.85</b>

Table 16  
*Intercorrelations Among All Study 1 Measures*  
 (n=147)

Variable	TB	PB	AC
TB			
PB	.72**		
AC	.45**	.44**	
Depression	.72**	.64**	.41** (.09 <sup>e</sup> )
Guilt	.56** (.24 <sup>*b</sup> )	.59**	.27** (.02 <sup>b</sup> )
Social Support	-.17*	-.14 (-.03 <sup>c</sup> )	-.12 (-.05 <sup>c</sup> )
NSSI Frequency	.15	.22** (-.07 <sup>d</sup> )	.31**
Lifetime Suicide Attempt (Y/N) <sup>a</sup>	.21*	.25**	.21*
Total Attempts of Any Kind	.19*	.26**	.33**
Total Suicide Attempts	.19**	.26**	.30*
Total Aborted Attempts	.29**	.33**	.29**
Total Interrupted Attempts	-.01	.07	.22*
Attempt Lethality	-.01	-.05	.28*

*Note.* TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

\* $p < .05$ . \*\* $p < .01$ . <sup>a</sup>Spearman's rho presented. <sup>b</sup>PB controlled. <sup>c</sup>TB controlled. <sup>d</sup>AC controlled.

<sup>e</sup>TB and PB controlled.

$r$  interpretations according to Cohen (1988, pp. 79-81): small  $r = .10$  - .29; medium  $r = .30$  to .49; large  $r = .50$  to 1.0

Table 17  
*Logistic Regression Equation Predicting Suicidal Ideation*

Predictors entered in set	<i>B</i>	<i>S.E.</i>	<i>p</i>	Exp(B)	95% CI
Step 1					
Age	-.32	.18	.07	.73	.52 – 1.02
Sex	.63	.57	.27	1.88	.62 – 5.76
Depression <sup>1</sup>	.22	.06	<.001	1.25	1.11 – 1.41
Hopelessness	.29	.09	<.005	1.34	1.12 – 1.60
Step 2					
Age	-.31	.22	.15	.73	.48 – 1.12
Sex	.13	.68	.85	1.13	.30 – 4.29
Depression <sup>1</sup>	.03	.08	.68	1.03	.88 – 1.22
Hopelessness	.01	.11	.94	1.01	.82 – 1.24
TB	.70	.37	.06	2.01	.98 – 4.11
PB	1.29	.38	<.005	3.62	1.73 – 7.57

*Note.* TB = thwarted belongingness; PB = perceived burdensomeness

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 18

*Logistic Regression Equation Predicting Passive versus Active Suicidal Ideation*

Predictors entered in set	<i>B</i>	<i>S.E.</i>	<i>p</i>	Exp( <i>B</i> )	95% CI
Step 1					
Age	-.13	.19	.50	.88	.61 – 1.28
Sex	1.15	.78	.14	3.16	.69 – 14.55
Depression <sup>1</sup>	.11	.07	.13	1.11	.97 – 1.28
Hopelessness	-.10	.07	.13	.91	.79 – 1.03
Step 2					
Age	-.16	.21	.45	.85	.57 – 1.29
Sex	1.76	.90	<.05	5.83	1.00- 34.03
Depression <sup>1</sup>	.24	.10	<.05	1.27	1.04 – 1.56
Hopelessness	-.04	.27	.60	.96	.82 – 1.12
TB	-.67	.41	.11	.51	.23 – 1.16
PB	-.31	.26	.24	.74	.44 – 1.22
TBxPB	.399	.17	<.05	1.49	1.08 – 2.07

*Note.* TB = thwarted belongingness; PB = perceived burdensomeness

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 19  
*Logistic Regression Equation Predicting Recent Suicide Plan or Attempt*

Predictors entered in set	<i>B</i>	<i>S.E.</i>	<i>p</i>	Exp(B)	95% CI
Step 1					
Age	-.06	.15	.67	.94	.70 – 1.26
Sex	.89	.56	.11	2.43	.81 – 7.27
Depression <sup>1</sup>	.20	.05	<.001	1.22	1.09 – 1.35
Hopelessness	.12	.05	<.05	1.13	1.02 – 1.25
Step 2					
Age	-.06	.16	.70	.94	.69 – 1.28
Sex	1.18	.60	.05	3.26	1.00 – 10.65
Depression <sup>1</sup>	.20	.06	<.001	1.22	1.09 – 1.37
Hopelessness	.07	.06	.22	1.07	.96 – 1.20
ACSS-FAD	.74	.25	<.05	2.10	1.28 – 3.45

*Note.* ACSS-FAD = acquired capability (fearlessness about death)

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.



Table 20  
*Hierarchical Multiple Regression Equation Predicting Current Suicidal  
 Symptom Severity*

Predictors entered in set	<i>F</i> for set	<i>R</i> <sup>2</sup>	<i>t</i> for predictors	<i>df</i>	$\beta$	<i>p</i>
1	21.22	.37		4, 142		<.001
Age			-1.27		-.09	.21
Sex			1.94		.13	.06
Depression <sup>1</sup>			5.67		.48	<.001
Hopelessness			2.74		.22	<.05
2	13.02	.52		11, 135		<.001
Age			-1.06		-.06	.29
Sex			2.43		.15	<.05
Depression <sup>1</sup>			3.21		.30	<.01
Hopelessness			-.51		-.05	.61
TB			1.72		.18	.09
PB			2.39		.24	<.05
AC			4.55		.38	<.001
TBxPB			-2.14		-.18	<.05
TBxAC			.24		.02	.81
PBxAC			.92		.09	.36
TBxPBxAC			-2.04		-.20	<.05

*Note.* TB = thwarted belongingness; PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 21

*Hierarchical Multiple Regression Equation Predicting Current Suicidal Symptom Severity for Low Thwarted Belongingness Group (n = 71)*

Predictors entered in set	<i>F</i> for set	<i>R</i> <sup>2</sup>	<i>t</i> for predictors	<i>df</i>	$\beta$	<i>p</i>
	6.89	.43		7, 63		<.001
Age			-1.66		-.17	.10
Sex			.79		.08	.43
Depression <sup>1</sup>			1.32		.17	.19
Hopelessness			-.17		-.02	.87
PB			3.00		.39	<.005
AC			3.31		.46	<.005
PBxAC			1.36		.19	.18

*Note.* PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 22  
*Hierarchical Multiple Regression Equation Predicting Current Suicidal  
 Symptom Severity for High Thwarted Belongingness Group (n = 71)*

Predictors entered in set	<i>F</i> for set	<i>R</i> <sup>2</sup>	<i>t</i> for predictors	<i>df</i>	$\beta$	<i>p</i>
	2.57	.22		7, 63		<.05
Age			-.02		-.002	.98
Sex			1.85		.22	.07
Depression <sup>1</sup>			2.75		.33	<.05
Hopelessness			.27		.04	.79
PB			.42		.06	.67
AC			2.01		.29	<.05
PBxAC			-.08		-.01	.93

*Note.* PB = perceived burdensomeness; AC = acquired capability for suicide – fearlessness about death

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 23  
*Hierarchical Multiple Regression Equation Predicting Current Suicidal  
 Symptom Severity for Low Perceived Burdensomeness Group (n = 71)*

Predictors entered in set	<i>F</i> for set	<i>R</i> <sup>2</sup>	<i>t</i> for predictors	<i>df</i>	$\beta$	<i>p</i>
	6.10	.34		7, 63		<.001
Age			-.86		-.09	.39
Sex			1.36		.14	.18
Depression <sup>1</sup>			1.77		.23	.08
Hopelessness			-.31		-.04	.76
TB			2.88		.45	<.005
AC			3.02		.35	<.005
TBxAC			1.81		.23	.08

*Note.* TB = thwarted belongingness; AC = acquired capability for suicide – fearlessness about death

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 24  
*Hierarchical Multiple Regression Equation Predicting Current Suicidal  
 Symptom Severity for High Perceived Burdensomeness Group (n = 71)*

Predictors entered in set	<i>F</i> for set	<i>R</i> <sup>2</sup>	<i>t</i> for predictors	<i>df</i>	$\beta$	<i>p</i>
	3.34	.27		7, 63		<.005
Age			-.59		-.06	.56
Sex			2.13		.24	<.05
Depression <sup>1</sup>			3.51		.43	<.001
Hopelessness			-.53		-.06	.60
TB			-.46		-.06	.65
AC			2.41		.36	<.05
TBxAC			-.49		-.08	.63

*Note.* TB = thwarted belongingness; AC = acquired capability for suicide – fearlessness about death

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 25  
*Logistic Regression Equation Predicting Lifetime Suicide Attempt Controlling for Age*

Predictors entered in set	<i>B</i>	<i>S.E.</i>	<i>p</i>	Exp(B)	95% CI
Step 1					
ACSS-FAD	.42	.17	.01	1.52	1.10 – 2.10
Step 2					
ACSS-FAD	.42	.17	.01	1.52	1.10 – 2.10
Age	.08	.12	.49	1.09	.86 – 1.38

*Note.* ACSS-FAD = acquired capability (fearlessness about death)

Table 26  
*Logistic Regression Equation Predicting Lifetime Suicide Attempt Controlling for Sex*

Predictors entered in set	<i>B</i>	<i>S.E.</i>	<i>p</i>	Exp(B)	95% CI
Step 1					
ACSS-FAD	.42	.17	.02	1.52	1.10 – 2.10
Step 2					
ACSS-FAD	.39	.17	.02	1.48	1.07 – 2.05
Sex	-.65	.40	.10	.52	.24 – 1.14

*Note.* ACSS-FAD = acquired capability (fearlessness about death)

Table 27  
*Logistic Regression Equation Predicting Lifetime Suicide Attempt Controlling  
 for Depression*

Predictors entered in set	<i>B</i>	<i>S.E.</i>	<i>p</i>	Exp(B)	95% CI
Step 1					
ACSS-FAD	.42	.17	.02	1.52	1.10 – 2.10
Step 2					
ACSS-FAD	.36	.18	.04	1.43	1.02 – 2.02
Depression <sup>1</sup>	.03	.03	.32	1.03	.97 – 1.10

*Note.* ACSS-FAD = acquired capability (fearlessness about death)

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.



Table 28  
*Logistic Regression Equation Predicting Lifetime Suicide Attempt Controlling  
 for Hopelessness*

Predictors entered in set	<i>B</i>	<i>S.E.</i>	<i>p</i>	Exp(B)	95% CI
Step 1					
ACSS-FAD	.42	.17	.02	1.52	1.10 – 2.10
Step 2					
ACSS-FAD	.36	.18	.05	1.44	1.00 – 2.06
Hopelessness	.03	.04	.55	1.03	.95 – 1.11

*Note.* ACSS-FAD = acquired capability (fearlessness about death)

Table 29  
*Logistic Regression Equation Predicting Lifetime Suicide Attempt Controlling  
 for Depression and Hopelessness*

Predictors entered in set	<i>B</i>	<i>S.E.</i>	<i>p</i>	Exp(B)	95% CI
Step 1					
ACSS-FAD	.42	.17	.02	1.52	1.10 – 2.10
Step 2					
ACSS-FAD	.35	.19	.06	1.41	.98 – 2.03
Depression <sup>1</sup>	.03	.04	.46	1.03	.96 – 1.11
Hopelessness	.01	.05	.82	1.01	.92 – 1.11

*Note.* ACSS-FAD = acquired capability (fearlessness about death)

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

Table 30  
*Logistic Regression Equation Predicting Lifetime Suicide Attempt Controlling  
 for Age, Sex, Depression, and Hopelessness*

Predictors entered in set	<i>B</i>	<i>S.E.</i>	<i>p</i>	Exp(B)	95% CI
Step 1					
ACSS-FAD	.42	.17	.02	1.52	1.10 – 2.10
Step 2					
ACSS-FAD	.34	.19	.07	1.41	.98 – 2.03
Age	.07	.12	.59	1.07	.84 – 1.36
Sex	-.53	.41	.20	.59	.26 – 1.33
Depression <sup>1</sup>	.02	.04	.67	1.02	.94 – 1.10
Hopelessness	.01	.05	.82	1.01	.92 – 1.11

*Note.* ACSS-FAD = acquired capability (fearlessness about death)

<sup>1</sup>Calculated using the QIDS-A-SR (Rush et al., 2006; Rush et al., 2003) without the suicide item.

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