

THE INTERPERSONAL THEORY OF SUICIDE AMONG ADOLESCENTS: EXAMINING
THE THEORY OVER THE COURSE OF TREATMENT

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THE INTERPERSONAL THEORY OF SUICIDE AMONG ADOLESCENTS: EXAMINING
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by

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Suicide is a one of the leading causes of death among young adults and adolescents. Adolescence is the period where suicidal phenomena typically develop and may offer an important window for understanding suicidal behavior. There are many known risk factors for suicide, but it has been difficult to integrate findings in a meaningful way that increases overall understanding of various risk factors for suicide. The Interpersonal Psychological Theory of Suicide (IPTS; Joiner, 2005) offers an organizing framework for understanding risk factors. The IPTS posits that an individual has to have the desire for suicide, as indicated by perceived burdensomeness and thwarted belongingness as well as the acquired capability to do so. There are few multiwave studies that indicate how IPTS variables change over time and also few studies that control for or compare against well-established variables associated with suicidality, specifically depressive symptoms. We aimed to address these shortcomings by examining how the IPTS variables change with treatment, and simultaneously

including a measure of depressive symptoms to investigate the dynamic nature of the model and its relationship with suicidal ideation relative to depressive symptoms. Participants were 56 adolescents engaged in an intensive outpatient treatment program, who completed measures of key IPTS constructs, depressive symptoms, and suicidal ideation at entrance and discharge. Results demonstrated that the interpersonal constructs of perceived burdensomeness and thwarted belongingness decreased significantly over the course of treatment while acquired capability remained stable. Change in interpersonal constructs and change in depressive symptoms were associated with change in suicidal ideation when tested in separate models. When change in depressive symptoms and change in interpersonal constructs were examined together, change in the interpersonal constructs contribution to prediction of variance in change in suicidal ideation persisted. This finding supports the unique contribution of IPTS variables to changes in suicidal ideation in a dynamic framework.

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CHAPTER ONE

Introduction

STATEMENT OF THE PROBLEM

Suicide is a worldwide public health concern and among the leading causes of death in the United States, especially among adolescents and young adults (Centers for Disease Control and Prevention [CDC], 2013). Suicidal ideation and acts typically begin in adolescence (Gould, Greenberg, Velting, Shaffer, 2003; Nock, Borges, Bromet, Cha, et al., 2008). Over one year, 17% of high school students seriously consider suicide, 8% attempted suicide, and 2.7% make a suicide attempt that requires medical treatment (Kann et al., 2014). Adolescence may offer an important developmental window for understanding and designing intervention for self-injurious behaviors.

Despite volumes of studies of suicide, there have been few gains made in influencing rates of attempts or completed suicide (National Action Alliance for Suicide Prevention: Research Prioritization Talk Force, 2014). The primary challenge in suicide research, for both adolescents and adults, continues to be determining who is at highest risk for making lethal attempts. The literature points to multiple risk factors, but even the most potent risk factors are imprecise in predicting a lethal suicide attempt. Moreover, many investigations and theories do not specify if they are predicting suicidal ideation, attempts, or both (Ribeiro et al., 2013). Critics of the field have pointed to the fact that these studies have rarely been theory-driven. As a consequence, it has been difficult to integrate findings in a meaningful way that increases overall understanding of various risk factors for suicide.

Joiner's Interpersonal-Psychological Theory of Suicide (IPTS) is becoming increasingly influential as a promising organizing framework (Joiner, 2005). The IPTS aims to integrate

scattered risk factors and explain the difference between rates of suicidal ideation and behaviors (Van Orden et al., 2010). The IPTS is also posited to be applicable across the lifespan (Joiner, 2005). The theory hypothesizes that individuals will die by suicide only if they have the desire to die (indicated by high levels of perceived burdensomeness and thwarted belongingness that are the basis for suicide ideation), and the capability to do so (described as acquired capability, which results from loss of fear of death through desensitization, and pain tolerance). Perceived burdensomeness and thwarted belongingness are believed to fluctuate over time, and are associated with interpersonal needs and negative cognitions about those needs being met. Acquired capability is seen as a less variable characteristic, based on exposure to provocative and painful experiences (such as physical trauma and non-suicidal self-injury). The IPTS innovatively highlights the role of a construct not previously associated with suicide attempts, acquired capability, as necessary but not independently sufficient for a suicide attempt.

This dissertation is guided by two gaps in the literature. The first is the constructs at the core of Joiner's (2005) theory, perceived burdensomeness, thwarted belongingness, and acquired capability, have generally been examined at one time point. Their stability over time, particularly following treatment, is unknown. Acquired capability, proposed to build up over a long period of time, presumably fluctuates less than perceived burdensomeness and thwarted belongingness. Investigating the stability of the IPTS constructs may help elucidate which elements are most responsive to intervention. It may also inform program development and propose prospective hypotheses regarding which individuals are more likely to persist in high risk for suicide.

Second, examination of a new theory should include investigation of whether it explains the phenomena in question better than existing theories. The IPTS will be particularly useful if it is able to explain variance in suicidality over that of depression – a better known and established risk factor. Depression is also associated with perceived burdensomeness and thwarted belongingness. However, change following treatment in IPTS variables, depressive symptoms, and suicidal ideation has not been examined together in adolescents. An examination of the change with treatment in suicidal ideation and its relative association with change in depression versus change in the IPTS variables could provide information regarding the dynamic nature of the model and the relative value of the IPTS variables compared to depressive symptoms. These findings would have significant implications for the validity of IPTS, and its usefulness in guiding future risk assessment and intervention.

Therefore, the first aim of the current study is to investigate stability of IPTS variables (perceived burdensomeness, thwarted belongingness, and acquired capability) over the course of treatment. The second aim is to examine suicidal ideation, depressive symptoms, and the IPTS variables of perceived burdensomeness and thwarted belongingness over the course of treatment, to elucidate if changes in ideation are associated with changes in depressive symptoms and/or IPTS variables, and to determine whether, as predicted by the theory, change in the IPTS persists even after accounting for change in depressive symptoms.

CHAPTER TWO

Review of the Literature

INTRODUCTION

Suicidal ideation is defined as thoughts or wishes to be dead or kill oneself. Suicide attempts are defined as self-inflicted behaviors intended to result in death (Lewinsohn, Rohde, & Seeley, 1996). Non-suicidal self-injury (NSSI) refers to deliberate destruction of one's body tissue for non-socially sanctioned purposes and is devoid of suicidal intent (Nock et al., 2006).

Adolescence is a unique period for research on suicidal ideation and attempts. Cross culturally, completed suicide is rare prior to puberty (World Health Organization, 2012). After puberty, suicide attempts increase in frequency, peaking between 16-18, with increased risk persisting into the early 20s (Gould et al., 2003; Kessler et al., 1999; Nock et al., 2008).

Suicide is a worldwide public health concern and is currently the second leading cause of death among 15-24 year olds in the United States (Kessler et al., 2014; Centers for Disease Control and Prevention [CDC], 2013). In addition to death by suicide, many more experience suicidal ideation (Kessler et al., 2005; National Comorbidity Survey: Adolescent Supplement [NCS-A], 2004). Over one year, 17% of high school students seriously consider suicide, 8% attempted suicide, and 2.7% make a suicide attempt that requires medical treatment (Kann et al., 2014). Furthermore, for every lethal adolescent suicide attempt in the U.S, there are 100 – 200 non-lethal adolescent suicide attempts (Moskos, Achilles, & Gray, 2004).

Current Issues in the Literature

Adolescents may be Unique and Findings from Adults may not Apply

Adolescence is an important period for suicide research, as it is when suicidal ideation and behaviors typically emerge (Gould et al., 2003). There is some evidence that there are differences among adults and adolescents related to diagnosis, intent, and presence of previous attempts (Parellada et al., 2008). Adolescent suicide attempts are associated with a weaker intent to die than adults and tend to occur in the wake of an acute emotional crisis. Conversely, adult suicide attempts tend to occur more often after multiple attempts and during a mood episode compared to adolescents.

Suicidal ideation and behaviors and their relationship with risk factors may change over the course of adolescence as cognitive, social, and physiological changes unfold. Findings from adult samples may not be completely translatable to adolescents. Specifically, ethnic and sex differences occur differently in younger samples than in adults. Among adults, the only racial/ethnic difference in suicidal ideation and attempts is that Asian adults have lower prevalence rates of suicidal ideation compared to other racial/ethnic groups (Crosby, Grfroerer, Han, Ortega, & Parks, 2011). Hispanic youth are more likely than white or black youth to report suicidal ideation, plan, or attempt (Kann et al., 2014). Asian American adolescents have higher rates of suicidal ideation and suicide compared to other racial/ethnic groups (Vander Stoep et al., 2009; US Department of Health and Human Services, 2007). Adolescent girls are more likely to attempt suicide than adolescent boys. Conversely, boys are at greater risk to complete suicide than girls (Gould et al., 2003; Spirito & Esposito-Smythers, 2006; World Health Organization,

2012; Center for Disease Control, 2013). Adult women report more frequent suicidal ideation (Crosby, Gfroerer, Han, Ortega, & Parks, 2011; Kessler, Berglund, Borges, Nock, & Wang, 2005) but there are inconsistent findings regarding sex differences in relation to suicide plan or attempt (Borges et al., 2006; Crosby et al., 2011; Kessler et al., 2005). Sexual orientation and gender identity and their relationship to suicide risk is notable; lesbian, gay, bisexual, and transgender youth are more likely to attempt than their heterosexual counterparts (Hatzenbuehler, 2011; Liu & Mustanski, 2012; Mustanski & Liu, 2013).

In addition to differences in ethnicity and sex, differences in impulsivity and emotional modulation are proposed to impact attempts in adolescence uniquely due to the developing brain. Specifically, impulsivity is often associated with adolescent attempts and NSSI. Impulsivity and qualities that reflect impulsivity (e.g., sensation seeking) have been associated with various risk-taking behaviors, including suicide attempt among adolescents (Kasen, Cohen, & Chen, 2011). However, there is controversy regarding whether impulsivity leads adolescents to make impulsive attempts or if the impulsivity exposes adolescents to more risky behaviors over time, which eventually habituates them to tolerate the painful experience of a suicide attempt (Witte et al., 2008).

Current evidence is also mixed on the relationship between emotional dysregulation and suicide attempt; among emotionally dysregulated individuals, interpersonal difficulties can be common and are thought to increase suicidal ideation. Simultaneously, emotional dysregulated individuals are posited to avoid situation that might be perceived as emotionally overwhelming (Anestis et al., 2011). More studies with clinical adolescent samples will be useful in examining

factors that influence suicidality, as risk factors are likely to be most evident in these populations.

Risk Factors in Adolescence

There are many known risk factors for suicidality in adolescence, including social, demographic, behavioral, and diagnostic variables. In a review of social factors and their association with adolescent suicidality, King & Merchant (2008) found poor peer relationships, physical and sexual abuse, and peer victimization are risk factors for adolescent suicidality. Additional social factors such as having few social supports, loss through separation, and poor parental attachment also put adolescents at risk for suicide (Agerbo et al., 2002; Sheftall et al., 2013; Cantor & Slater, 1005; Van Orden et al., 2010). Moreover, stressful life events such as low socioeconomic status and physical illness are associated with suicidality (Kaplan et al., 2007; Kposowa, 2001; Wagner et al., 2003).

Demographically, adolescent girls are more likely to attempt suicide than adolescent boys. Conversely, boys are at greater risk to complete suicide than girls (Gould et al., 2003; Spirito & Esposito-Smythers, 2006; World Health Organization, 2012; Center for Disease Control, 2012). Hispanic and Asian American youth are more likely to commit suicide than other ethnic/racial groups (Kann et al., 2014; Vander Stoep et al., 2009; US Department of Health and Human Services, 2007).

Engagement in NSSI, previous suicide attempt, and engagement in risky behaviors have also been linked with suicide attempt (Muehlenkamp & Gutierrez, 2007; Wilkinson et al., 2011; Lewinsohn, Rohde, & Seeley, 1994; Lewinsohn, Rohde, & Seeley, 1996; Shaffer et al., 1996; Kasen, Cohen, & Chen, 2011). Diagnostic characteristics such as negative cognitive styles, low

self-esteem, impulsivity, poor interpersonal problem solving skills, and current suicidal ideation have also been associated with attempt (Spirito & Esposito-Smythers, 2006; Lewinsohn, Rohde, & Seeley, 1996).

Psychiatric disorders are considered to be key in the pathogenesis of suicidal phenomena. Over 90% of adolescent suicide attempters have at least one preexisting psychiatric disorder (Gould et al., 2003; Nock et al., 2013). The most prevalent disorder associated with suicide attempt in adolescence is major depressive disorder followed by behavior and substance abuse disorders (Nock et al., 2013; Brent et al., 1993; Marttunen et al., 1991). A psychiatric diagnosis in conjunction with a history of suicide attempt is the strongest predictor of death by suicide in adolescents (Brent et al., 1993; Lewinsohn, Rodhe, & Seeley, 1996).

Depression has been considered one of the most prominent predictors of suicide attempt (Brent et al., 2009; Lewinsohn, Rodhe, & Seeley, 1996). However, findings are inconsistent; in a study by Klonsky and colleagues (2013) depression did not remain a significant risk factor after other variables (i.e., suicidal ideation and NSSI) were accounted for (Klonsky et al., 2013).

Need for Theory Driven Research

The principle challenge in suicide research is determining who is at greatest risk for making a lethal attempt, but findings remain inconclusive. This is largely due to practical limitations in suicide research. Individuals who completed suicide are the population whose characteristics would provide the most information about risk, but are unavailable for study. Additionally, suicide attempts are a low base rate occurrence, so it is difficult to garner adequate sample sizes for a prospective study to understand imminent risk (Prinstein, 2008). Additionally, information is typically gathered retrospectively, and not all salient factors might be documented

in an individual's history.

Despite volumes of studies of suicide, there have been few gains made in influencing rates of attempts or completed suicide (National Action Alliance for Suicide Prevention: Research Prioritization Talk Force, 2014). The lack of advancement may be associated with a lack of theory-driven research, which makes it challenging to integrate findings in a meaningful way that increases overall understanding of various risk factors for suicide. The literature has identified risk factors in various biological, psychological, and social domains. Specifically, the diagnosis of a psychiatric disorder and a history of previous suicide attempt are the strongest predictors for future completed suicide among adults (Christiansen & Jensen, 2007; Cavanagh et al., 2003). Yet, most individuals diagnosed with a psychiatric disorder do not complete suicide, and up to half who die by suicide, do so on their first attempt (Bostwick & Pankratz, 2000; Rudd, Joiner, & Rajab, 1996).

Additionally, early intervention may not be sufficient to prevent suicide; over 55% of suicidal adolescents begin some sort of mental health treatment prior to the onset of suicidal behaviors (Nock et al., 2013). An organizing framework that accounts for the interaction of individual risk factors is needed to elucidate what moves an individual to an imminent risk of attempt.

Need for More Longitudinal Research

Prospective analyses are essential in testing theories of suicide, as cross-sectional analyses do not well elucidate the directional implications that are specified in the theory. In the adolescent literature, there is a paucity of prospective analyses of suicidal ideation and attempt.

This is likely because these studies are challenging to conduct given the low base rate occurrence of attempts.

An exception is a study conducted by Prinstein and colleagues (2008), which followed adolescents 18 months after discharge from psychiatric hospitalization. Findings demonstrated that increases in suicidal ideation following discharge from the hospital are a short-term indicator of risk for attempt, even after controlling for depressive symptoms and attempt at baseline. Additionally, findings demonstrated that both NSSI and past attempt (both considered proxies for acquired capability) were predictors of future attempt (Prinstein et al., 2008). Czyz and King (2012) also examined outcome trajectories in adolescents inpatients 12 months post hospitalization. Findings demonstrated adolescents with chronically elevated suicidal ideation were more likely to attempt suicide and to be hospitalized compared to adolescents with less persistent ideation. Findings from both Prinstein and colleagues (2008) and Czyz and King's (2013) underscore the importance of monitoring adolescents' suicidal ideation closely after discharge.

In addition to the impact of suicidal ideation trajectories on attempt, there is also substantial support demonstrating the relationship between social factors and adolescent suicidality. King and colleagues (1995) found suicidal adolescents with lower levels of family support were more likely to make a suicide attempt in the six month following psychiatric hospitalization. Moreover, McKeown and colleagues (1998), examined predictors of suicidal behavior and one-year transition probabilities across suicidal behavior categories (none, ideation, plan, attempt). They found a negative association between family cohesion and suicide attempt.

Findings also demonstrated an association with decreasing family cohesion and more severe suicidal behavior.

Lewinsohn and colleagues (1994) reported findings from the Oregon Adolescent Depression Project, which assessed adolescents at two time points over a 12-month period. They found that adolescents' perceptions of low family support predicted future attempts even after controlling for depression. Additionally, low family support predicted attempts into young adulthood (Lewinsohn et al., 2001), which emphasizes the persistent and robust effect of family support on adolescent suicide attempts.

Intervention studies for depressed adolescents largely report outcomes without reporting mediational factors associated with decreases in depression. Examination of mediational factors of treatment effectiveness is an important, but infrequently studied topic (Kaufman et al., 2005; Hinshaw, 2002; Kazdin & Nock, 2003; La Greca et al., 2009; Weersing & Weisz, 2002). An exception is a study which examined mediational factors in a group CBT intervention for adolescents with major depressive disorder (Kaufman et al., 2005). Results suggested that reductions in negative thinking mediated the decrease in depressive symptoms. However, studies that examine mediators of intervention effectiveness in depression are inconsistent; Kolko and colleagues (2000) did not find measures of cognitive distortion or family dysfunction to mediate treatment outcome of depression in an adolescent sample.

Moreover, few adolescent intervention studies that examine suicidal ideation and attempt as outcomes report mediational factors. An exception is a clinical trial, where depressed adolescents received either CBT, systemic-behavioral-family (SBFT), or non-directive supportive therapy (Barbe et al., 2004). The association between suicidality (defined on a

continuum from suicidal ideation with a plan to attempt) and depression at the end of treatment was moderated by severity of depression and hopelessness at intake (Barbe et al., 2004).

There are a growing number of studies for depressed adolescents that include systematic family interventions (Rotheram-Borus et al., 1996; Miller et al., 1997; Huey et al., 2004; Diamond et al., 2010; Diamond et al., 2012; Pineda and Dadds, 2013). A few of these family-based intervention studies examined mediational factors. Their findings suggest that reduction in suicidal ideation was largely mediated by improvement in family functioning (Diamond et al., 2010; Diamond et al., 2012; Pineda and Dadds, 2013). While there are a few longitudinal studies examining suicidality in adolescents, there are even fewer studies that examine the mediators of change in suicidality. Indeed, little is known about changes that are associated with improvements in suicidality.

The Interpersonal Theory of Suicide

The Interpersonal-Psychological Theory of Suicide, most commonly referred to as the Interpersonal Theory of Suicide (IPTS), is becoming an increasingly influential framework. The IPTS posits that individuals will die by suicide only if they have the desire to die coupled with the ability to do so (Joiner, 2005). The IPTS as an organizing framework for suicidality possesses a multitude of strengths. The IPTS a) yields testable hypotheses, which allows for falsification of the theory's hypotheses; b) provides a framework to organize disparate risk factors associated with suicide via parsimonious central constructs; c) accounts for differentiations in level of suicidality as well as declining rates of increasingly severe suicidal phenomena; d) provides a framework to identify cognitions that are necessary to both ideation and attempt; and e) innovatively highlights the role of a construct not previously associated with

suicide attempts, acquired capability, as necessary but not independently sufficient for a suicide attempt.

In the IPTS, thwarted belongingness and perceived burdensomeness are instrumental to the development of suicidal desire (and hopelessness regarding these states is necessary for the development of suicidal intent) (Van Orden et al., 2010). A third construct, acquired capability for suicide, is central to the development of the capability to engage in suicidal behavior (Van Orden et al., 2010). Perceived burdensomeness and thwarted belongingness are believed to fluctuate over time, and are associated with interpersonal needs and negative cognitions about those needs being met. Acquired capability is seen as a less variable characteristic, based on exposure to provocative and painful experiences (such as physical trauma and NSSI).

The construct of thwarted belongingness is the psychological state when social belonging needs are not met. Thwarted belongingness is based on Baumeister and Leary's principle that the human psychological need to belong is a fundamental and pervasive motivation (Van Orden et al., 2010; Baumeister & Leary, 1995, p.1). Thwarted belongingness is a multidimensional construct comprised of two facets: 1) loneliness and 2) the absence of reciprocally caring relationships (Van Orden et al., 2010). Few social supports, reports of loneliness, and a non-intact family are posited to be associated with suicide because they are factors associated with the loneliness facet of thwarted belongingness (Roberts, Roberts, & Chen, 1998; Chew & McCleary, 1995; Gove & Hughes, 1980; Heikkinen, Aro, & Lönnqvist, 1994; Cantor & Slater, 1995; Van Orden et al., 2010). Marriage, number of children, and having close friends are some examples of protective factors posited to guard against the loneliness facet of thwarted belongingness (Joiner, Hollar, & Van Orden, 2006; Van Orden et al., 2010).

Perceived burdensomeness is proposed to be the misperception that one is a burden to all others in their life. It is a multidimensional construct comprised of two facets 1) belief that the self is flawed and a liability on others and 2) cognitions of self-hatred (Van Orden et al., 2010, p. 583). Risk factors for suicide such as unemployment, incarceration, homelessness, physical illness, feelings of expendability, and the belief one is a burden on their family are considered to be measurable reflections of the liability facet of perceived burdensomeness (Barak, Cohen, & Aizenberg, 2004; Fazel et al., 2008; Kposowa, 2001; Woznica & Shapiro, 1990; Sabbath, 1969; Kaplan et al., 2007; Van Orden et al., 2010). Moreover, risk factors such as low self-esteem, shame, and agitation are proposed to be associated with suicide because they are measurable indicators of the self-hatred facet of perceived burdensomeness (Chatard, Selimbegovic, & Konan, 2009; Foster, 2003; Fawcett et al., 1990; Van Orden et al., 2010). The experience of both thwarted belongingness and perceived burdensomeness combined with feeling hopeless regarding these states yield active suicidal ideation or desire.

Intentional self-harm is a painful and frightening act for which an individual must overcome biological tendencies for survival (Van Orden et al., 2010). Thus, IPTS suggests that the capability to make an attempt must be acquired. Acquired capability is posited to be a multidimensional latent variable that is comprised of lowered fear of death and increased physical pain tolerance (Van Orden, 2010). According to the theory, acquired capability is cultivated through habituation of the physically painful and/or fear-inducing aspects of self-harm.

The theory suggests that suicidal ideation is not sufficient, but a reduction in fear of death must also occur. Individuals who have a history of suicidal ideation, but have not attempted

reported higher levels of fear of suicide compared to individuals with ideation who acted on the ideation through suicidal behaviors (Linehan, Goodstein, Nielsen, & Childes, 1983). Fear of death is considered to be a dimensional construct from very high to minute levels of fear. In order for suicide ideation to increase towards ideation with intent than fear must be reduced to a non-zero degree of fearlessness (Van Orden et al., 2010).

Additionally, dying by suicide not only requires that an individual overcomes fear, but also habituates to physical pain. Research suggests that individuals with recent suicidal behavior demonstrate elevated pain tolerance compared to non-suicidal samples of community and clinical individuals (Orbach, Mikulincer, King, Cohen & Stein, 1997; Orbach, Palgi, Stein, HarEven, LotemPeleg, Asherov, et al., 1996, Van Orden et al., 2010). Acquired capability is proposed to develop via the mechanisms of habituation (to fear and pain related to self injury) in conjunction with the strengthening of opponent processes. Opponent process is a model by Solomon and Corbit (1974), which proposes that with repeated exposures the emotional effects of the opposite process become amplified (i.e., primary response to sky diving may be excitement, which will remain stable, but the opponent process [e.g., fear] may decrease) (Van Orden et al., 2010).

Painful and provocative experiences (PPE) are any events such as NSSI, shoplifting, promiscuous sex, involvement in contact sports, shooting a gun, hurting animals on purpose, engaging in physical fights, physical abuse (Joiner, 2005, Bender et al, 2011; Joiner et al., 2012). These are thought to increase risk for suicide because they are physically painful and/or frightening enough to engage habituation and opponent processes in regard to the pain and fear

inherent in self-harm. According to the IPTS, a previous suicide attempt would be the strongest PPE and thus the most reliable predictor of suicidal behavior (Van Orden et al., 2010).

Van Orden and colleagues (2010) propose four hypotheses of the theory: 1) Perceived burdensomeness and thwarted belongingness are proximal causes of passive suicidal ideation; 2) the simultaneous presence of perceived burdensomeness and thwarted belongingness, is a proximal cause of active suicidal desire; 3) the simultaneous suicidal desire and lowered fear of death is the condition under which suicidal desire becomes intent; and 4) the outcome of lethal (or near lethal attempts) is most likely to occur in the context of the interpersonal states (perceived burdensomeness and thwarted belongingness), reduced fear of suicide, and elevated pain tolerance.

There is accumulating empirical support of the theory in adults, especially of the interpersonal states (perceived burdensomeness and thwarted belongingness) with the outcome of suicidal ideation and attempts among adults (examples include Davidson et al., 2011; Davidson et al., 2010; Gauthier et al., 2014; Hill & Pettit, 2012; Van Orden et al., 2008). In the process of testing the theory among adults, Joiner and colleagues have developed measures of thwarted belongingness and perceived burdensomeness (both measured in the Interpersonal Needs Questionnaire) and acquired capability for suicide (measured in the Acquired Capability for Suicide Scale). Recent adult studies have utilized direct measures of the IPTS constructs in order to fully capture the pathways that lead to development of the constructs.

Evidence for the Theory in Adolescence

Although in its beginning stages, there is accumulating support of the IPTS in adolescence (Stewart et al., 2015). Perhaps due to the relatively new application of the theory to

adolescents, investigators have primarily utilized proxy variables instead of the specific IPTS measures. Specifically, measurable indicators of thwarted belongingness (e.g., self-reported loneliness), perceived burdensomeness (e.g., self-reported feelings of expendability), and acquired capability of suicide (e.g., previous attempts) and their associations with suicidal ideation and attempts have been studied among adolescents with findings interpreted through the IPTS framework. The majority of the adolescent literature has focused on either the combination of the interpersonal states (i.e., perceived burdensomeness and thwarted belongingness) or acquired capability. Therefore, the initial evidence for the theory in adolescence will first be outlined for perceived burdensomeness/thwarted belongingness then for acquired capability.

Lasgaard and colleagues (2011), using loneliness as a proxy for thwarted belongingness, found that loneliness was associated with suicidal ideation concurrently and one year later. However, the association between loneliness and suicidal ideation was no longer significant once depressive symptoms were controlled. This study did not support the unique contribution of loneliness (as a proxy for thwarted belongingness) to suicidal ideation.

One study among Asian-American high school students examined the quality of family, school, and peer relationships (social supports were proxies for thwarted belongingness) and concurrent suicidal ideation (Wong & Maffini, 2011). Findings indicated that for most high school students, all three kinds of social support were protective against suicidal ideation, providing evidence for the IPTS. This study did not control for depressive symptoms.

Cero and Sifers (2013a), utilizing self-esteem as a negative indicator of perceived burdensomeness in community adolescents, found that self-esteem mediated the effect of parental behavior variables on suicide attempt. Moreover, physical abuse was associated with

increased probability of suicide attempt through mediation by self-esteem (a proxy for perceived burdensomeness and thwarted belongingness), supporting the model (Cero & Sifers, 2013b).

Another study, utilizing measures of family attachment, family cohesion, and family adaptability as proxy variables for thwarted belongingness, examined suicide attempt in a sample of clinical adolescents (Sheftall et al., 2013). They found that the suicide attempt group was significantly predicted by adolescent-rated variables of paternal attachment, family cohesion, and family adaptability, supporting the IPTS model.

Timmons and colleagues (2011) studied parental displacement (including abandonment, parental death, and divorce) as well as loneliness on lifetime attempt in a sample of community adolescents. Investigators found that loneliness (a proxy for thwarted belongingness) mediated displacement's relationship to suicide attempt. Moreover, in a second study by Timmons and colleagues (2011), displacement interacted with loneliness to predict suicide attempts, such that adolescents who experienced both displacement and loneliness had the highest risk for suicide. However, there are inconsistent findings regarding displacement; Kretschmar and Flannery (2011) found no differences in suicide attempt between youth placed in or out of the home (displacement was a proxy for perceived burdensomeness and thwarted belongingness).

In the above studies there are mixed findings for the relationship between perceived burdensomeness/thwarted belongingness and suicide attempt. However, the IPTS hypothesizes that both interpersonal components (perceived burdensomeness and thwarted belongingness) are needed in conjunction with acquired capability for a suicide attempt to occur. Therefore, the inconsistent findings do not necessarily contradict the theory, as acquired capability was not examined. Moreover, the timing of most of the studies was cross-sectional with an outcome

variable of lifetime attempt. Future research should examine interpersonal states through a multiwave design to fully assess the predictive ability of the constructs.

Cero and Sifers (2013a), using exposure to violence as a proxy for acquired capability, found that exposure mediated the relationship between parental behavior variables and suicide attempt in boys, but not in girls. Suicide attempts occur more frequently among adolescents who engage in violent behaviors (e.g., physical fighting and carrying a weapon) compared to suicide ideators (Stack, 2013). Investigators examining injection drug use (as a proxy for acquired capability) hypothesized that depressed adolescents who injected substances were more likely to have made a suicide attempt than adolescents who used substances but did not inject them (Liu et al., 2014). They found that adolescents who injected substances were more likely to have made an attempt compared to those who used but did not inject. Additionally, there were no differences in reporting suicidal ideation between groups, supporting the IPTS hypothesis that acquired capability differentiates ideators from attempters.

The strong association between NSSI and suicide attempt in adolescents with depression has been established (Asarnow et al., 2011). Adolescents engaging in NSSI are at greater risk to attempt suicide than non-NSSI engaging peers (Muehlenkamp, 2007). Examining NSSI through the IPTS framework, Franklin and colleagues (2013) posited that NSSI increases an individual's acquired capability via habituation to painful and provocative experiences. In a study by Klonsky and colleagues (2013), NSSI and suicidal ideation were found to be predictive of suicide attempts over other well known risk factors such as depression and impulsivity. Another investigation examined the relationship between NSSI and suicide attempt in an inpatient adolescent sample (Nock et al., 2006). Results revealed that number of lifetime attempts were

associated with number of years engaging in NSSI, number of NSSI methods, and lack of pain during NSSI.

There is limited prospective research examining the IPTS among adolescents. To our knowledge, only one study has prospectively examined the three-way interaction of IPTS constructs in a clinical adolescent sample (Czyz, Berona, and King, 2015). Czyz and colleagues (2015) found the interaction did not prospectively predict suicide attempt. However, the study may be limited due to the utilization of proxy measures for key constructs. In another prospective study, Kerr and colleagues (2008) examined a group of adolescent boys annually for five years. They examined suicidal ideation and recurrence over time, controlling for depressive symptoms and other risk factors. Their findings suggested that the occurrence of suicidal ideation increases the risk for future suicidal ideation. Kerr and colleagues (2008) interpreted the findings through the IPTS framework and suggested recurrent suicidal ideation is a form of habituation.

As mentioned above, proxy measures are predominantly used as opposed to specific measures, which are designed to capture the theory's broader latent constructs (Stewart et al., 2015). The use of proxy variables to measure the central constructs of the IPTS is not wholly problematic, as they rely on how risk factors develop in real world situations. However, multiple risk factors are posited to work through the IPTS constructs, and a single risk factor proxy would capture only some of the variability in the underlying IPTS construct.

In addition to reliance on proxy variables, most studies include either the interpersonal states (perceived burdensomeness and thwarted belongingness) or acquired capability, though a key concept in the model is that all three IPTS constructs are considered necessary for an attempt

to occur. However, an exception is a recent study by Horton and colleagues, which to our knowledge, is the only study that utilized specific measures of all three constructs. Horton and colleagues (2015) examined 147 adolescents hospitalized on an inpatient psychiatric unit and were guided by the following questions:

1a) Are the interpersonal states (perceived burdensomeness and thwarted belongingness) associated with recent suicidal ideation?

1b) Do thwarted belongingness mediate the associations, if any, between depression and hopelessness, and suicidal ideation?

1c) Does the interaction of perceived burdensomeness and thwarted belongingness differentiate between adolescents with passive and active suicidal ideation?

2) Do adolescents with a recent history of suicidal intent have higher level of acquired capability?

3) Is the interaction of the perceived burdensomeness, thwarted belongingness, and acquire capability associated with increasing severity of suicidal symptoms?

They found that perceived burdensomeness, and at a marginal level, thwarted belongingness, independently distinguished between adolescents with and without current suicidal ideation. Results remained even when depression was controlled. The interaction of thwarted belongingness and perceived burdensomeness distinguished between passive and active ideation. Acquired capability for suicide differentiated adolescents with and without recent suicidal intent. An examination of the three-way interaction of key constructs revealed main effects of each construct (with a marginal effect of thwarted belongingness) and a three-way

interaction effects for key constructs in association with suicidal symptoms severity. The study offers strong, preliminary support of the IPTS as a practical framework in clinical adolescents.

Controversies and the Next Steps in the Study of the IPTS

The current challenges in the IPTS research include that there are a) relatively few studies with clinical adolescents, which is a high risk population in need of further investigation; b) the vast majority of IPTS studies in adolescent populations use proxy variables instead of direct measures; c) there are few multiwave studies that indicate how IPTS variables change over time; and d) few studies that control for or compare against well-established variables associated with suicidality, specifically depression.

To our knowledge, there are no studies prospectively examining the stability of IPTS constructs in adolescent samples. Acquired capability is posited to be stable over time while perceived burdensomeness and thwarted belongingness are considered to be state-related cognitions (Van Orden et al., 2010). However, the short and long-term stability of the constructs following treatment remains unknown. If acquired capability is stable then it may be a persistent clinical risk factor. If perceived burdensomeness and thwarted belongingness are indeed state-related cognitions then they may be modifiable and an important target of intervention in clinical populations.

Depression has been repeatedly demonstrated to be an important determinant of suicidal ideation and attempt, and is associated with perceived burdensomeness and thwarted belongingness. Depressive symptoms and negative cognitive styles have long been associated with suicidal ideation and attempt. An important consideration in longitudinal research is whether depressive symptoms and negative cognitive styles (e.g., hopelessness and loneliness)

explain suicidal outcomes as well as do IPTS constructs (Lasgaard et al., 2011). In a short-term study of undergraduates with depressive symptoms above the cut-point to indicate probable depression on the Center for Epidemiological Studies screening scale (Kleiman, Liu & Riskind, 2014), IPTS variables, depressive symptoms, and suicide ideation were examined twice over two months. The IPTS variables were found to mediate the effects of depressive symptoms on suicidal ideation. However, depressive symptoms did not mediate the association between the IPTS variables and suicidal ideation.

An additional longitudinal study (Kleiman, Law & Anestis, 2014) demonstrated that model fit is better when the variables act on suicidal ideation through the mediation of IPTS variables rather than the fit when variables are organized so that negative cognitive style (i.e., hopelessness) is more proximal to suicidal ideation.

However, there are some mixed findings regarding the mediational role of IPTS variables on depressive symptoms. Lasgaard and colleagues (2011) utilized loneliness as a proxy for thwarted belongingness. Loneliness was associated with suicidal ideation concurrently and one year prospectively. However, when depressive symptoms were controlled, there was no association between loneliness and suicidal ideation.

Summary

The IPTS offers a framework that accounts for differentiations in phenomena for which other theories do not. The implication of a more nuanced framework is greater understanding of what leads from risk factors to suicidal ideation and attempt. The IPTS has a growing base of evidence among adults and preliminary evidence among clinical adolescents (Horton et al., 2015). At present, central constructs have been primarily examined through cross-sectional

research. An important challenge is to view the model prospectively – particularly in adolescence – when suicidal ideation and behaviors are still emerging. A prospective examination may elucidate the associations that IPTS constructs have over time on suicidal ideation. The IPTS constructs, perceived burdensomeness and thwarted belongingness, are posited to be both a proximal cause of suicidal ideation and are simultaneously considered to be malleable over time, whereas acquired capability would not be expected to change. It is unknown whether acquired capability fluctuates after initial exposure to painful and provocative events. A second question that remains with regard to the model is the extent to which it explains suicidal phenomena over known and well-accepted risk factors, specifically depression. An examination of the variables that change with treatment, and simultaneous inclusion of measures of depression could provide information regarding the dynamic nature of the model and its relationship with suicidal ideation relative to depression. These findings would have significant implications for the validity of IPTS, and its usefulness in guiding future prevention and intervention.

Future research of the IPTS should include more prospective studies using direct measures of the constructs to a) examine the stability of the constructs and if they change with treatment; b) whether the constructs mediate changes in suicidality; and c) whether the IPTS constructs are entirely distinct from better known and acknowledged risk factors for suicidality, specifically depression.

Primary Aims and Hypotheses

Aim I: To examine the IPTS variables (perceived burdensomeness, thwarted belongingness, and acquired capability) over the course of treatment to assess their stability.

Hypothesis Ia: As suggested by the Interpersonal Theory of Suicide, acquired capability (assessed by ACSS) will be stable over time.

Hypothesis Ib: Perceived burdensomeness/thwarted belongingness (as assessed by INQ) will improve over the course of treatment.

Aim II: To examine suicidal ideation, depressive symptoms, and the IPTS variables of perceived burdensomeness and thwarted belongingness over time, to elucidate if changes in ideation are associated with changes in depressive symptoms, IPTS variables, or both.

Hypothesis IIa: Changes in depressive symptoms and in the IPTS variables will be associated with changes in suicidal ideation when tested separately.

Hypothesis IIb: When both IPTS constructs and depressive symptoms are included in the same equation, changes in suicidal ideation will remain associated with changes in IPTS constructs after controlling for changes in depressive symptoms.

CHAPTER THREE

Methodology

PARTICIPANTS

The final sample consisted of 56 participants ages 12 – 17 in the Suicide Prevention and Resilience at Children's (SPARC) Intensive Outpatient Program (IOP) who completed research assessments at baseline [T1] and discharge [T2]. Discharge [T2] was completed at either SPARC exit ($n = 53$) or upon hospitalization at Children's psychiatric inpatient unit, if a higher level of care was needed during IOP ($n = 3$). Participants were primarily girls and non-Hispanic Caucasian (sample characteristics are presented in Table 1).

Participants were recruited from a pool of 144 consecutive adolescents enrolling in SPARC over a 13-month period with 139 (95.52%) meeting eligibility requirements (Figure 1). Ninety-three (66.91%) of the 139 eligible adolescents were referred to SPARC directly from the Children's psychiatric inpatient unit. Seventy five percent of those eligible ($n = 70$) were approached for recruitment at the psychiatric inpatient unit and 93% provided consent ($n = 65$). The primary reason the remaining 25% of eligible adolescents were not approached was due to limited availability of part-time research staff.

The remaining 46 (33.09%) of the eligible participants were referred directly to SPARC from community sources, including outpatient therapists, psychiatrists, emergency departments, and self-referrals. Thirty-seven percent of the 46 eligible adolescents ($n = 17$) were approached and 76% provided consent ($n = 13$). Sixty three percent of eligible adolescents referred from the community were not recruited. Proportionately fewer eligible participants were approached who were referred directly from the community because of a time lag in starting recruitment with this group because of limited researcher availability. The proportionate number that were

approached when procedures to include community participants were put in place (80.9%) was similar to those who entered from the inpatient unit.

Of the 80 consented participants, 78 completed measures at T1 ($n = 2$ excluded due to withdrawn consent and low reading level). Of the 78 completing measures at T1, 56 (71.79%) completed T2. Reasons that data from these participants ($n = 22$) were not obtained were due to error in the research form administration process ($n = 6$), participants dropping out prior to completing the program ($n = 10$), and participants requiring a higher level of care at an external hospital with admission precluding return to complete study participation ($n = 6$). Due to error in the clinical data collection process, 13 of the 56 completing research assessments at T1 and T2 were missing key measures obtained at SPARC for clinical purposes. Therefore, the final sample size was 56 for Aim I and 42 for Aim II of the study.

Inclusion and Exclusion Criteria

Inclusion:

- 1) Age 12 – 17
- 2) English-speaking participants and their parents

Exclusion:

- 1) Concurrent mental retardation, active psychosis, neurological disorders that would impact ability to complete questionnaires.
- 2) Held back more than two years from age-appropriate grade level

Procedures

All participants completed measures at treatment entrance [T1] and discharge [T2] with assessment occurring a mean of 5.8 (± 2.2) weeks apart. The questionnaires at SPARC IOP were comprised of self-report and clinician-administered questionnaires assessing Interpersonal Theory of Suicide constructs (Interpersonal Needs Questionnaire [INQ] and Acquired Capability for Suicide Scale [ACSS]), depressive symptoms (Quick Inventory of Depressive Symptomology-SR-A-17 [QIDS-SR-A-17]), suicide risk (Concise Health Risk Tracking [CHRT]), and clinician assessment of suicide risk (Columbia-Suicide Severity Rating Scale [C-SSRS]).

Measures

Perceived burdensomeness and thwarted belongingness

Perceived burdensomeness and thwarted belongingness were measured using the Interpersonal Needs Questionnaire (INQ, Van Orden et al., 2008). To test the hypotheses of the IPTS, Joiner and colleagues developed the INQ. It is a self-report measure designed to assess the respondent's current perception of thwarted belongingness and perceived burdensomeness. Items from the thwarted belongingness scale were adapted from Baumeister and Leary's "need to belong" concept and their corresponding self-report measure of Inclusionary Status (Leary, Terday, Tambor, & Downs, 1995). Items from the Mattering to Others Questionnaire developed by Marshall (2005) contributed to the perceived burdensomeness scale. The INQ has a Flesch-Kincaid grade reading level of 3.2.

Different versions of the INQ have been used in various studies. However, the psychometric support has been the strongest for the 15-item scale, which was utilized in the

current study. The 15-item INQ is comprised of nine items measuring thwarted belongingness and six items measuring perceived burdensomeness (Van Orden et al., 2010). Each item is answered on a Likert scale from 1 (“not at all true of me”) to 7 (“very true for me.”) 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 in adult populations (Van Orden et al., 2012).

Both the thwarted belongingness and perceived burdensomeness subscales demonstrated convergent validity in adult populations (Van Orden et al., 2012). Divergent validity is strong among older adults, but there is inadequate divergent validity among younger adults (Van Orden et al., 2012). Consistent with the theory, perceived burdensomeness and thwarted belongingness 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).

Horton and colleagues (unpublished manuscript), as far as we know, were the first to examine the psychometric properties of the INQ in an adolescent clinical sample. Interpretable factors consistent with the theory were obtained in exploratory factor analyses. A three-factor solution of the 15-item INQ was interpretable in the context of the IPTS. Internal consistency was excellent for both perceived burdensomeness ($\alpha = .93$) and thwarted belongingness ($\alpha = .89$). Tests for discriminant and convergent associations provided initial support for construct validity. Overall, findings support the reliable use of the INQ with clinical adolescents.

Acquired capability for suicide

The original Acquired Capability for Suicide Scale (ACSS; Van Orden et al., 2008; Bender et al., 2007) was developed by Joiner and colleagues in order to test the construct of

acquired capability. The 20-item self-report measure is intended to assess a respondents' fearlessness about death, perceived pain tolerance, and exposure to painful and/or fear-inducing events. Various versions of the ACSS have been used in research. The ACSS had a Flesch-Kincaid reading level of 2.8.

Most recently, Ribeiro and colleagues (2014) developed the ACSS-FAD, which is a revised version comprised of seven items intended to assess fearlessness about death. In adult samples, the ACSS-FAD has demonstrated convergent validity with associated constructs such as pain tolerance and fear of suicide (Ribeiro et al., 2014). Divergent validity has also been established; ACSS-FAD scores were not associated with depression severity or suicidal ideation in undergraduate samples (Ribeiro et al., 2014). ACSS-FAD has adequate internal consistency among adult samples ($\alpha \geq .75$; Witte, Correia, & Angarano, 2013).

In an adolescent clinical sample, Horton and colleagues (unpublished manuscript) found that forced one-factor solution yielded a viable factor structure for the ACSS-FAD; all seven items clearly loaded onto one factor. Internal reliability for the ACSS-FAD was good ($\alpha = .84$). Regarding convergent validity, ACSS-FAD demonstrated associations with NSSI frequency and attempt lethality. There were mixed findings with divergent validity; acquired capability demonstrated a medium relationship with depression and a small association with guilt. After controlling for thwarted belongingness and perceived burdensomeness, acquired capability's relationship with depression was weaker than depression's relationship with both thwarted belongingness and perceived burdensomeness. When controlling for perceived burdensomeness, acquired capability's relationship with guilt was significantly weaker than perceived burdensomeness' relationship with guilt. Overall, findings provide preliminary support for the

use of ACSS-FAD in a clinical adolescent sample (Horton et al., 2015). In the current study we will administer the 20-item ACSS from which we can derive the 7-item ACSS-FAD.

Depression

The Quick Inventory of Depressive Symptomatology – Adolescent Version Self-Report (QIDS-A-SR-17; Rush, Bernstein, & Trivedi, 2006; Rush et al., 2003) will be used to measure depression. The QIDS-A-SR-17 is a 17-item self-report measure designed to assess the severity of the nine core symptoms of Major Depressive Disorder, as defined in the DSM-IV-TR, prompting adolescents to respond to items based on how they have been feeling the past week. The adolescent version of the QIDS was adapted from the adult version by adding an item to assess irritability, as the DSM-IV-TR outlines that children and adolescents with mood disturbance may present with either sadness and/or irritability (Rush et al., 2003; Moore et al., 2007; APA, 2000).

The QIDS-A-SR-17 correlates strong with the Children's Depression Rating Scale Revised (CDRS-R, Poznanski & Mokros, 1996), a well-established measure of child and adolescent depression ($r=.62$; Haley et al., 2009). The QIDS-A-SR-17 has strong internal consistency ($\alpha = .84$) and acceptable reliability ($\alpha = .78$) (Haley et al., 2009). Moreover, the 16-item QIDS-SR has been found to be comparable to measures of depression rated by clinicians ($\alpha \geq 0.8$) (Bernstein et al., 2010).

Suicidal Ideation

The Concise Health Risk Tracking Self Report (CHRT SR) is a relatively new measure designed to track suicide risk over time (Trivedi et al., 2008). CHRT includes a three item risk score and was utilized as our primary outcome measure of suicidal ideation, as there is

accumulating evidence to suggest that the score shows the most clinical utility as indicators of imminent suicide risk (Trivedi et al., 2011). Questions included: 1) I have had thoughts of killing myself; 2) I have thoughts about how I might kill myself; and 3) I have a plan to kill myself. Each item is scored from 0 to 4 (0 = strongly disagree to 4 = strongly agree). Internal consistency (Cronbach α) was .78 for the items. CHRT risk possesses acceptable psychometric properties and performed as well as a clinician-rated version of the measure (Trivedi et al., 2011).

Suicidal Ideation and Suicidal Behavior

Suicidal behavior and specific degrees of suicidal ideation (i.e., passive, active, plan) were measured using the Columbia Suicide Severity Rating Scale (C-SSRS; Posner et al., 2008). The C-SSRS was utilized for description of participants, but not in analyses. The C-SSRS is a clinician-rated interview measure, which classifies severity of suicidal behaviors over two points: the past week and greatest severity in the respondent's lifetime (i.e., when respondent felt the most suicidal). Suicidal ideation is rated on an ordinal scale (1=wish to be dead, 2=nonspecific active suicidal thoughts, 3=suicidal thoughts with methods, 4=suicidal intent, and 5=suicidal intent with plan). Suicidal behavior is rated on a scale that classifies and assesses the number of actual attempts, aborted attempts, and interrupted attempts. Lethality of actual attempts is rated on a scale from 0 to 5. If there is no actual lethality of an attempt than potential lethality is assessed. The C-SSRS also assesses the presence of NSSI and preparatory behavior.

The C-SSRS has demonstrated good convergent and divergent validity with other clinician and self-report suicidal ideation and behavior scales (Posner, Brown, Stanley, et al., 2011). It also has high sensitivity and specificity for suicidal behavior classifications. Both the ideation and behavior subscales were sensitive to change over time and the ideation portion of

the scale has demonstrated moderate to strong internal consistency (Posner, Brown, Stanley, et al., 2011).

Power analyses

Analyses for Aim I were powered for the hypotheses relevant to examining change scores in SPARC Time 1 and Time 2. To detect a difference of a medium effect size, 51 participants are required. Analyses for aim II were powered by the hypothesis that states that when both IPTS constructs and depressive symptoms are included in the same equation, changes in suicidal ideation will remain associated with changes in IPTS constructs after controlling for changes in depressive symptoms. To detect a medium effect size with five predictors (predictors=Time 1 Suicidal ideation, Time I interpersonal construct, Time 2 interpersonal construct, Time 1 QIDS, Time 2 QIDS), 47 participants are required.

CHAPTER FOUR

Study Results

The final sample consisted of 56 adolescents who completed IPTS measures at Time 1 and Time 2. As previously discussed, the majority of participants were recruited from the inpatient unit while 17% were recruited directly from the community. We analyzed differences at T1 and T2 between the inpatient- and community-referred participants (Table 1). No significant differences emerged and therefore we examined participants as a single group. The sample was primarily girls and non-Hispanic Caucasian. Complete sample characteristics, descriptive data, and intercorrelations among key study variables are presented in Tables 2, 3, and 4. Previous findings indicated perceived burdensomeness and thwarted belongingness demonstrated a large concurrent association (Horton et al., 2015). From this the question arose whether perceived burdensomeness and thwarted belongingness should be considered as separate constructs or a single construct. Therefore, in analyses that examine the individual contribution of perceived burdensomeness and thwarted belongingness we also examined their composite, INQ. More detailed findings regarding the psychometric properties of the combined scales are presented in Exploratory Analyses (p. 38).

Change in Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability over the Course of Treatment

A one-way repeated measures ANOVA was conducted to examine the first aim, with time as the within-person factor and the IPTS variables (perceived burdensomeness, thwarted belongingness, and acquired capability) at SPARC entrance [T1] and SPARC discharge [T2] entered as independent variables. We followed guidelines set forth by Cohen, Miles, and Shevlin (2001), which describe partial eta square effect sizes as small at .01, medium at .06, and large at

.14. Overall, there was a significant effect of time across the IPTS variables with a large effect size, Wilks' $\lambda = .70$, $F(3, 52) = 7.52$, $p < .001$, multivariate $\eta^2 = .30$.

Follow-up polynomial contrasts indicated significant linear effects with means decreasing over time for perceived burdensomeness, $F(1, 55) = 4.36$, $p = .04$, partial $\eta^2 = .07$ and thwarted belongingness, $F(1, 55) = 20.57$, $p = .00003$, partial $\eta^2 = .27$. Perceived burdensomeness difference and thwarted belongingness difference demonstrated a medium and large effect size, respectively. (A paired sample t-test was also conducted to examine the INQ composite at over time. The test demonstrated a decrease in the INQ at T1 and T2, $t(55) = 3.84$, $p = .0003$.) While there was a reduction in the acquired capability mean score over time, it was non-significant and demonstrated a small effect size, $F(1, 55) = .86$, $p > .05$, partial $\eta^2 = .02$.

Change in the IPTS Constructs, Depressive Symptoms, and their Associations with Change in Suicidal Ideation over the Course of Treatment

Three separate hierarchical multiple regressions were performed to assess whether changes in the interpersonal constructs: 1) perceived burdensomeness, 2) thwarted belongingness, and 3) INQ (perceived burdensomeness and thwarted belongingness composite score) were associated with change in suicidal ideation over treatment. Change was consistently measured as the contribution to variance provided by the T2 measure of the predictor of interest after controlling for T1 levels of the same variable. For all three regressions (Tables 5-7), covariates (suicidal ideation at baseline and treatment duration) were entered at step one. Step one results indicated that these covariates accounted for a significant amount of the change in suicidal ideation variability.

For the first regression (Table 5), T1 and T2 perceived burdensomeness (to account for *change in perceived burdensomeness*) were included at step two with the second step accounting for an additional 22% of the variance in change in suicidal ideation over treatment. T2 perceived burdensomeness (indicating change in perceived burdensomeness) was significantly related to change in suicidal ideation in the final model.

For the second regression (Table 6), T1 and T2 thwarted belongingness (to account for *change in thwarted belongingness*) were included at step two with the second step accounting for an additional 20% of the variance in change in suicidal ideation. T2 thwarted belongingness (indicating change in thwarted belongingness) and, at a marginal level, treatment duration were significantly related to change in suicidal ideation in the final model.

For the third regression (Table 7), T1 and T2 INQ (to account for *change in INQ*) was included at step two with the second step accounting for an additional 24% of the variance in change in suicidal ideation. T2 INQ (indicating change in INQ) was significantly related to change in suicidal ideation in the final model.

A separate hierarchical multiple regression was conducted to assess whether depressive symptoms were associated with change in suicidal ideation over treatment (Table 8). Step one was identical to the analyses reported above. T1 and T2 depressive symptoms (to account for *change in depressive symptoms*) accounted for an additional 13% of the variance in change in suicidal ideation. T2 depressive symptoms (indicating change in depressive symptoms) were significantly related to change in suicidal ideation in the final model. To summarize, results were consistent with our hypothesis that change in IPTS constructs and change in depressive symptoms will be associated with change in suicidal ideation when tested separately.

Next, change in the IPTS constructs and change in depressive symptoms were included in the same equation to examine their associations with change in suicidal ideation over treatment. This was performed through three separate hierarchical multiple regressions to analyze changes in the IPTS constructs of 1) perceived burdensomeness, 2) thwarted belongingness, and 3) INQ (Tables 9 - 11). Step one was identical to the equations reported above. For the first regression (Table 9), T1 and T2 perceived burdensomeness and T1 and T2 depressive symptoms (to account for *change in perceived burdensomeness and change in depressive symptoms*) were entered in step two and accounted for an additional 29% of the variance in change in suicidal ideation. T2 perceived burdensomeness (indicating change in perceived burdensomeness) and, at a marginal level, T2 depressive symptoms (indicating change in depressive symptoms) were significantly associated with change in suicidal ideation in the final model. For the second regression (Table 10), T1 and T2 thwarted belongingness and T1 and T2 depressive symptoms (to account for *change in thwarted belongingness and change in depressive symptoms*) were entered in step two and accounted for an additional 19% of the variance in change in suicidal ideation. T2 thwarted belongingness (indicating change in suicidal ideation) was significantly associated with change in suicidal ideation in the final model. For the third regression (Table 11), T1 and T2 INQ and T1 and T2 depressive symptoms (to account for *change in INQ and change in depressive symptoms*) were entered in step two and accounted for an additional 29% of the variance in change in suicidal ideation. T2 INQ (indicating change in INQ) was significantly associated with change in suicidal ideation in the final model.

Exploratory Analyses

As discussed above, based on findings that interpersonal constructs were highly correlated led to the question whether perceived burdensomeness and thwarted belongingness are best treated as separate constructs or a single construct. In the current sample, there was a large concurrent association between perceived burdensomeness and thwarted belongingness at both Time 1 and Time 2 ($r = .54, p = <.001$ and $r = .57, p = <.001$ respectively). Given that constructs are conceptualized as separate, combining them would necessitate empirical evidence that the items load on a single factor. The 15 items of the INQ were subjected to factor analysis with a single forced factor using maximum likelihood to determine if perceived burdensomeness and thwarted belongingness loaded as a single factor at Time 1 (Table 12). All 15 items clearly loaded onto a single factor. The result was consistent at Time 2.

Given that the IPTS theoretically predicts a two-factor structure, a forced two-factor oblimin analysis was run using maximum likelihood (Table 13). Five of the six perceived burdensomeness items loaded on factor two (.57 - .94). One perceived burdensomeness item (PB5, “These days, I think the people in my life wish could be rid of me”) loaded with thwarted belongingness items on factor one. It is plausible, given the item’s content, that this cognition is associated with feelings of not being cared for or belonging. Eight of the nine thwarted belongingness items loaded on a single factor (.41 - .93). One item (TB3, “These days, I rarely interact with people who care about me”) did not load on either factor (.20, .22). It is possible that adolescents in the current sample pervasively experienced a short-term uptick in perceptions of social support due to engagement in the program and the support required to participate. The

low loading on the item may be the result of relatively little variability on that item and was an artifact of the current context.

In examining support for retaining two scales or combining into a single scale, we were also interested in whether separation of perceived burdensomeness and thwarted belongingness might have some practical value. For example, did they change at different rates, and/or explain greater variance separated versus combined. In earlier analyses, we found that thwarted belongingness decreased at a greater rate compared to perceived burdensomeness (see *Change in Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability over the Course of Treatment*, p. 34).

To investigate whether perceived burdensomeness and thwarted belongingness explained greater variance separated versus combined, exploratory analyses were conducted. As we had examined these variables with and without controlling for depression, we conducted two parallel sets of analyses. To examine if perceived burdensomeness and thwarted belongingness contribute independent variance to changes in suicidal ideation, change in perceived burdensomeness and change in thwarted belongingness were included in the same equation (Table 14). Step one was identical to the equations reported above. T1 and T2 perceived burdensomeness and T1 and T2 thwarted belongingness (to account for *change in perceived burdensomeness and change in thwarted belongingness*) were entered in step two and accounted for an additional 29% of the variance in change in suicidal ideation. At a marginal level, both T2 perceived burdensomeness and T2 thwarted belongingness ($p = .06$ and $p = .07$, respectively) were associated with change in suicidal ideation in the final model. This indicates that when examined together without depression controlled, perceived burdensomeness and

thwarted belongingness both independently contribute variance at a marginal level to suicidal ideation. The marginality of the finding may be due to the small sample size.

To examine if including controlling for change in depressive symptoms influenced the results, a second analysis parallel to the one above was conducted (Table 15). T1 and T2 perceived burdensomeness, T1 and T2 thwarted belongingness, and T1 and T2 depressive symptoms (to account for **change in perceived burdensomeness, change in thwarted belongingness, and change in depressive symptoms**) were included at step two and accounted for an additional 31% of the variance in change in suicidal ideation. At a marginal level, T2 perceived burdensomeness (accounting for change in perceived burdensomeness), but not thwarted belongingness, was associated with change in suicidal ideation in the final model. Even though the findings were only at trend level, this indicates that perceived burdensomeness may have a stronger relationship with suicidal ideation compared to thwarted belongingness. Overall, these findings provide support for the related, but separable constructs of perceived burdensomeness and thwarted belongingness.

CHAPTER FIVE

Study Discussion

This study contributes to the literature by examining the dynamic changes in the IPTS variables over treatment and their persistent relationships with depression and suicidality in clinical adolescents. Results demonstrated that both perceived burdensomeness and thwarted belongingness decreased significantly over the course of treatment while acquired capability remained stable. Change in interpersonal constructs and change in depressive symptoms were associated with change in suicidal ideation when tested in separate models. When change in depressive symptoms and change in interpersonal constructs were examined together, change in the interpersonal constructs contribution to prediction of variance in change in suicidal ideation persisted. This finding supports the unique contribution of IPTS variables to changes in suicidal ideation in a dynamic framework.

COMPARISONS OF FINDINGS TO THE IPTS LITERATURE

A recent study by Miller and colleagues (2016) examined the predictive ability of the IPTS among a sample of clinical adolescents engaged in a partial hospitalization program at two time points that occurred an average of three weeks apart. They tested the cross-sectional and prospective association between perceived burdensomeness/thwarted belongingness and suicidal ideation while controlling for depression symptom severity and sex. Results demonstrated that perceived burdensomeness was associated with suicidal ideation using a cross-sectional, but not a prospective design. Miller and colleagues also examined depression symptom severity as a potential mediator of the relationship between Time 1 perceived burdensomeness/thwarted belongingness and Time 2 suicidal ideation. They found a significant indirect effect of Time 1 thwarted belongingness on Time 2 suicidal ideation through the mediation of Time 2 depression

symptom severity. Both the current study and the study by Miller and colleagues (2016) examined clinical adolescents over treatment utilizing direct measures of the IPTS. Both the Miller et al. (2016) study and the current study's results suggested that perceived burdensomeness may have a stronger association with suicidal ideation compared to thwarted belongingness. However, Miller and colleagues examined the interpersonal constructs at only one time point. The IPTS proposes that the interpersonal constructs are dynamic yet this was not directly test by Miller and colleagues (2016). They instead examined the predictive ability of Time 1 interpersonal constructs relative to Time 2 suicidal ideation. However, it is possible that interpersonal constructs may have changed over treatment and that change may have explained the variance in Time 2 suicidal ideation after controlling for depressive symptoms. Our study tests the proposed malleability of the interpersonal constructs and stability of acquired capability. We also extended the literature by examining the dynamic nature of the IPTS constructs over treatment relative to depressive symptoms and suicidal ideation.

As predicted by the IPTS, results demonstrated that the interpersonal constructs were dynamic while acquired capability was stable over time. The majority of the IPTS research has been conducted at one time point. One exception was a recent prospective study (Czyz, Berona, and King, 2015). Czyz and colleagues examined the IPTS with proxy variables among clinical adolescents over a three-month timespan and found that perceived burdensomeness and thwarted belongingness changed over time while acquired capability appeared persistent. However, findings were mixed. One study that examined the IPTS prospectively reported perceived burdensomeness and thwarted belongingness means twice over two months (Kleiman, Liu & Riskind, 2014a). The interpersonal constructs appeared stable. However, the sample was

comprised of college students not engaged in a treatment program and thus change in these constructs would not be expected. Our findings extend the literature by using measures of the larger latent constructs rather than narrower proxy variables in a longitudinal paradigm. The selective change of the interpersonal variables and the stability of the acquired capability measure provided some degree of discriminant validity in that the discrepancies in change were consistent with the model, rather than a drop across the board driven by social desirability or an expectation-driven effect of treatment in the absence of a no-treatment control.

Within-variable intercorrelations across waves for each IPTS construct and suicidal ideation ranged from moderate to high. Although cross-wave correlation would be expected for acquired capability, it was less predictable for the interpersonal constructs. Others have also found this relationship across waves for suicidal ideation (Kerr et al., 2008). Kerr and colleagues examined suicidal ideation prospectively among boys/men beginning at age 12 through age 29. They examined the occurrence and recurrence of suicidal ideation over time, controlling for vulnerability factors including depressive symptoms. Their findings suggested that the occurrence of suicidal ideation increases the risk for future suicidal ideation, and the more time points at which suicidal ideation was reported, the greater the risk of future report. Their findings were interpreted within the IPTS framework, and authors suggested that habituation – a process thought to develop acquired capability typically associated with attempt – might be a mechanism through which suicidal ideation is perpetuated. Our findings also suggest that adolescents seem to “hold their place” in relation to variability in ideation. That is, those with high levels of suicidal ideation experience a reduction in suicidal ideation without it dissipating completely, whereas those with lower levels might have no ideation at all following treatment. This

phenomenon might reflect trait-like characteristics in those that are prone to have high levels of suicidal ideation. Even when these individuals are doing relatively well, they may continue to exhibit a tendency to think of suicide. Under stress, these thoughts might be exacerbated. Although this suggests that risk for suicide is self-perpetuating, the IPTS framework does not consider risk for attempt as arising exclusively from the presence of suicidal ideation. An individual with both a tendency toward developing cognitions associated with high thwarted belongingness and perceived burdensomeness, and a high level of acquired capability may indeed remain at high risk for suicide under vulnerable interpersonal conditions because negative interpersonal cognitions may be triggered to high levels again.

Thwarted belongingness demonstrated a greater decrease over time relative to perceived burdensomeness. Although the IPTS posits that both interpersonal constructs are malleable, comparisons of the rate of change has not yet been considered. A prospective study of the IPTS, (Kleiman, Liu & Riskind, 2014a), reported means of the interpersonal constructs at two time points. Both perceived burdensomeness and thwarted belongingness remained stable over time and thus no difference in rate of change was observed. Perhaps studies over the course of treatment can more readily examine differences in rate of change. It is possible that the risk associated with thwarted belongingness is more easily reduced while perceived burdensomeness is a relatively more enduring dimension in need of continued intervention. It is difficult know how generalizable current findings are as there have been few longitudinal studies of the IPTS. As far as we know, the current study is the first to examine the IPTS constructs over the course of treatment.

Consistent with the IPTS, the results of the study support that perceived burdensomeness and thwarted belongingness are the constructs most proximal to suicidal ideation when compared with depressive symptoms. Most other studies have reported similar findings regarding the proximal role of interpersonal constructs to suicidal ideation. In a cross-sectional study among community adults, Campos and Holden (2015) examined the relationship between suicide risk (ranging from suicidal ideation to behaviors), depressive symptoms, and IPTS variables. They found the model fit was best when depressive symptoms were indirectly related to suicide risk through the IPTS variables. In a prospective study of undergraduates (Kleiman, Liu & Riskind, 2014a), IPTS variables, depressive symptoms, and suicidal ideation were examined twice over two months. They found that IPTS variables mediated the relationship between depression and suicidal ideation. However, depressive symptoms did not mediate the association between the IPTS variables and suicidal ideation. An additional longitudinal study (Kleiman, Law & Anestis, 2014b) demonstrated that model fit is better when the variables act on suicidal ideation through the mediation of IPTS variables rather than when variables are organized so that negative cognitive style (i.e., hopelessness) is more proximal to suicidal ideation.

However, one study reports a contradictory finding. Lasgaard and colleagues (2011) utilized loneliness as a proxy for thwarted belongingness among high school students. Loneliness was associated with suicidal ideation concurrently and one year prospectively. However, when depressive symptoms were controlled, they found no association between loneliness and suicidal ideation. Lasgaard and colleagues acknowledged that a potential limitation of the study was the utilization of a loneliness measure most relevant to peer

relationships. It is possible that the full construct of loneliness was not captured by the measure. Moreover, the IPTS posits that thwarted belongingness develops through multiple pathways. It is therefore possible that if direct measures of the IPTS were utilized thwarted belongingness would have been more broadly assessed. Overall, findings from the current study are consistent with several previous studies (Campos & Holden, 2015; Kleiman et al., 2014a; Kleiman et al., 2014b), which suggested that IPTS variables are the constructs most proximal to suicidal ideation when compared with depressive symptoms.

IMPLICATIONS FOR THE THEORY

Whether perceived burdensomeness and thwarted belongingness are best treated as separate constructs or a single construct was explored in the current study. This question arose based on previous analyses of data with similar patients that found a large concurrent association between the two constructs (Horton et al., 2015). This concern has significant implications for theory which posits two separate paths to the development of suicide ideation. However, findings from Horton and colleagues may have been specific to their sample alone. In order to explore this issue we took the following approach with this entirely nonoverlapping sample: a) Given that the constructs are conceptualized as separate, combining them would require empirical evidence that the items that contribute to the constructs load well on a single factor. We anticipated that if they did load on a single factor, we would also want to: b) determine whether when forcing two factors would result in a separation as expected, providing evidence that the two constructs might be treated as related subscales. Finally, we took a practical look at the data. We examined: c) whether perceived burdensomeness and thwarted belongingness changed at different rates, or explained greater variance separated versus combined. We argued

that differential performance of the two sets of items would reflect on recommendations regarding whether they are treated as separate or combined into a single construct.

a) In the initial factor analysis of the 15-item INQ forcing a single dimension, all perceived burdensomeness and thwarted belongingness items loaded onto the factor (loadings ranged from .49 to .83). This finding was consistent with Horton and colleagues' (2015) report. However, we were mindful of the characteristics of both samples and their effects on these variables. All participants endorsed suicidal ideation over the past two weeks and around 70% reported a lifetime suicide attempt. It is likely that both constructs were highly elevated in contrast to the normal distribution expected in community samples where the two scales might be less likely to covary. Our interest then was in: b) discovering whether, despite the close association between the two constructs, they could still be distinguished. A forced two-factor solution demonstrated a clear separation of perceived burdensomeness and thwarted belongingness items with few differences from the theoretically proposed structure.

We then explored: c) whether there was additional data-based evidence for separating the two scales. Given that they were originally conceptualized as separate, and that the contours of the original concepts were apparent, we sought evidence that the data suggested additional grounds for separation. We found that the two constructs appeared to move at different rates, as thwarted belongingness demonstrated a greater decrease over treatment relative to perceived burdensomeness. In regard to explanation of variance, we were interested in whether change in perceived burdensomeness or change in thwarted belongingness would explain more variance in change in suicidal ideation when examined together. Results indicated that change in perceived burdensomeness and change in thwarted belongingness both marginally contributed to change in

suicidal ideation when depressive symptoms were not controlled ($t(4,35) = 1.98, p = .06$ and $t(4,35) = 1.90, p = .07$, respectively). However, when we controlled for depressive symptoms, differences in the interpersonal constructs' contribution to variance appeared to emerge; we found that change in perceived burdensomeness seemed to explain more variance ($t(6,33) = 1.93, p = .06$) in change in suicidal ideation than did change thwarted belongingness ($t(6,33) = 1.35, p = .19$).

We were also interested in whether more variance in suicidal ideation would be explained when perceived burdensomeness and thwarted belongingness were both included in the model compared to when the INQ composite was included in the model. Both perceived burdensomeness and thwarted belongingness versus their composite, INQ, appeared to explain a comparable level of variance after depressive symptoms were controlled (R^2 change = .06 and R^2 change = .05, respectively).

Findings appeared to suggest a slight advantage to keeping constructs separated. There has been research which suggested that perceived burdensomeness may be more strongly associated with suicidal ideation compared to thwarted belongingness. Bryan and colleagues (2010) examined military personnel and found that perceived burdensomeness independently predicted suicidal ideation while thwarted belongingness did not. Although the findings in relation to perceived burdensomeness in the current study was not quite significant, the small sample size might well have explained the marginal nature of the findings. Alternatively, the small sample size might have resulted in spuriously higher correlations due to sample idiosyncracies, which would disappear in a larger group of participants.

Earlier studies have reported findings relevant to relative endorsement of perceived burdensomeness versus thwarted belongingness. In the current study, we found that TB ($M = 3.63$, $SD = 1.46$) values were significantly higher than PB values ($M = 2.88$, $SD = 1.17$), $p < .001$. Studies with military personnel utilizing the INQ 10 also found thwarted belongingness was endorsed to a greater degree compared to perceived burdensomeness (Bryan et al., 2010; Bryan et al., 2012). However, findings are inconsistent. In a study of clinical adolescents receiving inpatient care, Horton and colleagues found no difference related to endorsement of perceived burdensomeness (PB $M = 4.33$, $SD = 1.59$) versus thwarted belongingness (TB $M = 4.35$, $SD = 1.25$). It is possible that due to the high clinical acuity of the current and Horton and colleagues' (2015) samples that all measures were more likely to be elevated resulting in spurious correlations. Our results suggested that thwarted belongingness might be endorsed to a greater degree compared to perceived burdensomeness. A difference in endorsement rate between the constructs would give further support to examining perceived burdensomeness and thwarted belongingness separately. Overall, separation of interpersonal constructs are supported based on findings that suggested: 1) factors on the INQ are related, but distinct; 2) constructs moved at separate rates; 3) perceived burdensomeness may have a stronger association with suicidal ideation compared to thwarted belongingness; 4) there is slight evidence suggesting that separated constructs explained more variance in suicidal ideation than their composite, and 5) thwarted belongingness may be endorsed relatively more compared to perceived burdensomeness.

An important test of the value of the theory is whether the constructs can explain variance even after known risk factors are controlled. As predicted by the IPTS, changes in IPTS constructs were associated with change in suicidal ideation, and this relationship persisted when change in depressive symptoms was controlled. This finding held for each of the methods we used to define the interpersonal constructs (i.e., perceived burdensomeness independently, thwarted belongingness independently, and their composite, INQ). These findings provide support for the concept that interpersonal constructs are not simply manifestations of depressive symptoms, and that they carry additional weight in understanding suicidal ideation and how it changes over time and with treatment.

The IPTS also indicates that the IPTS constructs are *sufficient* for suicidal ideation. That is, that the IPTS constructs are the mechanisms and the “final common pathway” by which all risk factors exert their effects on suicidal ideation. This proposal has rarely been examined in previous studies. Investigators have controlled known risk factors including depressive symptoms when examining the association between IPTS variables and suicidality, but they do not typically report (or discuss the implications of) the extent to which associations between these control variables and suicidality persists (Jones et al., 2011; Czyz et al., 2015). As reported above (Table 9), perceived burdensomeness remained associated with change in suicidal ideation when change in depressive symptoms was included in the model. However, at a marginal level, change in depressive symptoms *also* exerted a contribution to the variance in change in suicidal ideation. The marginality of the depression association might be attributable to sample size and low power. This finding would contradict the theory, which proposes that depressive symptoms are distal factors that influence the more proximal interpersonal constructs, but do not exercise

direct influence on suicide ideation. One possibility is that while cognitive factors of depression overlap largely with perceived burdensomeness and thwarted belongingness, the noncognitive component of depression (e.g., fatigue, insomnia) might contribute unique variance to suicidal ideation through an independent pathway.

IMPLICATIONS FOR ASSESSMENT AND TREATMENT

Our findings reveal the utility of the IPTS model in guiding assessment of and intervention to reduce suicidality. Interpersonal constructs, thwarted belongingness and perceived burdensomeness, should be key components of clinical assessment among suicidal adolescents. Asking adolescents about feeling like a burden on others and assessing for perceptions of not belonging could identify those at risk for continued suicidal ideation, as these are the cognitions most proximal to suicidal ideation. These enquiries may also suggest cognitions to reduce risk. Of note, if a single cognition was to be prioritized than there is evidence from our and others' studies that perceived burdensomeness might be a stronger driver of suicidal ideation. Due to the stability of acquired capability, assessment of acquired capability level and limiting exposure to future provocative and painful experiences would be a useful practice to assess suicide risk.

In the framework of the IPTS, given that acquired capability is not seen as easy to change, the challenge of treatment is to effectively reduce cognitions related to both thwarted belongingness and perceived burdensomeness. There are some structural components of the group- and family-based treatment program that our participants undertook that may preferentially reduce perceptions of thwarted belongingness. A study that implemented a CBT group intervention found that adolescents reported feeling highly accepted by their peers

(Thienemann et al., 2001). It is possible that the adolescents that perceive peer support in group interventions may also experience a reduction in thwarted belongingness. There are also a growing number of studies for depressed adolescents that include systematic family interventions (Rotheram-Borus et al., 1996; Miller et al., 1997; Huey et al., 2004; Diamond et al., 2010; Diamond et al., 2012; Pineda and Dadds, 2013; Asarnow et al., 2015). A few of these family-based intervention studies examined mediational factors. Their findings suggest that reduction in suicidal ideation was largely mediated by improvement in family functioning (Diamond et al., 2010; Diamond et al., 2012; Pineda and Dadds, 2013).

Common goals of family therapy for suicidal adolescents that may decrease thwarted belongingness include establishing collaborative family support surrounding adolescent safety, enhancing family communication, and increasing familial positive experiences through planned activities. Individual interventions that may reduce thwarted belongingness include behavioral activation to help adolescents plan specific and feasible activities with their family members and friends instead of solitary activities, interpersonal effectiveness training, and cognitive restructuring to replace maladaptive or distorted thoughts related to thwarted belongingness.

Preliminary evidence from the current study suggested that thwarted belongingness responded relatively more to intervention yet perceived burdensomeness might have a stronger association with suicidal ideation. Thoughts related to perceived burdensomeness are self-directed and may be indicative of a relatively chronic suicide risk dimension while thoughts related to thwarted belongingness are others-directed and may be characteristic of an acute suicide risk dimension. Cognitions related to perceived burdensomeness appear to parallel the negative self beliefs (i.e., core beliefs) in cognitive behavioral theory. In general, initial treatment

targets for suicidal adolescents often include safety planning and introduction of skills designed to reduce self-harm such as distress tolerance and emotion regulation skills. An important next step that may target perceived burdensomeness is introducing the concept of negative self beliefs and working collaboratively with the adolescents to identify and challenge maladaptive schema-related beliefs. From a program development perspective, including a module on self beliefs and schema-related beliefs relatively early in treatment (after safety concerns are sufficiently addressed) may be important for enhancing outcomes (i.e., the reduction of suicidal ideation). From a family perspective, providing psychoeducation to parents regarding the nature of perceived burdensomeness and suicidality may help families reduce language related to strain or hardship surrounding treatment. It may also help caregivers identify and gently challenge distortions of burdensomeness they may hear from their adolescent. Additionally, a focus on an adolescent's strengths and what he/she brings to his/her family may further reduce cognitions related to burdensomeness.

IMPLICATIONS FOR THIS SPECIFIC PROGRAM

The current program from which our participants were drawn is based in cognitive behavioral therapy and is influenced by dialectical behavior therapy. It is comprised of a multifamily group, adolescent group, and parent group. The adolescent and multifamily group interventions are standardized. Adolescents participating in the program reported a greater reduction in thwarted belongingness compared to perceived burdensomeness.

One possibility is that the program targeted thwarted belongingness more directly than perceived burdensomeness. Structural components of the program such as group and family interventions may have directly enhanced social support and thus decreased perceptions of

thwarted belongingness. Additionally, specific group intervention modules were focused directly on enhancing social support. Another possibility is that thwarted belongingness is modified more easily compared to perceived burdensomeness. Thoughts consistent with thwarted belongingness are essentially negative thoughts about others (e.g., “These days, other people care about me”; Van Orden et al., 2012). In contrast, thoughts consistent with 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). An additional possibility is that thoughts directed toward others may be more malleable in nature compared to self-directed cognitions. A final possibility is that adolescents at this point might have an objective reason to experience persistent perceived burdensomeness. Over sixty percent of participants first received psychiatric inpatient care before participating in the current program. Additionally, there is an unavoidable high demand on caregivers to engage in the current program; participants, on average, received seven hours of intervention a week for five weeks. Adolescents are undoubtedly aware of the high demand placed on their caregivers and this may translate into cognitions related to perceived burdensomeness.

Perceived burdensomeness appeared to be the construct with the largest unique association to suicidal ideation yet was the interpersonal construct least responsive to intervention. There may be several opportunities to assess and target perceived burdensomeness. Direct questions at the initial assessment related to feeling like a burden on others and self-hatred would likely help the clinician to ascertain the current level of perceived burdensomeness and formulate the individual treatment plan. From a family perspective, it may be helpful for clinicians to provide psychoeducation to caregivers of adolescents with high levels of perceived

burdensomeness and in a family or multifamily focus some attention on acknowledging adolescent's individual strengths. Due to the short-term nature of the treatment program, self beliefs are not typically addressed. However, identifying and modifying maladaptive self beliefs and building positive self-schema may be a key mechanism to reducing perceived burdensomeness and its associate, suicidal ideation. The concept of self beliefs may be introduced as part of a group module and tailored in individual intervention. Building and reinforcing positive self-schema is a process that takes time over the course of treatment. Therefore, an additional recommendation is to reinforce the importance of continuing in therapy after the program ends, and communicating the key role that perceived burdensomeness plays to individual therapists working with these patients after discharge from the program.

FUTURE RESEARCH

Findings from the current study demonstrated that the interpersonal constructs change as a response to intervention and are most proximal to suicidal ideation when compared with depressive symptoms. This finding supports the utility of the theory in guiding assessment and intervention. More studies are needed to generalize these findings and further clarify the relationship between IPTS variables and suicidal phenomena over time. Multiwave studies with three or more time points could provide more rigorous evaluation of which variables change first (i.e., interpersonal constructs or depressive symptoms) and mediate change in suicidal ideation.

Preliminary findings suggested that perceived burdensomeness might have a stronger association with suicidal ideation than thwarted belongingness, yet the later had a greater decrease over treatment. The dynamic nature of the IPTS variables and their associates merits further investigation. More prospective studies – particularly over the course of treatment – are

needed to clarify the individual malleability of the interpersonal constructs as well as their unique association with suicidal ideation. If perceived burdensomeness is indeed more closely related to suicidal ideation than it may add a nuanced understanding to the model and guide intervention efforts. Findings demonstrated that changes in IPTS constructs were associated with change in suicidal ideation, and this relationship persisted when change in depressive symptoms was controlled. For the combined interpersonal construct, a marginal level change in depressive symptoms also exerted a contribution to the variance in change in suicidal ideation. It is possible that noncognitive depressive symptoms (e.g., fatigue, sleep difficulties) might contribute unique variance to suicidal ideation through an independent pathway. Future studies should consider the role of noncognitive depressive symptoms in relation to the IPTS.

Results from the current study demonstrated a high concurrent association between perceived burdensomeness and thwarted belongingness, which is consistent with previous findings among clinical adolescents (Horton et al., 2015). We suggested that simultaneous elevations of perceived burdensomeness and thwarted belongingness might be due to the severity of the clinical adolescents studied. However, future studies among community adolescents should be conducted to elucidate if interpersonal constructs play out as more distinct, less highly associated constructs. Discerning the relationship between the interpersonal constructs across diverse populations would guide our understanding of the model. If constructs were less highly associated among community adolescents, but both elevated and thus highly associated among clinical adolescents than that would provide validity for the distinct nature of the interpersonal constructs and simultaneously highlight the severity of clinical adolescents. In contrast, if across diverse populations perceived burdensomeness and thwarted belongingness demonstrated a high

concurrent association than that would suggest that interpersonal constructs are highly related and this should be considered when utilizing the model.

The current study examined the interpersonal constructs over time, which is proposed to be the direct mechanisms by which suicidal ideation develops. However, the risk associated with acquired capability over time in relation to suicide attempt was not examined. Future longitudinal studies among clinical adolescents should also investigate the role of acquired capability relative to suicide attempt. It would also be especially valuable if future studies include direct measures of the IPTS, as there has not yet been a prospective investigation of the three-way interaction of constructs utilizing direct measures. This would be an ambitious investigation yet invaluable to increasing understanding of how the interpersonal constructs interact and confer risk for suicide attempt over time. Additionally, the current model does not appear to adequately explain what leads an individual to imminent risk. Variables proposed to be associated with imminent risk include emotion dysregulation, negative urgency, overarousal, and sleep disturbance. These proposed variables may offer insight to if there is an independent pathway that leads to imminent risk. Future research should consider including these variables to investigate which factor(s) move a vulnerable individual to imminent risk.

For the model to be fully utilized in clinical practice, future research is needed to develop normative data for the INQ and ACSS-FAD among community and clinical adolescent samples. The establishment of clinically meaningful cut-off points on direct IPTS measures would help clinicians more readily integrate the IPTS as a framework for suicide risk assessment and intervention. The establishment of normative data would be particularly helpful in developing targeted intervention. An area worthy of future exploration is an examination of which

components of treatment (e.g., family intervention, targeting cognitive distortions), and which strategies, contribute the most to reduction in perceived burdensomeness and thwarted belongingness.

Figure 1. Consort Diagram

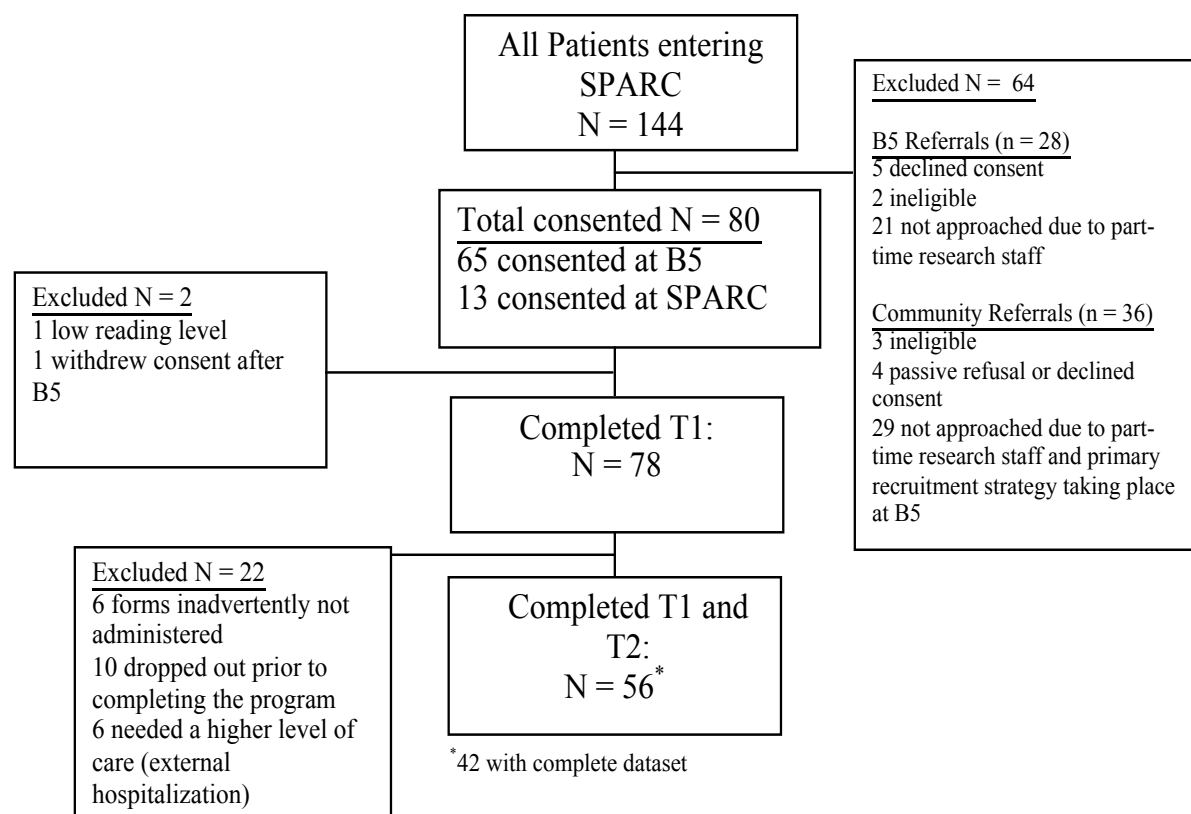


Table 1
Sample Demographics and Clinical Characteristics for Inpatient- versus Community-Referred Participants

Variables	Inpatient sample entering T1 (n=65)	Community sample entering T1 (n=13)	Inpatient sample completing T1, T2 (n=46)	Community sample completing T1, T2 (n=10)
Age	15.08 (1.15)	14.85 (1.57)	14.93 (1.12)	14.80 (1.55)
Admitting Diagnosis				
Major Depressive Disorder	54 (83.1%)	12 (92.3%)	38 (82.6%)	9 (90.0%)
Mood Disorder NOS	5 (7.7%)	0 (0.0%)	5 (10.9%)	0 (0.0%)
Bipolar Disorder	1 (1.5%)	1 (7.7%)	1 (2.2%)	1 (10.0%)
Depression NOS	5 (7.7%)	0 (0.0%)	2 (4.3%)	
Female	51 (78.5%)	10 (76.9%)	38 (82.6%)	8 (80.0%)
Ethnicity				
Hispanic	4 (6.2%)	1 (7.7%)	2 (4.3%)	0 (0.0%)
Non-Hispanic	61 (93.8%)	12 (92.3%)	44 (95.7%)	10 (100.0%)
Race				
Caucasian	55 (84.6%)	11 (84.6%)	40 (87.0%)	8 (80.0%)
African American	6 (9.2%)	1 (7.7%)	5 (10.9%)	1 (10.0%)
Asian	2 (3.1%)	1 (7.7%)	1 (2.2%)	1 (10.0%)
Other	2 (3.1%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Lifetime Suicidal Ideation ^a				
None	0 (0.0%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Death wishes	2 (3.1%)	0 (0.0%)	2 (4.3%)	0 (0.0%)
Active ideation	21 (32.3%)	2 (15.4%)	16 (34.7%)	2 (20.0%)
Plan	41 (63.1%)	11 (84.6%)	28 (60.9%)	8 (80.0%)
Lifetime Attempt				
None	20 (30.8%)	5 (38.4%)	15 (32.6%)	3 (30.0%)
1	32 (49.2%)	4 (30.8%)	20 (43.5%)	4 (40.0%)
≥2	13 (20.0%)	4 (30.8%)	11 (23.9%)	3 (30.0%)
Suicide Attempt Past Two Weeks	42 (64.6%)	7 (53.8%)	29 (63.0%)	6 (60.0%)

Note. T1= Time 1; T2= Time 2; NOS = not otherwise specified; ^aHighest level reported

Table 2
Sample Demographics and Clinical Characteristics

Variables	Sample entering T1 (n=78)	Sample completing T1, T2 (n=56)	Sample with no missing data T1, T2 (n=42)
Age	15.04 (1.22)	14.93 (1.22)	14.76 (1.12)
Admitting Diagnosis			
Major Depressive Disorder	66 (84.6%)	47 (83.9%)	34 (81.0%)
Mood Disorder NOS	5 (6.4%)	5 (8.9%)	4 (9.4%)
Bipolar Disorder	2 (2.6%)	2 (3.6%)	2 (4.8%)
Depression NOS	5 (6.4%)	2 (3.6%)	2 (4.8%)
Female	61 (78.2%)	45 (80.4%)	36 (85.7%)
Ethnicity			
Hispanic	5 (6.4%)	2 (3.6%)	2 (4.8%)
Non-Hispanic	73 (93.6%)	54 (96.4%)	40 (95.2%)
Race			
Caucasian	66 (84.6%)	48 (85.7%)	36 (85.7%)
African American	7 (9.0%)	6 (10.7%)	4 (9.5%)
Asian	3 (3.8%)	2 (3.6%)	2 (4.8%)
Other	2 (2.6%)	0 (0.0%)	0 (0.0%)
Lifetime Suicidal Ideation			
None	0 (0.0%)	0 (0.0%)	0 (0.0%)
Death wishes	2 (2.6%)	2 (3.6%)	1 (2.4%)
Active ideation	23 (29.5%)	18 (32.1%)	15 (35.6%)
Plan	53 (67.9%)	36 (64.3%)	26 (62.0%)
Lifetime Attempt			
None	25 (32.1%)	18 (32.1%)	13 (31.0%)
1	36 (46.1%)	24 (42.9%)	18 (42.9%)
≥2	17 (21.8%)	14 (25.0%)	11 (26.1%)
Suicide Attempt Past Two Weeks	49 (62.8%)	35 (62.5%)	26 (61.9%)

Note. T1= Time 1; T2= Time 2; NOS = not otherwise specified; ^aHighest level reported

Table 3
Means and Standard Deviations of Measures at Time 1 and Time 2

Variables	n	T1	T2	<i>p</i>	<i>r</i> of T1, T2
PB	56	2.88 (1.17)	2.55 (1.07)	.04	.44**
TB	56	3.63 (1.46)	2.90 (1.31)	<.001	.63**
INQ	56	6.51 (2.31)	5.45 (2.11)	<.001	.57**
ACSS-FAD	56	2.56 (.97)	2.45 (1.08)	.36	.63**
CHRT Risk ^a	42	5.10 (3.52)	2.40 (2.91)	<.001	.51**
DS ^b	42	13.69 (5.35)	9.14 (5.43)	<.001	.30
DS-SI ^b	42	12.36 (4.74)	8.52 (4.80)	<.001	.32*
SI item QIDS	42	1.33 (1.00)	0.62 (0.90)	<.001	.22
Suicidal Ideation ^c	42				
None		0 (0.0%)	24 (57.2%)		
Death wishes		2 (4.8%)	4 (9.5%)		
Active ideation		18 (42.9%)	10 (23.8%)		
Plan		22 (52.3%)	4 (9.5%)		

Note. TB = thwarted belongingness; PB = perceived burdensomeness; INQ = PB/TB composite; ACSS-FAD = acquired capability; SI = suicidal ideation; DS = depressive symptoms

* $p < .05$. ** $p < .01$, indicating differences between means at Time 1 and Time 2

^aActive suicidal ideation calculated using the CHRT Risk factor (Trivedi et al., 2011)

^bCalculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

^cPast two weeks

Table 4

Intercorrelations Among Time 1 and Time 2 Measures

Variable	1	2 ^a	3	4	5	6	7	8	9	10 ^a	11 ^a	12 ^a	13 ^a
1. Age	—	.05	.03	-.17	-.09	-.10	-.18	.02	.02	-.07	-.39	-.10	-.16
2. Sex ^a	.05	—	.15	.17	.17	.08	.15	.02	-.03	-.01	.03	.05	.07
3. PB	-.16	.23	—	.58**	.86**	-.05	.70**	.62**	.58**	-.16	.06	.36**	.47**
4. TB	-.11	.25	.54**	—	.91**	-.01	.51**	.62**	.62**	.12	.22	.23	.32*
5. INQ	-.15	.28*	.85**	.90**	—	-.03	.66**	.69**	.66**	.07	.18	.36**	.45**
6. ACSS-FAD	-.13	.18	.11	-.02	.04	—	.02	.28	.29	.002	.31*	-.02	-.005
7. CHRT Risk	.07	-.02	.46**	.40**	.48**	.18	—	.57**	.52**	.13	.41**	.38**	.53**
8. DS	.01	.02	.42**	.48**	.51**	.19	.68	—	.99**	.12	.33*	.40**	.41**
9. DS-SI ^b	.01	-.04	.37**	.47**	.48**	.13	.62	.98**	—	.15	.31*	.37*	.38*
10. Passive SI(Y/N) ^{ac}	.16	-.09	-.25	-.15	-.18	-.07	-.21	-.16	-.14	—	-.16	-.10	-.11
11. Active SI(Y/N) ^{ac}	.02	-.02	.01	.11	.03	-.05	-.06	.07	.09	-.13	—	-.13	.04
12. Plan(Y/N) ^{ac}	-.08	.06	.08	-.05	.04	.07	.12	-.02	-.05	-.26	—	—	.73**
13. Suicide Attempt (Y/N) ^{ac}	-.02	-.10	.07	.16	.12	.30*	-.22	-.22	-.25	.13	-.46**	.40**	—

Note. T2 variables are shaded; TB = thwarted belongingness; PB = perceived burdensomeness; ACSS-FAD = acquired capability; DS = depressive symptoms; SI = suicidal ideation

* $p < .05$. ** $p < .01$. ^aSpearman's rho reported.

^bCalculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

^cPast two weeks

Table 5
*Hierarchical Multiple Regression Equation Predicting Association between
 Change in Perceived Burdensomeness and Change in Suicidal Ideation over
 Treatment (n = 42)*

Predictors entered in step	<i>F</i> for step	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	β	<i>p</i>
Step 1	10.12	.34		2, 39		.0003
Duration			-2.21		-.29	.03
SI T1			4.08		.53	.0002
Step 2	9.12	.56		2, 37		.001
Duration			-1.36		-.16	.18
SI T1			1.94		.27	.06
PB T1			-.01		-.001	.99
PB T2			4.19		.55	.0002

Note. PB = perceived burdensomeness; SI = suicidal ideation; T1 = Time 1; T2 = Time 2; Duration = days between Time 1 and Time 2

Table 6
*Hierarchical Multiple Regression Equation Predicting Association between
 Change in Thwarted Belongingness and Change in Suicidal Ideation over
 Treatment (n = 42)*

Predictors entered in step	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	β	<i>p</i>
Step 1	10.11	.34		2, 39		.0003
Duration			-2.21		-.29	.03
SI T1			4.01		.53	.0002
Step 2	8.27	.54		2, 37		.001
Duration			-2.05		-.23	.05
SI T1			4.40		.52	.00009
TB T1			-2.38		-.38	.07
TB T2			4.05		.62	.0003

Note. TB = thwarted belongingness; SI = suicidal ideation; T1 = Time 1; T2 = Time 2 | Duration = days between Time 1 and Time 2

Table 7
*Hierarchical Multiple Regression Equation Predicting Association between
 Change in INQ and Change in Suicidal Ideation over Treatment (n = 42)*

Predictors entered in step	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	β	<i>p</i>
Step 1	10.12	.34		2, 39		.0003
Duration			-2.21		-.29	.03
SI T1			4.01		.53	.0002
Step 2	10.16	.58		2, 37		.0003
Duration			-1.82		-.20	.08
SI T1			3.26		.41	.002
INQ T1			-1.50		-.21	.14
INQ T2			4.45		.60	.00008

Note. INQ = perceived burdensomeness and thwarted belongingness composite score; SI= suicidal ideation; T1 = Time 1; T2 = Time 2; Duration = days between Time 1 and Time 2

Table 8
*Hierarchical Multiple Regression Equation Predicting Association between
 Change in Depressive Symptoms and Change in Suicidal Ideation over
 Treatment*
 (n = 42)

Predictors entered in step	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	β	<i>p</i>
Step 1	10.12	.34		2, 39		.0003
Duration			-2.21		-.29	.03
SI T1			4.08		.53	.0002
Step 2	7.05	.47		2, 37		.003
Duration			-1.67		-.20	.10
SI T1			4.05		.61	.003
DS-SI T1 ^a			-1.70		-.22	.16
DS-SI T2 ^a			3.68		.45	.001

Note. DS = depressive symptoms; SI= suicidal ideation; T1 = Time 1; T2 = Time 2; Duration = days between Time 1 and Time 2

^aCalculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

Table 9

Hierarchical Multiple Regression Equation Predicting Association between Change in Perceived Burdensomeness, Change in Depressive Symptoms, and Change in Suicidal Ideation over Treatment (n = 42)

Predictors entered in step	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	β	<i>p</i>
Step 1	10.11	.34		2, 39		.0003
Duration			-2.21		-.29	.03
SI T1			4.08		.53	.0002
Step 2	6.95	.63		4, 35		.0003
Duration			-1.04		-.12	.31
SI T1			2.92		.44	.006
PB T1			.36		.05	.72
PB T2			3.05		.45	.004
DS-SI T1 ^a			-2.17		-.31	.04
DS-SI T2 ^a			1.91		.25	.07

Note. DS = depressive symptoms; PB = perceived burdensomeness; SI= suicidal ideation; T1 = Time 1; T2 = Time 2; Duration = days between Time 1 and Time 2

^aCalculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

Table 10
*Hierarchical Multiple Regression Equation Predicting Association between
 Change in Thwarted Belongingness, Change in Depressive Symptoms, and
 Change in Suicidal Ideation over Treatment (n = 42)*

Predictors entered in step	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	β	<i>p</i>
Step 1	10.12	.34		2, 39		.0003
Duration			-2.21		-.29	.03
SI T1			4.08		.53	.0002
Step 2	3.81	.53		4, 35		.001
Duration			-1.73		-.19	.09
SI T1			4.51		.59	.00007
TB T1			-1.59		-.26	.12
TB T2			2.57		.48	.01
DS-SI T1 ^a			-1.78		-.27	.08
DS-SI T2 ^a			1.52		.22	.14

Note. DS = depressive symptoms; TB = thwarted belongingness; SI= suicidal ideation; T1 = Time 1; T2 = Time 2; Duration = days between Time 1 and Time 2

^aCalculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

Table 11
Hierarchical Multiple Regression Equation Predicting Association between Change in INQ, Change in Depressive Symptoms, and Change in Suicidal Ideation over Treatment (n = 42)

Predictors entered in step	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	β	<i>p</i>
Step 1	10.12	.34		2, 39		.0003
Duration			-2.21		-.26	.03
SI T1			4.08		.53	.0002
Step 2	6.92	.63		4, 35		.0003
Duration			-1.50		-.16	.14
SI T1			4.03		.57	.0003
INQ T1			-.94		-.13	.36
INQ T2			3.16		.53	.003
DS-SI T1 ^a			-2.18		-.26	.04
DS-SI T2 ^a			1.15		.16	.26

Note. DS = depressive symptoms; INQ = perceived burdensomeness and thwarted belongingness composite; SI = suicidal ideation; T1 = Time 1; T2 = Time 2; Duration = days between Time 1 and Time 2

^aCalculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

Table 12

15-item Interpersonal Needs Questionnaire Forced Single Factor Analysis using Maximum Likelihood Loading at Time 1

Item	Factor
	1
These days, the people in my life would be better off if I were gone (PB1).	.82
These days, the people in my life would be happier without me (PB2).	.83
These days, I think I am a burden on society (PB3).	.69
These days, I think my death would be a relief to the people in my life (PB4).	.77
These days, I think the people in my life wish they could be rid of me (PB5).	.60
These days, I think I make things worse for the people in my life (PB6).	.80
These days, other people care about me (TB1).	.59
These days, I feel like I belong (TB2).	.78
These days, I rarely interact with people who care about me (TB3).	.56
These days, I am fortunate to have many caring and supportive friends (TB4).	.49
These days, I feel disconnected from other people (TB5).	.70
These days, I often feel like an outsider in social gatherings (TB6).	.57
These days, I feel that there are people I can turn to in times of need (TB7).	.56
These days, I am close to other people (TB8).	.57
These days, I have at least one satisfying interaction every day (TB9).	.58

Table 13
*15-item Interpersonal Needs Questionnaire Two Factor Solution using
 Maximum Likelihood Factor Loadings at Time 1*

Item	Factor	
	1	2
These days, the people in my life would be better off if I were gone (PB1).	.03	-.90
These days, the people in my life would be happier without me (PB2).	.002	-.91
These days, I think I am a burden on society (PB3).	.04	-.65
These days, I think my death would be a relief to the people in my life (PB4).	-.12	-.94
These days, I think the people in my life wish they could be rid of me (PB5).	-.57	.07
These days, I think I make things worse for the people in my life (PB6).	.24	-.68
These days, other people care about me (TB1).	.76	.05
These days, I feel like I belong (TB2).	.65	-.19
These days, I rarely interact with people who care about me (TB3).	.20	-.22
These days, I am fortunate to have many caring and supportive friends (TB4).	.93	.18
These days, I feel disconnected from other people (TB5).	.44	-.02
These days, I often feel like an outsider in social gatherings (TB6).	.41	-.14
These days, I feel that there are people I can turn to in times of need (TB7).	.79	-.04
These days, I am close to other people (TB8).	.86	.06
These days, I have at least one satisfying interaction every day (TB9).	.67	-.03

Table 14
*Hierarchical Multiple Regression Equation Predicting Association between
 Change in Perceived Burdensomeness, Change in Thwarted Belongingness, and
 Change in Suicidal Ideation over Treatment (n = 42)*

Predictors entered in step	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	<i>B</i>	<i>p</i>
Step 1	10.12	.34		2, 39		.0003
Duration			-2.21		-.29	.03
SI T1			4.08		.53	.001
Step 2	3.81	.60		4, 35		.001
Duration			-1.37		-.16	.18
SI T1			2.44		.34	.02
PB T1			.64		.10	.53
PB T2			1.98		.34	.06
TB T1			-1.71		-.31	.10
TB T2			1.90		.37	.07

Note. PB = perceived burdensomeness; TB = thwarted belongingness; SI= suicidal ideation; T1 = Time 1; T2 = Time 2; Duration = days between Time 1 and Time 2

Table 15
*Hierarchical Multiple Regression Equation Predicting Association between
 Change in Perceived Burdensomeness, Change in Thwarted Belongingness,
 Change in Depressive Symptoms, and Change in Suicidal Ideation over
 Treatment
 (n = 42)*

Predictors entered in step	<i>F</i> for set	<i>R</i> ²	<i>t</i> for predictors	<i>df</i>	β	<i>p</i>
Step 1	10.12	.34		2, 39		.0003
Duration			-2.21		-.29	.03
SI T1			4.08		.53	.001
Step 2	3.81	.65		6, 33		.001
Duration			-1.10		-.12	.28
SI T1			3.09		.48	.004
PB T1			.66		.10	.51
PB T2			1.93		.33	.06
TB T1			-1.16		-.21	.26
TB T2			1.35		.28	.19
DS-SI T1 ^a			-1.95		-.29	.06
DS-SI T2 ^a			1.23		.18	.23

Note. DS = depressive symptoms; INQ = perceived burdensomeness and thwarted belongingness composite; SI= suicidal ideation; T1 = Time 1; T2 = Time 2; Duration = days between Time 1 and Time 2

^aCalculated using the QIDS-A-SR (Rush, et al., 2006; Rush et al., 2003) without the suicide item.

BIBLIOGRAPHY

- Agerbo, E., Nordentoft, M., & Mortenson, P. B. (2002). Familial, psychiatric, and socioeconomic risk factors for suicide in young people: nested case control study. *British Medical Journal*, 325, 74–77.
- American Psychiatric Association (Ed.). (2000). *Diagnostic and statistical manual of mental disorders: DSM-IV-TR®*. American Psychiatric Pub.
- Anestis, M. D., Bagge, C. L., Tull, M. T., & Joiner, T. E. (2011). Clarifying the role of emotion dysregulation in the interpersonal-psychological theory of suicidal behavior in an undergraduate sample. *Journal of Psychiatric Research*, 45(5), 603-611.
- Asarnow, J. R., Berk, M., Hughes, J. L., & Anderson, N. L. (2015). The SAFETY Program: a treatment-development trial of a cognitive-behavioral family treatment for adolescent suicide attempters. *Journal of Clinical Child & Adolescent Psychology*, 44(1), 194-203.
- Asarnow, J. R., Porta, G., Spirito, A., Emslie, G., Clarke, G., Wagner, K. D., & Brent, D. A. (2011). Suicide attempts and nonsuicidal self-injury in the treatment of resistant depression in adolescents: findings from the TORDIA study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 50(8), 772-781.
- Barak, Y., Cohen, A., & Aizenberg, D. (2004). Suicide among the homeless: a 9-year case-series analysis. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 25(2), 51-53.
- Barbe, R. P., Bridge, J., Birmaher, B., Kolko, D., & Brent, D. A. (2004). Suicidality and its relationship to treatment outcome in depressed adolescents. *Suicide and Life-Threatening Behavior*, 34(1), 44-55.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, 117(3), 497-529.
- Bender, T. W., Gordon, K. H., Bresin, K., & Joiner Jr, T. E. (2011). Impulsivity and suicidality: the mediating role of painful and provocative experiences. *Journal of Affective Disorders*, 129(1), 301-307.

- Borges, G., Angst, J., Nock, M., Ruscio, A., Walters, E., & Kessler, R. (2006). A risk index for 12-month suicide attempts in the National Comorbidity Survey Replication (NCS-R). *Psychological Medicine*, 36(12), 1747-1757.
- Bostwick, J. M., & Pankratz, V. S. (2000). Affective disorders and suicide risk: a reexamination. *American Journal of Psychiatry*, 157, 1925–1932.
- Bender, T. W., Gordon, K. H., & Joiner, T. E. (2007). *Impulsivity and suicidality: A test of the mediating role of painful experiences*. Unpublished manuscript.
- Bernstein, I. H., Rush, A. J., Trivedi, M. H., Hughes, C. W., Macleod, L., Witte, B. P., Jain, S., Mayes, T. L., & Emslie, G. J. (2010). Psychometric properties of the Quick Inventory of Depressive Symptomatology in adolescents. *International Journal of Methods in Psychiatric Research*, 19(4), 185-194.
- Brent, D. A., Perper, J. A., Moritz, G., Allman, C., Friend, A., Roth, C., Schwerz, J., Barach, L., & Baugher, M. (1993). Psychiatric risk factors for adolescent suicide: a case-control study. *Journal of the American Academy of Child & Adolescent Psychiatry*, 32(3), 521-529.
- Bryan, C. J., Morrow, C. E., Anestis, M. D., & Joiner, T. E. (2010). A preliminary test of the interpersonal-psychological theory of suicidal behavior in a military sample. *Personality and Individual Differences*, 48(3), 347-350.
- Bryan, C. J., Clemans, T. A., & Hernandez, A. M. (2012). Perceived burdensomeness, fearlessness of death, and suicidality among deployed military personnel. *Personality and Individual Differences*, 52(3), 374-379.
- Campos, R. C., & Holden, R. R. (2015). Testing models relating rejection, depression, interpersonal needs, and psychache to suicide risk in nonclinical individuals. *Journal of Clinical Psychology*, 71(10), 994-1003.
- Cantor, C. H., & Slater, P. J. (1995). Marital breakdown, parenthood, and suicide. *Journal of Family Studies*, 1(2), 91-102.
- Cavanagh, J. T., Carson, A. J., Sharpe, M., & Lawrie, S. M. (2003). Psychological autopsy studies of suicide: A systematic review. *Psychological Medicine*, 33, 395– 405.

- Centers for Disease Control and Prevention (CDC). Web-based Injury Statistics Query and Reporting System (WISQARS) (2013).
- Cero, I., Sifers, S.K. (2013). Parenting behavior and the interpersonal-psychological theory of suicide: a mediated moderation analysis with adolescents. *Journal of Affective Disorders*, 150 (3), 987-992.
- Cero, I., & Sifers, S. (2013). Moderating factors in the path from physical abuse to attempted suicide in adolescents: application of the interpersonal-psychological theory of suicide. *Suicide and Life-Threatening Behavior*, 43(3), 296-304.
- Chatard, A., Selimbegović, L., & Konan, P. N. (2009). Self-esteem and suicide rates in 55 Nations. *European Journal of Personality*, 23(1), 19-32.
- Chew, K. S., & McCleary, R. (1995). The spring peak in suicides: a cross-national analysis. *Social Science & Medicine*, 40(2), 223-230.
- Christiansen, E., & Jensen, B. F. (2007). Risk of repetition of suicide attempt, suicide or all deaths after an episode of attempted suicide: A register-based survival analysis. *The Australian and New Zealand Journal of Psychiatry*, 41, 257–265.
- Crosby A.E., Gfroerer J., Han B., Ortega L.V., & Parks S.E. (2011). Suicidal thoughts and behaviors among adults aged >18 years - United States, 2008-2009. Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report Accessed October 21, 2015. 2011; 60: 1–22
- Czyz, E. K., Liu, Z., & King, C. A. (2012). Social connectedness and one-year trajectories among suicidal adolescents following psychiatric hospitalization. *Journal of Clinical Child & Adolescent Psychology*, 41(2), 214-226.
- Czyz, E. K., Berona, J., & King, C. A. (2015). A Prospective Examination of the Interpersonal-Psychological Theory of Suicidal Behavior Among Psychiatric Adolescent Inpatients. *Suicide and Life-Threatening Behavior*, 45(2), 243-259.
- Davidson, C. L., Wingate, L. R., Grant, D. M., Judah, M. R., & Mills, A. C. (2011). Interpersonal suicide risk and ideation: The influence of depression and social anxiety. *Journal of Social and Clinical Psychology*, 30(8), 842-855.

- Davidson, C. L., Wingate, L. R., Slish, M. L., & Rasmus, K. A. (2010). The great black hope: Hope and its relation to suicide risk among African Americans. *Suicide and Life-Threatening Behavior*, 40(2), 170-180.
- Diamond, G. M., Diamond, G. S., Levy, S., Closs, C., Ladipo, T., & Siqueland, L. (2012). Attachment-based family therapy for suicidal lesbian, gay, and bisexual adolescents: A treatment development study and open trial with preliminary findings. *Psychotherapy*, 49(1), 62.
- Diamond, G. S., Wintersteen, M. B., Brown, G. K., Diamond, G. M., Gallop, R., Shelef, K., & Levy, S. (2010). Attachment-based family therapy for adolescents with suicidal ideation: A randomized controlled trial. *Journal of the American Academy of Child & Adolescent Psychiatry*, 49(2), 122-131.
- Fawcett, J., Scheftner, W. A., Fogg, L., Clark, D. C., Young, M. A., Hedeker, D., & Gibbons, R. (1990). Time-related predictors of suicide in major affective disorder. *The American journal of psychiatry*, 147, 1189-1194.
- Fazel, S., Cartwright, J., Norman-Nott, A., & Hawton, K. (2008). Suicide in prisoners: a systematic review of risk factors. *Journal of Clinical Psychiatry*, 69(11), 1721-1731.
- Foster, T. (2003). Suicide note themes and suicide prevention. *The International Journal of Psychiatry in Medicine*, 33(4), 323-331.
- Franklin, J., Hessel, E., & Prinstein, M. (2011). Clarifying the role of pain tolerance in suicidal capability. *Psychiatry Research*, 189(3), 362--367
- Gauthier, J., Zuromski, K., Gitter, S., Witte, T., Cero, I., & Gordon, K., Joiner, T. (2014). The interpersonal-psychological theory of suicide and exposure to video game violence. *Journal of Social and Clinical Psychology*, 33(6), 512--535.
- Gould, M. S., Greenberg, T., Velting, D. M., Shaffer, D. (2003). Youth suicide risk and preventive intervention: a review of the past 10 years. *Journal of the American Academy of Child and Adolescent Psychiatry*, 42(4), 386-405.
- Gove, W. R., & Hughes, M. (1980). Reexamining the ecological fallacy: A study in which aggregate data are critical in investigating the pathological effects of living alone. *Social Forces*, 58(4), 1157-1177.

- Haley, C. (2009). Improving depressive symptom measurement in adolescents: a psychometric evaluation of the quick inventory of depressive symptomatology, adolescent version (QIDS-S17) (Unpublished doctoral dissertation). University of Texas Southwestern Medical Center, Dallas, Texas.
- Hatzenbuehler, M. (2011). The social environment and suicide attempts in lesbian, gay, and bisexual youth. *Pediatrics*, 127(5), 896-903.
- Heikkinen, M., Aro, H., & Lönnqvist, J. (1994). Recent life events, social support and suicide. *Acta Psychiatrica Scandinavica*, 89 (s377), 65-72.
- Hill, R. M., & Pettit, J. W. (2012). Suicidal ideation and sexual orientation in college students: the roles of perceived burdensomeness, thwarted belongingness, and perceived rejection due to sexual orientation. *Suicide and life-threatening behavior*, 42(5), 567-579.
- Hinshaw, S. P. (2002). Intervention research, theoretical mechanisms, and causal processes related to externalizing behavior patterns. *Development and Psychopathology*, 14(04), 789-818.
- Horton, S.E., Hughes, J.L., King, J.D., Kennard, B.D., Westers, N.J., Mayes, T.L., & Stewart, S.M. (2015). Preliminary Examination of the Interpersonal Theory of Suicide in an Adolescent Clinical Sample. *Journal of Abnormal Child Psychology*.
- Huey, S. J., Henggeler, S. W., Rowland, M. D., Halliday-Boykins, C. A., Cunningham, P. B., Pickrel, S. G., & Edwards, J. (2004). Multisystemic therapy effects on attempted suicide by youths presenting psychiatric emergencies. *Journal of the American Academy of Child & Adolescent Psychiatry*, 43(2), 183-190.
- Joiner, T. E. (2005). *Why people die by suicide*. Cambridge, MA: Harvard University Press.
- Joiner, T. E., Hollar, D., & Orden, K. V. (2006). On buckeyes, gators, super bowl Sunday, and the miracle on ice: "pulling together" is associated with lower suicide rates. *Journal of Social and Clinical Psychology*, 25(2), 179-195.
- Joiner, T. E., Ribeiro, J. D., & Silva, C. (2012). Nonsuicidal self-injury, suicidal behavior, and their co-occurrence as viewed through the lens of the interpersonal theory of suicide. *Current Directions in Psychological Science*, 21(5), 342-347.

- Kaplan, M., McFarland, B., Huguet, N., & Newsom, J. (2007). Physical illness, functional limitations, and suicide risk: a population-based study. *American Journal of Orthopsychiatry*.
- Kessler, R. C., Borges, G., & Walters, E. E. (1999). Prevalence of and risk factors for lifetime suicide attempts in the National Comorbidity Survey. *Archives of General Psychiatry*, 56(7), 617.
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. *Archives of general psychiatry*, 62(6), 593-602.
- Kerr, D., Owen, L., & Capaldi, D. (2008). Suicidal ideation and its recurrence in boys and men from early adolescence to early adulthood: an event history analysis. *Journal of Abnormal Psychology*, 117(3), 625.
- Kann, L., Kinchen, S., Shanklin, S., Flint, K., Kawkins, J., & Harris, W., Zaza, S. (2014). Youth risk behavior surveillance--United States, 2013. *MMWR*, 63(Supplement 4), 1-168.
- Kasen, S., Cohen, P., & Chen, H. (2011). Developmental course of impulsivity and capability from age 10 to age 25 as related to trajectory of suicide attempt in a community cohort. *Suicide and Life-Threatening Behavior*, 41(2), 180-192.
- Kaufman, N. K., Rohde, P., Seeley, J. R., Clarke, G. N., & Stice, E. (2005). Potential mediators of cognitive-behavioral therapy for adolescents with comorbid major depression and conduct disorder. *Journal of Consulting and Clinical Psychology*, 73(1), 38.
- Kazdin, A. E., & Nock, M. K. (2003). Delineating mechanisms of change in child and adolescent therapy: Methodological issues and research recommendations. *Journal of Child Psychology and Psychiatry*, 44(8), 1116-1129.
- King, C. A., Merchant, C. R. (2008). Social and interpersonal factors relating to adolescent suicidality: a review of the literature. *Archives of Suicide Research*, 12(3), 181-196.

- King, C. A., Segal, H., Kaminski, K., Naylor, M. W., Ghaziuddin, N., & Radpour, L. (1995). A prospective study of adolescent suicidal behavior following hospitalization. *Suicide and Life-Threatening Behavior*, 25(3), 327-338.
- Kleiman, E. M., Law, K. C., & Anestis, M. D. (2014). Do theories of suicide play well together? Integrating components of the hopelessness and interpersonal psychological theories of suicide. *Comprehensive Psychiatry*, 55(3), 431-438.
- Kleiman, E. M., Liu, R. T., & Riskind, J. H. (2014). Integrating the interpersonal psychological theory of suicide into the depression/suicidal ideation relationship: A short-term prospective study. *Behavior Therapy*, 45(2), 212-221.
- Klonsky, E. D., May, A. M., Glenn, C. R. (2013). The relationship between nonsuicidal self-injury and attempted suicide: converging evidence from four samples. *Journal of Abnormal Psychology*, 122(1), 231-237.
- Kolko, D. J., Brent, D. A., Baugher, M., Bridge, J., & Birmaher, B. (2000). Cognitive and family therapies for adolescent depression: Treatment specificity, mediation, and moderation. *Journal of Consulting and Clinical Psychology*, 68(4), 603.
- Kposowa, Augustine J. Unemployment and suicide: a cohort analysis of social factors predicting suicide in the US National Longitudinal Mortality Study." *Psychological Medicine* 31.01 (2001): 127-138.
- Kretschmar, J. M., & Flannery, D. J. (2011). Displacement and suicide risk for juvenile justice-involved youth with mental health issues. *Journal of Clinical Child & Adolescent Psychology*, 40(6), 797-806.
- La Greca, A. M., Silverman, W. K., & Lochman, J. E. (2009). Moving beyond efficacy and effectiveness in child and adolescent intervention research. *Journal of Consulting and Clinical Psychology*, 77(3), 373.
- Lasgaard, M., Goossens, L., & Elklit, A. (2011). Loneliness, depressive symptomatology, and suicide ideation in adolescence: Cross-sectional and longitudinal analyses. *Journal of Abnormal Child Psychology*, 39(1), 137-150.

- Leary, M. R., Tambor, E. S., Terdal, S. K., & Downs, D. L. (1995). Self-esteem as an interpersonal monitor: The sociometer hypothesis. *Journal of Personality and Social Psychology*, 68(3), 518-530.
- Lewinsohn, P. M., Rohde, P., & Seeley, J. R. (1994). Psychosocial risk factors for future adolescent suicide attempts. *Journal of Consulting and Clinical Psychology*, 62(2), 297-305.
- Lewinsohn, P. M., Rohde, P., & Seeley, J. (1996). Adolescent suicidal ideation and attempts: prevalence, risk factors, and clinical implications. *Clinical Psychology: Science & Practice*, 3, 25– 46.
- Linehan, M. M., Goodstein, J. L., Nielsen, S. L., & Chiles, J. A. (1983). Reasons for staying alive when you are thinking of killing yourself: the reasons for living inventory. *Journal of Consulting and Clinical Psychology*, 51(2), 276-286.
- Liu, R., Case, B., & Spirito, A. (2014). Injection drug use is associated with suicide attempts but not ideation or plans in a sample of adolescents with depressive symptoms. *Journal of Psychiatric Research*, 56, 65-71.
- Liu, R., & Mustanski, B. (2012). Suicidal ideation and self-harm in lesbian, gay, bisexual, and transgender youth. *American Journal of Preventive Medicine*, 42(3), 221-228.
- Marshall, S. K. (2001). Do I matter? construct validation of adolescents' perceived mattering to parents and friends. *Journal of Adolescence*, 24(4), 473-490.
- Marttunen, M. J., Aro, H. M., Henriksson, M. M., & Lonnqvist, J. K. (1991). Mental disorders in adolescent suicide: DSM-III-R axes I and II diagnoses in suicides among 13- to 19-year-olds in Finland. *Archives of General Psychiatry*, 48(9), 834.
- McKeown, R. E., Garrison, C. Z., Cuffe, S. P., Waller, J. L., Jackson, K. L., & Addy, C. L. (1998). Incidence and predictors of suicidal behaviors in a longitudinal sample of young adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, 37(6), 612-619.
- Muehlenkamp, J. J., & Gutierrez, P. M. (2007). Risk for suicide attempts among adolescents who engage in non-suicidal self-injury. *Archives of Suicide Research*, 11(1), 69-82.

- Mustanski, B., & Liu, R. (2013). A longitudinal study of predictors of suicide attempts among lesbian, gay, bisexual, and transgender youth. *Archives of Sexual Behavior*, 42(3), 437-448.
- Moskos, M. A., Achilles, J., & Gray, D. (2004). Adolescent suicide myths in the United States. *Crisis: The Journal of Crisis Intervention and Suicide Prevention*, 25(4), 176-182.
- National Action Alliance for Suicide Prevention: Research Prioritization Task Force. (2014). A prioritized research agenda for suicide prevention: An action plan to save lives. Rockville, MD: National Institute of Mental Health and the Research Prioritization Task Force.
- Nock, M. K., Borges, G., Bromet, E. J., Cha, C. B., Kessler, R. C., & Lee, S. (2008). Suicide and suicidal behavior. *Epidemiologic Reviews*, 30(1), 133-154.
- Nock, M. K., Green, J. G., Hwang, I., McLaughlin, K. A., Sampson, N. A., Zaslavsky, A. M., & Kessler, R. C. (2013). Prevalence, correlates, and treatment of lifetime suicidal behavior among adolescents: results from the National Comorbidity Survey Replication Adolescent Supplement. *Journal of the American Medical Association Psychiatry*, 70(3), 300-310.
- Nock, M. K., Joiner, T. E., Gordon, K. H., Lloyd-Richardson, E., Prinstein, M. J. (2006). Non-suicidal self-injury among adolescents: diagnostic correlates and relation to suicide attempts. *Psychiatry Research*, 144, 65-72.
- Orbach, I., Mikulincer, M., King, R., Cohen, D., & Stein, D. (1997). Thresholds and tolerance of physical pain in suicidal and nonsuicidal adolescents. *Journal of Consulting and Clinical Psychology*, 65(4), 646.
- Orbach, I., Palgi, Y., Stein, D., Har-Even, D., Lotem-Peleg, M., Asherov, J., & Elizur, A. (1996). Tolerance for physical pain in suicidal subjects. *Death Studies*, 20(4), 327-341.
- Parellada, M., Saiz, P., Moreno, D., Vidal, J., Llorente, C., Alvarez, M., Garcia-Portilla, P., Ruiz-Sancho, A., Arango, C., Bobes, J. (2008). Is attempted suicide different in adolescents and adults? *Psychiatry Research*, 157, 131-137.

- Pineda, J., & Dadds, M. R. (2013). Family intervention for adolescents with suicidal behavior: a randomized controlled trial and mediation analysis. *Journal of the American Academy of Child & Adolescent Psychiatry*, 52(8), 851-862.
- Posner, K., Brent, D., Lucas, C., Gould, M., Stanley, B., Brown, G., & Mann, J. (2008). Columbia-Suicide Severity Rating Scale (C-SSRS). *Columbia University Medical Center*.
- Posner, K., Brown, G. K., Stanley, B., Brent, D. A., Yershova, K. V., Oquendo, M. A., & Mann, J. J. (2011). The Columbia–Suicide Severity Rating Scale: initial validity and internal consistency findings from three multisite studies with adolescents and adults. *American Journal of Psychiatry*, 168(12), 1266-1277.
- Poznanski, E. O., & Mokros, H. B. (1996). *Children's depression rating scale, revised (CDRS-R): manual*. Western Psychological Services.
- Prinstein, M. J., Nock, M. K., Simon, V., Aikins, J. W., Cheah, C. S., & Spirito, A. (2008). Longitudinal trajectories and predictors of adolescent suicidal ideation and attempts following inpatient hospitalization. *Journal of Consulting and Clinical Psychology*, 76(1), 92.
- Ribeiro, J. D., Bodell, L. P., Hames, J. L., Hagan, C. R., Joiner, T. E. (2013) An empirically based approach to the assessment and management of suicidal behavior. *Journal of Psychotherapy Integration*, 1-15.
- Roberts, R. E., Roberts, C. R., & Chen, Y. R. (1998). Suicidal thinking among adolescents with a history of attempted suicide. *Journal of the American Academy of Child & Adolescent Psychiatry*, 37, 1294–300.
- Rotheram-Borus, M. J., Piacentini, J., Van Rossem, R., Graae, F., Cantwell, C., Castro-Blanco, D., Miller, S., & Feldman, J. (1996). Enhancing treatment adherence with a specialized emergency room program for adolescent suicide attempters. *Journal of the American Academy of Child & Adolescent Psychiatry*, 35(5), 654-663.
- Rudd, M. D., Joiner, T., & Rajad, M. H. (1996). Relationships among suicide ideators, attempters, and multiple attempters in a young-adult sample. *Journal of Abnormal Psychology*, 105(4), 541.

- Rush, A. J., Bernstein, I. H., Trivedi, M. H., Carmody, T. J., Wisniewski, S., Mundt, J. C., & Fava, M. (2006). An evaluation of the quick inventory of depressive symptomatology and the hamilton rating scale for depression: a sequenced treatment alternatives to relieve depression trial report. *Biological Psychiatry*, 59(6), 493-501.
- Rush, A. J., Trivedi, M. H., Ibrahim, H. M., Carmody, T. J., Arnow B, Klein DN, Markowitz JC, Ninan PT, Kornstein S, Manber R, Thase ME, Kocsis JH, Keller MB (2003). The 16-Item Quick Inventory of Depressive Symptomatology (QIDS), clinician rating (QIDS-C), and self-report (QIDS-SR): a psychometric evaluation in patients with chronic major depression. *Biological Psychiatry*, 54(5), 573-583.
- Sabbath, J. C. (1969). The suicidal adolescent—The expendable child. *Journal of the American Academy of Child Psychiatry*, 8(2), 272-285.
- Shaffer, D., Gould, M. S., Fisher, P., Trautman, P., Moreau, D., Kleinman, M., & Flory, M. (1996). Psychiatric diagnosis in child and adolescent suicide. *Archives of General Psychiatry*, 53(4), 339.
- Sheftall, A. H., Mathias, C. W., Furr, R. M., & Dougherty, D. M. (2013). Adolescent attachment security, family functioning, and suicide attempts. *Attachment & Human Development*, 15(4), 368-383.
- Solomon, R. L., & Corbit, J. D. (1974). An opponent-process theory of motivation: I. Temporal dynamics of affect. *Psychological Review*, 81(2), 119.
- Spirito, A., & Esposito-Smythers, C. (2006). Attempted and completed suicide in adolescence. *Annual Review of Clinical Psychology*, 2, 237-266.
- Stack, S. (2013). Differentiating Suicide Ideators from Attempters: Violence—A Research Note. *Suicide and Life-Threatening Behavior*.
- Stewart, S. M., Eaddy, M., Horton, S. E., Hughes, J., & Kennard, B. (2015). The validity of the interpersonal theory of suicide in adolescence: a review. *Journal of Clinical Child & Adolescent Psychology*, 1-13.
- Timmons, K. A., Selby, E. A., Lewinsohn, P. M., & Joiner, T. E. (2011). Parental displacement and adolescent suicidality: Exploring the role of failed belonging. *Journal of Clinical Child & Adolescent Psychology*, 40(6), 807-817.

- Van Orden, K. A., Witte, T. K., Gordon, K. H., Bender, T. W., Joiner, T. E. (2008). Suicidal desire and the capability for suicide: tests of the interpersonal-psychological theory of suicidal behavior among adults. *Journal of Consulting and Clinical Psychology, 76*(1), 72-83.
- Van Orden, K. A., Witte, T. K., Cukrowicz, K. C., Braithwaite, S. R., Selby, E. A., Joiner, T. E. (2010). The interpersonal theory of suicide. *Psychological Review, 117*, 575-600.
- Van Orden, K. A., Cukrowicz, K. C., Witte, T. K., Joiner, T. E. (2012). Thwarted Belongingness and perceived burdensomeness: construct validity and psychometric properties of the interpersonal needs questionnaire. *Psychological Assessment, 24*, 197-215.
- Vander Stoep, A., McCauley, E., Flynn, C., & Stone, A. (2009). Thoughts of death and suicide in early adolescence. *Suicide and Life-Threatening Behavior, 39*, 599–613.
- Wagner, B. M., Silverman, M. A. C., & Martin, C. E. (2003). Family factors in youth suicidal behaviors. *American Behavioral Scientist, 46*(9), 1171-1191.
- Weersing, V. R., & Weisz, J. R. (2002). Mechanisms of action in youth psychotherapy. *Journal of Child Psychology and Psychiatry, 43*(1), 3-29.
- Wilkinson, P., & Goodyer, I. (2011). Non-suicidal self-injury. *European Child & Adolescent Psychiatry, 20*(2), 103-108.
- Witte, T. K., Merrill, K. A., Stellrecht, N. E., Bernert, R. A., Hollar, D. L., Schatsneider, C., Joiner, T. E. (2008). “Impulsive” youth suicide attempters are not necessarily all that impulsive. *Journal of Affective Disorders, 107*(1), 107-116.
- Ribeiro, J. D., Witte, T. K., Van Orden, K. A., Selby, E. A., Gordon, K. H., Bender, T. W., & Joiner Jr, T. E. (2014). Fearlessness about death: The psychometric properties and construct validity of the revision to the Acquired Capability for Suicide Scale. *Psychological Assessment, 26*(1), 115.
- Wong, Y. J., & Maffini, C. S. (2011). Predictors of Asian American adolescents’ suicide attempts: A latent class regression analysis. *Journal of Youth and Adolescence, 40*(11), 1453-1464.

World Health Organization. (2012). WHO mortality data and statistics. Retrieved from http://www.who.int/mental_health/prevention/suicide/country_reports/en/

Woznica, J. A., Shapiro, J. R. (1990). An analysis of adolescent suicide attempts: the expendable child. *Journal of Pediatric Psychology*, 15, 789-796.