

THE INTERPERSONAL-PSYCHOLOGICAL
THEORY OF SUICIDAL BEHAVIOR: A
PROSPECTIVE ANALYSIS

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“Vita Brevis, Ars Longa.”

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Abstract: Suicide is both a national and global concern, yet limitations still remain in our knowledge of the pathways to suicide. The Interpersonal-Psychological Theory of Suicidal Behavior is a recently proposed, comprehensive theory of suicidal behavior that seeks to address the limitations in our understanding of who dies by suicide. In the theory, the interpersonal constructs of perceived burdensomeness and thwarted belongingness combine to form the desire for suicide, while the construct of acquired capability provides the ability to engage in lethal self-harm. Previous research has supported this theoretical framework as it predicts suicidal behavior. The current study sought to expand on the previous literature by examining the three-way interaction of perceived burdensomeness, thwarted belongingness, and acquired capability as it predicts suicidal ideation and suicidal behavior over three distinct time points spanning a time-frame of eight weeks. Results indicated that the three-way interaction predicted suicidal behavior proximally; however, the interaction did not predict suicidal ideation or behavior over time. Additionally, the current study sought to examine how proximal levels of hopelessness moderate the relationship between the interaction of perceived burdensomeness by thwarted belongingness and distal levels of suicidal ideation at eight weeks. The same hypothesis was proposed examining the relationship within a mediation analysis. Results did not find support for either the moderation analysis or the mediation analysis. Overall, the results of the current study found support for the central tenet of the theory. Clinical implications, limitations, and future research are discussed.

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CHAPTER I

INTRODUCTION

Suicide is both a national and global concern with approximately one million people ending their lives each year worldwide (World Health Organization [WHO], 2011). Though a significant amount of research on suicide and its correlates has been conducted over the years, limitations still remain in our knowledge of the pathways to suicide. Moreover, very few psychological interventions and treatments have been shown to be efficacious at preventing suicide or treating suicidal individuals (Fleischmann et al., 2008; Linehan et al., 2006). Perhaps few empirical advances toward understanding and preventing suicide have been made due to the flaws in previous theories of suicide (Van Orden et al., 2010). A recent comprehensive theory of suicidal behavior draws upon the previous theoretical literature and seeks to address the limitations in our understanding of who dies by suicide.

In 2005, Joiner presented the Interpersonal-Psychological Theory of Suicidal Behavior (IPTS) as an explanation of how individuals die by suicide. Since that time it has served as a catalyst for empirical research into suicidal ideation, attempts, and completions (see Ribeiro & Joiner, 2009; Smith & Cukrowicz, 2010; Van Orden et al., 2010). In his theory, Joiner proposed three psychological constructs to be necessary,

but not sufficient individually, to enact suicide. More specifically, the interpersonal constructs of perceived burdensomeness and thwarted belongingness combine to form the desire for suicide, while the construct of acquired capability provides the necessary ability to engage in lethal self-harm (Joiner, 2005; Van Orden, Merrill, & Joiner, 2005). According to the theory, both the presence of suicidal desire and the capability for suicide account for the relatively small subset of the population who dies by suicide. Since its proposal, the theory has gained a considerable amount of support in the literature (Davidson, Wingate, Rasmussen, & Slis, 2009; Davidson, Wingate, Slis, & Rasmussen, 2010; Joiner et al., 2009; Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Overall, IPTS provides an explanation for why only a small portion of the population will experience thoughts of suicide, a smaller portion will attempt suicide, and an even smaller portion will progress to complete the act of suicide.

The current body of literature has found support for the “desire” and “capability” components of the theory. Past research has found perceived burdensomeness to individually predict suicidal behavior (Davidson et al., 2009; Davidson et al., 2010; Joiner et al., 2002; Van Orden, Lynam, Hollar, & Joiner, 2006) and similarly thwarted belongingness has been shown to individually predict suicidal behavior (Conner, Britton, Sworts, & Joiner, 2007; Davidson et al., 2009; Davidson et al., 2010; Joiner, Hollar, & Van Orden, 2006). Although individually these constructs predict suicidal behavior, the theory hypothesizes that the simultaneous presence of both constructs creates the desire to die within an individual. Research has supported this premise. Specifically, the interaction between perceived burdensomeness and thwarted belongingness has been shown to significantly predict suicidal behavior (Joiner et al., 2009; Van Orden et al., 2008). Finally, IPTS posits that the presence

of perceived burdensomeness, thwarted belongingness, and acquired capability in combination are necessary for an individual to engage in lethal suicidal behavior. Again, the literature has found support for this tenet. Specifically, three-way interactions between perceived burdensomeness, thwarted belongingness, and acquired capability have been shown to significantly predict suicidal behavior (Davidson et al., 2010; Joiner et al., 2009). Though the aforementioned findings provide important support for the theory, the current body of literature has not examined the ability of all three components to predict suicidal behavior prospectively. This represents a void in the extant literature. Research aimed at confirming the predictive ability of all three components of IPTS as they predict suicidal behavior over time would significantly add to the validation of the theory.

In addition to understanding the three-way interactional effect of the theoretical components over time, it is important to further understand the levels of ideation (e.g. desire) which move an individual from minimal risk to high risk of enacting suicidal behavior. While providing a detailed overview of IPTS, Van Orden and colleagues (2010) discuss several testable hypotheses of the theory that have yet to obtain empirical support. One such testable hypothesis attempts to explain how the severity of suicidal ideation changes over time. Van Orden and colleagues (2010) hypothesized that passive suicidal ideation surmounts from the simultaneous presence of perceived burdensomeness and thwarted belongingness. These interpersonal states create a desire for suicide that becomes evident through cognitions such as “Others would be better off if I was dead.” The theory assumes that thwarted belongingness exists as a dynamic state rather than a stable trait. This “state” of belongingness is thereby influenced by both interpersonal and intrapersonal factors as an individual’s degree of belongingness varies over time. Likewise, perceived burdensomeness

is presumed to exist as a dynamic state that is bound to similar temporal changes due to fluctuating interpersonal and intrapersonal variables. Overall, these cognitive-affective interpersonal states are proposed to vacillate along a continuum of severity such that when additional variables become present, increased suicidal risk surmounts. Therefore, it is hypothesized that when the states of perceived burdensomeness and thwarted belongingness are perceived as unlikely to change, active suicidal ideation results (Van Orden et al., 2010).

Van Orden and colleagues (2010) hypothesize that active suicidal desire occurs when an individual experiences the simultaneous presence of complete thwarted belongingness, global perceptions of burdensomeness, and hopelessness regarding future changes in their interpersonal relations. This hypothesis would suggest that through intense exposure to the states of perceived burdensomeness and thwarted belongingness, an individual becomes hopeless that these states will change. This hypothesis further suggests that it is the addition of the hopelessness that moves the individual from passive suicidal ideation (“I wish I was no longer living”) to active suicidal ideation (“I want to die. I will kill myself”). Though Van Orden and colleagues (2010) emphasize hopelessness specific to the unchanging nature of perceived burdensomeness and thwarted belongingness causes changes in the severity of suicidal ideation, severe suicidal ideation may occur in the presence of general hopelessness about the future as has been suggested by previous literature. For example, the development of general hopelessness about the future may impact the relationship between the interpersonal risk factors (e.g. perceived burdensomeness and thwarted belongingness) and suicidal ideation. One could argue that general hopelessness about the future might then elevate the severity of suicidal ideation and suicide risk in the presence of burdensomeness

and thwarted belongingness due to the vast empirical literature relating hopelessness to suicide.

In the existing literature, hopelessness has been identified as one of the most robust correlates and predictors of suicide (Joiner & Rudd, 1996). Multiple studies have shown that hopelessness is more highly related to suicidal ideation and behaviors than depression (Beck, Kovacs, & Weissman, 1975; Beck, Steer, Kovacs, & Garrison, 1985; Bedrosian & Beck, 1979; Minkoff, Bergman, Beck, & Beck, 1973; Weissman, Beck, & Kovacs, 1979; Wetzel, Margulies, Davis, & Karam, 1980). Hopelessness has not only been related to suicidal behavior, it has also been shown to be associated with interpersonal variables that may increase the likelihood of depression and suicidal behavior (Arie, Apter, Orbach, Yefet, & Zalzman, 2008; Joiner, Wingate, & Otamendi, 2005; Pettit & Joiner, 2006; Rasmussen et al., in preparation). These variables include poor interpersonal problem solving and interpersonally oriented cognitions (Pettit & Joiner, 2006).

Hopelessness is integral for understanding who dies by suicide (Beck et al., 1985). The construct of hopelessness is often identified as a marker of severity in conceptualizations of depression (e.g., Abramson, Metalsky, & Alloy, 1987; Beck, 1963). However, it was Beck who first operationally defined hopelessness, a construct which had only been observed but not measured, within suicides throughout human history (see Durkheim, 1897, 1951; Rosen, 1971). During the treatment of 50 patients suffering from depression, Beck (1963) identified suicidal patients as being “hopeless” regarding their current and future suffering. Beck hypothesized that the cognitive distortions held by depressed individuals play a role in the development of the hopeless cognitive schemata which makes an individual desire suicide. Empirical tests of the hopelessness theory have consistently found hopelessness to be a better

predictor of suicidal behavior than depression (Minkoff et al., 1973) and studies have found hopelessness to account for the relationship between depression and suicide (Beck et al., 1975; Wetzel et al., 1980). Clearly, the construct of hopelessness is a robust predictor of suicidal behavior and may create an active desire for death amongst individuals who believe their condition to be unbearable with no possible resolution.

Though Van Orden and colleagues (2010) suggest that hopelessness specific to perceived burdensomeness and thwarted belongingness leads to active suicidal ideation, the current study proposes that general hopelessness experienced at an initial time point will impact the prospective relationship between interaction of perceived burdensomeness by thwarted belongingness (i.e. the interpersonal risk factors for suicide) and suicidal ideation. The constructs of perceived burdensomeness and thwarted belongingness have been largely considered and supported as proximal and sufficient causes of passive suicidal ideation or the desire for suicide (see Van Orden et al., 2010). Although these interpersonal risk factors may vary over time as a function of environmental features, some evidence suggests that prolonged exposure to various indices of the interpersonal risk factors can have serious deleterious effects (Cacioppo et al., 2006; Motto & Bostrom, 1990). Therefore, it is hypothesized that the interpersonal risk factors are not only proximal causes of suicidal ideation, but they may also exist as distal predictors of suicidal ideation. In addition, the association of the interpersonal risk factors with suicidal ideation may vary as a function of activated interpersonal schemas such as hopelessness. The literature has also proven the ability of initial levels of hopelessness to predict eventual death by suicide (Beck, Brown, & Steer, 1989; Beck et al., 1985; Kuo, Gallo, & Eaton, 2004). Because of the aforementioned empirical support, the current study specifically hypothesizes that the initial presence of

hopelessness will moderate the relationship between the simultaneous presence of perceived burdensomeness and thwarted belongingness and prospective levels of suicidal ideation.

Before testing the previously stated hypothesis, it is important to examine all three components (i.e. the three-way interaction of perceived burdensomeness by thwarted belongingness by acquired capability) as they predict suicidal ideation and suicidal behavior over time. There are presently no studies that have tested the three-way interaction as it predicts suicidal ideation and suicidal behavior prospectively. Therefore, the current study hypothesizes that the simultaneous presence of perceived burdensomeness, thwarted belongingness, and acquired capability will predict suicidal *ideation* cross-sectionally (time one), at four weeks (time two), and at eight weeks (time three). Secondly, the current study hypothesizes that the simultaneous presence of perceived burdensomeness, thwarted belongingness, and acquired capability will predict suicidal *behavior* cross-sectionally (time one), at four weeks (time two), and at eight weeks (time three). As stated previously, the final hypothesis will examine the relationship between the simultaneous presence of perceived burdensomeness and thwarted belongingness (time one) and suicidal ideation eight weeks later (time three) as it is moderated by the proximal experience of hopelessness (time one). It is hypothesized that the prospective relationship between the interpersonal risk factors and suicidal ideation will be strengthened by high levels of hopelessness at time one. Alternatively, the relationship between the interpersonal risk factors and suicidal ideation will be weakened by the presence of low levels of hopelessness at time one. As an additional step, a mediation analysis will be conducted to examine whether hopelessness at time one mediates the relationship between the interpersonal risk factors at time one and suicidal ideation eight weeks later. This analysis will be run, in effect, to examine whether the

hopelessness not only impacts the relationship between the interpersonal risk factors and suicidal ideation, but also whether the relationship merely exists due to the presence of hopelessness. Each of these hypotheses should provide a test of IPTS and answer questions regarding the theory's prospective ability to predict suicide.

CHAPTER II

LITERATURE REVIEW

Suicide is a major public health concern in the United States. In 2011, approximately 38,285 individuals died by suicide (Hoyert & Xu, 2012). As a result, suicide was estimated as the tenth leading cause of death in the United States during 2011. Suicide has a major impact on the United States and is also a global concern, yet little is known about the causal pathways to suicidal behavior. Due to changing definitions of what constitutes as suicidal behavior, it has been difficult for researchers to study the phenomenon of suicide. Also, current theories attempting to explain who dies by suicide often lack the ability to comprehensively explain known risk factors for suicide and fail to provide a theoretical framework for future suicide risk assessment (Van Orden et al., 2010). It is therefore important to more fully understand the avenues that lead individuals to engage in suicidal behavior in order to provide effective methods of prevention and intervention.

Suicide

Death as a result of suicidal behavior is relatively rare. More specifically, few individuals who think about suicide (ideations) or who communicate thoughts of suicide will ever go on to make an attempt (Pettit & Joiner, 2006; WHO, 1998). An even smaller

subset of those who engage in serious suicidal behavior (lethal and non-lethal attempts) will ever die by suicide (American Association of Suicidology [AAS], 2011; Pettit & Joiner, 2006). Over the history of suicidology, definitions of suicidal behavior have varied widely. However, the current definition of suicidal behavior incorporates ideations, communications, and behaviors as integral components (Van Orden et al., 2010).

Research has attempted to understand the relative rarity of suicide within the general population by examining potential risk factors for suicidal ideation and behavior. Risk factors for suicide include family conflict (Duberstein, Conwell, Conner, Eberly, & Caine, 2004), social isolation (Dervic, Brent, & Oquendo, 2008; Joiner & Van Orden, 2008), unemployment (Stack, 2000), and physical illness (Harris & Barraclough, 1997). Another well known risk factor for suicide is the presence of a mental illness (Cavanagh, Carson, Sharpe, & Lawrie, 2003). Data indicates that approximately 90% of those who die by suicide have been diagnosed with one or more mental disorders (AAS, 2011). Depression is generally acknowledged as a significant risk factor for suicide amongst the representative mental illnesses. Data estimates that anywhere from 43.6 to 60 percent of suicide completers were experiencing a depressed mood at the time of their death (AAS, 2011; Karch et al., 2009). Other psychiatric disorders such as bipolar disorder and substance abuse (Harris & Barraclough, 1997), schizophrenia (Palmer, Pankratz, & Bostwick, 2005), and borderline personality disorder (Duberstein & Witte, 2008) have also been shown to increase the risk for suicidal behavior.

Although many individuals suffer from one or more mental illnesses, only a fraction of those individuals will commit suicide (Goldney, Dal Grande, Fisher, &

Wilson, 2003; Verona, Sachs-Ericsson, & Joiner, 2004). Though the aforementioned variables have been shown to increase risk for suicide, they do not always predict who will die by suicide. It is evident that a vast body of literature has established the relationship between psychopathology and suicide; however, our ability to predict who will ultimately die by suicide with specificity is limited.

Depression and Hopelessness

Before understanding the relationship between hopelessness and suicide, it is important to understand the relationship between hopelessness and depression. Hopelessness has consistently been identified as one of the most robust correlates and predictors of suicide (Joiner & Rudd, 1996). In addition, one of the most well known mental health risk factors for suicide and correlate of hopelessness is depression (Berman, 2009).

Prior studies indicate that the vast majority of completed suicides occur amongst individuals diagnosed with a mood disorder (Harris & Barraclough, 1997; Tanney, 2000). Importantly, amid individuals suffering from a depressive disorder, acute risk factors proximally associated with completed suicides have been identified. Hopelessness poses as both an acute risk factor (occurring within 6-12 months prior to the suicide completion) and a chronic risk factor (Berman, 2009). Several theories have illustrated the connection between hopelessness and depression, where hopelessness is conceptualized as the belief that enviable outcomes are unlikely to occur and that aversive events will occur in the future (Joiner, Wingate, Gencoz, & Gencoz, 2005; Joiner, Wingate, & Otamendi, 2005). These theories have furthermore aided in the definition of hopelessness and have served as a catalyst for further empirical research.

The cognitive theory of depression (Beck, 1967, 1987) sought to describe aspects of depression as well as explain its origins. Beck's (1967) original cognitive model of depression posited that depressed individuals maintain stable cognitive schemas about themselves, the world, and the future while distorted methods of processing the information (cognitive distortions) maintain the individuals' schemas (Joorman, 2009). Early on in the conceptualization of depression, hopeless and futile thoughts about the future were identified as a contributing factor to the development and maintenance of depressive symptoms (Beck, 1963; Schmidt, Schmidt, & Young, 1999).

In a review of the research surrounding the cognitive theory of depression, Haaga and colleagues (1991) outline nine testable hypotheses derived from Beck's updated cognitive theory (see Beck, 1987). One such hypothesis suggested that particular cognitions are positively correlated with the intensity of specific depressive symptoms (Haaga, Dyck, & Ernst, 1991). More specifically, cognitions of hopelessness were positively associated with the most severe symptom of depression; suicidality. Out of his extensive work with individuals suffering from depression, Beck (1963) identified hopelessness as a variable present amongst depressed individuals who died by suicide.

Another conceptualization between the relationship of depression and hopelessness emerged out of the learned helplessness theory of depression (see Seligman, 1975). Specifically, Abramson, Metalsky, and Alloy (1987) proposed that hopelessness is a sufficient and proximal cause for the development of hopelessness depression, a severe subtype of depression. Central to their theory, they proposed that hopelessness is the expectation that aversive events are likely to occur, desirable events are unlikely to occur, and expectations of helplessness regarding the ability to change the occurrence of the

outcomes (Abramson, Metalsky, & Alloy, 1989). They further postulated that hopelessness depression arises through the occurrence of negative life events, attributional styles (internal, stable, and global), and situational cues. These processes are identified as distal contributory causes for hopelessness depression while hopelessness is identified as a proximal contributory cause.

Abramson and colleagues (1989) also hypothesized the duration of an individual's level of hopelessness is influenced by the stability of their attributions for past negative life events and the stability of attributions regarding the occurrence of future negative life events. In short, individuals with a negative cognitive style who encounter significant stressors may have the predisposition to experience feelings of hopelessness and eventually manifest hopelessness depression (Abela & Seligman, 2000; Joiner, Wingate, Gencoz, & Gencoz, 2005; Joiner, Wingate, & Otamendi, 2005). Importantly, Abramson and colleagues characterized hopelessness depression as a severe form of depression. The symptoms of hopelessness depression include suicide, and research has found that individuals high on hopelessness depression endorsed higher levels of suicidal behavior than those individuals low on hopelessness depression (Whisman, Miller, Norman, & Keitner, 1995).

Joiner, Wingate, and Otamendi (2005) proposed an addendum to the hopelessness theory of depression by positing hopelessness as a generator of both interpersonal stress and depression. The results of a longitudinal study suggested that hopelessness accounted for increases in interpersonal stress and symptoms of depression over time. Also, their results supported a mediational effect. Namely, that interpersonal stress partially mediated the relationship between hopelessness and depression. Not only did the authors'

results support Abramson and colleagues (1989) original hopelessness theory of depression (i.e. hopelessness engenders depression), but the findings of their second hypothesis suggested that hopelessness may also engender interpersonal stressors independent of depression and vice versa. Joiner and colleagues (2005) concluded that, perhaps after first developing through negative cognitive or attributional styles, hopelessness leads to the direct development of depressive symptoms. Also, hopelessness indirectly leads to the development of depressive symptoms by generating interpersonal stress. Lastly, they concluded that when hopelessness generates stress it “provides more ‘grist’ for negative cognitive style’s ‘mill,’ thus propagating the sequence and perpetuating depressive symptoms” (Joiner, Wingate, & Otamendi, 2005, p. 659).

Joiner and colleagues (2005) hypothesize that hopelessness may generate stress by imbuing others with negative biases and perceptions about the hopeless individual. These individuals may then experience changes in their communications to the hopeless individual which may in turn perpetuate the cycle of increased depression, hopelessness, and interpersonal stress. Joiner and colleagues also postulate that the cyclical downward spiral might do so infinitely to the point of suicide.

Hopelessness and Suicide

Each of the theoretical frameworks identifying associations between depressive cognitive styles and hopelessness (e.g. Abramson et al., 1987; Beck, 1963; Joiner, Wingate, & Otamendi, 2005) also acknowledges an association with suicide. Through research with severely depressed patients and critical examination of suicidal behavior, Beck and colleagues formulated a theory regarding the relationship between hopelessness, depression, and suicide (Beck, Schuyler, & Herman, 1974). Beck and

colleagues hypothesized hopelessness as a precursor for all serious or fatal suicide attempts. Furthermore, they hypothesized that hopelessness was more highly related to suicide than depression.

In 1974, Beck, Weissman, Lester, and Trexler developed a scale by which to quantify hopelessness. The authors defined hopelessness as a “system of cognitive schemas whose common denomination is negative expectations about the future” (p. 864). The measure has exhibited good reliability and validity since its initial publication (see Beck & Steer, 1988; Durham, 1982; Jahn, Cukrowicz, Linton, & Prabhu, 2010; Metalsky & Joiner, 1992). Utilizing the measure, hopelessness has since been identified as the preeminent clinical predictor of suicide amid depressed patients (Beck, 1987; Brown, Beck, Steer, & Grisham, 2000; Mann, Wateraux, Haas, & Malone, 1999) and a predisposing factor for suicide amongst other forms of psychopathology (Beck et al., 1985).

Overall, research has supported the relationship between hopelessness and suicide. Hopelessness has been shown to predict suicidal behavior in samples of adolescents (Lewinsohn, Rohde, & Seeley, 1994), children (Kazdin, French, Unis, Esveldt-Dawson, & Sherick, 1983), adult outpatients (Beck, Brown, Berchick, Stewart, & Steer, 1990), and adult inpatients (Beck et al., 1989; Beck et al., 1985). The results of several cross-sectional studies found hopelessness to be significantly positively correlated with suicide even after controlling for the effects of depression (Beck et al., 1975; Kazdin et al., 1983; Minkoff et al., 1973; Wetzel, 1976; Wetzel et al., 1980). Conversely, depression and suicide were not significantly correlated after controlling for the effects of hopelessness (Beck et al., 1975; Kazdin et al., 1983; Minkoff et al., 1973; Wetzel, 1976;

Wetzel et al., 1980). Also, hopelessness has been found to be 1.3 times more predictive of suicidal ideation than symptoms of depression, and both symptoms of depression and hopelessness were found to be 2.5 times more predictive of suicidal ideation than a diagnosis of a mood disorder (Beck, Steer, Beck, & Newman, 1993). Hopelessness has also been correlated with suicide attempts above and beyond depression in groups of both alcohol abusers (Beck, Weissman, & Kovacs, 1976) and drug abusers (Weissman et al., 1979). Lastly, hopelessness has been found to be associated with suicidal ideation even in the absence of depressive symptoms (Elliott & Frude, 2001).

When examined longitudinally, levels of hopelessness as assessed by clinician ratings predicted eventual death by suicide (Beck et al., 1989). Similarly, when depression and hopelessness were assessed longitudinally through self-report measures, higher scores on self-reported hopelessness and not depression predicted eventual death by suicide (Beck et al., 1985). Kuo, Gallo, and Eaton (2004) found hopelessness to predict suicidal ideation, suicide attempts, and completed suicide over a period of thirteen years while controlling for depression. Also, the authors found that individuals expressing high levels of hopelessness at initial assessment were 11.2 times more likely to have committed suicide over the thirteen year follow-up period (Kuo et al., 2004). Young and colleagues (1996) examined the ability of trait levels and state levels of hopelessness to predict suicidal behavior. The authors found support for baseline trait level stability of hopelessness as it predicted suicidal behavior over an eight-year period. Also, they found that state levels of hopelessness prior to and during the experience of depressive symptoms were not predictive of suicidal behavior.

As mentioned previously, specific measures of hopelessness have been shown to be predictive of suicidal behavior in adults (Beck, Weissman, et al., 1974) and children (Kazdin et al., 1983). The Beck Hopelessness Scale (BHS) with a clinical cutoff score of nine on the measure has been shown to predict suicidal behavior and suicide completions (McMillan, Gilbody, Beresford, & Neilly, 2007). Importantly, the BHS is widely used as a reliable and valid measure of the hopelessness construct. Though the BHS has been found to predict severe suicidal behavior, McMillan and colleagues (2007) found the measure to be sensitive at predicting attempts and completions but lacking in specificity. Hopelessness may be a robust predictor of suicide above and beyond depression and may be quantified in a way that captures insight into who dies by suicide; however, not all hopeless individuals attempt or enact suicide (Van Orden et al., 2010). A recent theory may provide a theoretical framework which accounts for who dies by suicide to a greater extent.

The Interpersonal-Psychological Theory of Suicidal Behavior

A recent theory of suicidal behavior proposes an explanation for the relative rarity of suicide by incorporating previous empirical and theoretical literature into a new model which can be tested. The Interpersonal-Psychological Theory of Suicidal Behavior (IPTS; Joiner, 2005) posits that completed suicide can only be obtained through the simultaneous presence of a desire to die and the ability to die. According to the theory, the desire to die comes from the presence of perceptions of burdensomeness and feelings of thwarted belongingness. Perceived burdensomeness is defined as the misperception of incompetence such that one is a burden on friends, family members, and society (Ribeiro & Joiner, 2009). Because of their misperception, individuals come to believe that others

would be better off if they were no longer living. Thwarted belongingness is defined as feelings of social alienation or isolation (Ribeiro & Joiner, 2009). Individuals who feel thwarted in their interactions feel as though they do not belong in valued social groups. Also according to the theory, the ability to die comes by means of acquired capability for lethal self-injury through exposure to painful and provocative experiences. Joiner (2005) suggests that humans have an innate instinct for self-preservation and an intrinsic fear of death that is central to human survival. Habituation to pain and fearlessness regarding death combine to strengthen an individual's ability to engage in lethal self-harm. Again, it is the simultaneous presence of the desire to commit suicide and the ability to enact lethal self-harm which is proposed to account for how individuals die by suicide.

The Desire to Die: Perceived Burdensomeness and Thwarted Belongingness

As was previously noted, according to IPTS the desire to die is composed of perceived burdensomeness and thwarted belongingness. These components are considered necessary but, alone, not sufficient for suicide to occur. Recent literature has supported the theoretical basis of the “desire” component of the theory.

The perception, or often misperception, of being a burden on others is a common theme in the theoretical underpinnings of suicidal behavior. For example, several risk factors for suicide such as unemployment, physical illness, and family conflict often contain themes of burdensomeness on others. In individuals who have a terminal or chronic illness, their desire to die is often associated with perceptions of being a burden on others (Chochinov et al., 2005) and such perceptions have been observed in terminal patients who die by suicide (Filiberti et al., 2001). Similarly, among individuals who are vulnerable for suicide, unemployment may raise perceptions of incompetence or

burdensomeness on other dependents (Van Orden et al., 2010). Regarding family conflict, de Catanzaro (1995) found that perceived burdensomeness towards family members was associated with suicidal ideation amongst groups of both community and high risk suicide groups. One theory of adolescent suicide posits burdensomeness on family as a contributing factor for suicidal behavior (Sabbath, 1969). Not only has the perception of being a burden been observed in previous literature examining risk factors (e.g. unemployment, physical illness, etc.), the construct of perceived burdensomeness has also been directly supported through tests of IPTS.

Joiner and colleagues (2002) conducted two studies examining the content of suicide notes. Trained individuals rating the content of the suicide notes detected increased expressions of burdensomeness within the notes of individuals who died by suicide in contrast to those individuals who attempted suicide but survived. Also, the authors found that expressions of burdensomeness were higher in the notes of individuals who died through violent means (e.g. shooting) than those who died by less violent behaviors (e.g. overdose). In a study utilizing a clinical sample, self-reported perceptions of burdensomeness were shown to predict increased suicidal ideation severity and higher numbers of past suicide attempts even after controlling for risk factors such as sex, age, symptoms of depression, and hopelessness (Van Orden et al., 2006). Overall, the current body of literature supports perceived burdensomeness as a significant risk factor for suicidal behavior. Perceived burdensomeness is thus one contributing factor in the desire to die by suicide.

The theory also posits that feelings of thwarted belongingness contributory in the desire to die. Several theories have alluded to the impact of social connectedness on

suicidal ideation and behavior. One such theory, proposed by Baumeister and Leary (1995), suggested that suicide occurs when the “need to belong” (p. 1) is left unmet. Durkheim (1897, 1951) suggested that a dearth of social integration, stemming from specific societal forces, results in increases of suicide rates amongst populations over time. In his theory of psychache, Shneidman (1987) indicated that psychache is the result of a series of thwarted basic needs including a need for affiliation. Subsequently, when basic needs are thwarted and psychache (i.e. intolerable emotional and psychological pain) increases, suicide results (Shneidman, 1998). Not only has a significant amount of theoretical literature spoken to the importance of social connectedness, but direct empirical studies have also highlighted the association between belongingness and suicide.

In studies examining the construct of loneliness, it was observed that a myriad of negative interpersonal states and negative emotions were elevated in individuals expressing chronic feelings of loneliness (Cacioppo et al., 2000; Cacioppo et al., 2006). Experimental manipulations of thwarted belongingness have been shown to induce risky and self-defeating behaviors (Twenge, Catanese, & Baumeister, 2002), aggressive behaviors (Twenge, Baumeister, Tice, & Stucke, 2001), states of inter numbness (Twenge, Catanese, & Baumeister, 2003), and increased motivations to make connections with other individuals (Maner, DeWall, Baumeister, & Schaller, 2007).

Of course, direct associations of the construct as defined by Joiner (2005) have also been observed between levels of belongingness and suicide. When examining the effects of positive collective experiences on group belongingness, Joiner, Hollar, and Van Orden (2006) found that suicide rates were lower after sporting team successes. They

found that the action of “pulling together” supported the hypothesis that positive outcomes of sporting events (positive collective experiences) caused decreased suicide rates by fostering a sense of belongingness amongst populations. Evidence suggests that even in times of great tragedy following the wake of natural disasters, suicide rates decrease as a function of pulling together for the common good thereby decreasing feelings of thwarted belongingness (Gordon, Bresin, Dombek, Routledge, & Wonderlich, 2011; Kessler, Galea, Jones, & Parker, 2006; Morali, Jehel, & Paterniti, 2008).

Though perceptions of burdensomeness and thwarted belongingness, when observed separately increase the risk for suicide, it is hypothesized that the concurrent presence of both constructs creates the desire and increased risk for suicide. Several studies have illustrated the relationship between concurrent levels of perceived burdensomeness, belongingness, and suicidal ideation. Joiner and colleagues (2009) examined levels of belongingness and perceived burdensomeness in a community sample. The authors found that individuals expressing low levels of belongingness and increased levels of perceived burdensomeness had the highest levels of suicidal ideation after controlling for the effects of depression. Similarly in a sample of undergraduates, Van Orden and colleagues (2008) found that undergraduates expressing both elevated levels of perceived burdensomeness and thwarted belongingness had more severe levels of suicidal ideation relative to undergraduates who only had elevations on either burdensomeness or belongingness. Potentially more importantly, they found that individuals who evidenced high levels of thwarted belongingness did not have elevations in suicidal ideation unless there were also high levels of perceived burdensomeness (Van

Orden et al., 2008). This finding suggests that not only do perceived burdensomeness and thwarted belongingness need to be concurrently present, but they need to be concurrently present at high levels. Recent research has further supported this claim by showing the interaction of burdensomeness and belongingness predicts suicidal ideation at high levels and does not predict suicidal ideation at low levels of both constructs (Davidson, Wingate, Grant, Judah, & Mills, 2011; Rasmussen et al., in preparation). In summation, the literature has supported the constructs of perceived burdensomeness and thwarted belongingness as proximal risk factors for suicidal ideation.

Acquired Capability for Suicide through Painful and Provocative Experiences

The final component of the IPTS is acquired capability for suicide. Though the desire to die increases an individual's risk for suicidal behavior, the desire alone is inadequate to die by suicide. Because death and pain are generally considered fearful experiences to most humans, an individual must overcome the fear and anxiety associated with death in order to enact lethal self-harm. It has been hypothesized that the human fear of suicide supports evolutionary drives for self-preservation (Ohman & Mineka, 2001) and individuals who have the capability to engage in lethal self-harm have overcome this evolutionary drive (Van Orden et al., 2010). An individual might therefore acquire the capability for lethal self-injury by exposure to physically painful and psychologically provocative events (Bender, Gordon, Bresin, & Joiner, 2010; Gordon et al., 2011; Smith, Cukrowicz, Poindexter, Hobson, & Cohen, 2010; Van Orden et al., 2008) thereby conditioning themselves to be unalarmed by death.

Acquired capability for suicide is considered to be multifaceted and is comprised of a lowered fear of death and increased pain tolerance. These facets are maintained

through exposure to painful and provocative events and eventual habituation through the strengthening of opponent processes. For instance, individuals who have been exposed to physically painful events, such as previous suicide attempts, theoretically have begun the process of increased pain tolerance and habituation to the fear of death through their self-injurious behaviors (see Orbach, Mikulincer, King, Cohen, & Stein, 1997; Orbach, Palgi et al., 1996; Orbach, Stein et al., 1996).

Though an individual might gain the capability for lethal self-injury through painful and provocative experiences such as combat exposure (Selby et al., 2010; Smith & Cukrowicz, 2010), childhood maltreatment, promiscuous sex, impulsivity and physical fights (Joiner, 2005), or exposure to natural disasters (Gordon et al., 2011), it is hypothesized that engaging in suicidal behavior provides the highest increase in acquired capability (Smith et al., 2010; Van Orden et al., 2010). Previous research has shown that individuals who engage in both greater levels of non-suicidal self-injury (NSSI) and have a history of previous suicide attempts, have increased levels of pain tolerance, pain insensitivity, and fearlessness towards self-injury (Haw, Bergen, Casey, & Hawton, 2007; Joiner, Conwell et al., 2005; Orbach et al., 1996; Van Orden et al., 2008). Brain and colleagues (2002) found that individuals engaging in five or more NSSI episodes reported decreased levels of fear and increased feelings of relief regarding self-injury relative to those individuals who engaged in less than five NSSI episodes. These findings are in line with the theoretical underpinnings of acquired capability, namely that the most direct route to acquired capability comes from suicide attempts, aborted attempts, practicing for suicidal behavior, and preparing for suicidal behavior (Van Orden et al., 2010).

Who Dies by Suicide?

Joiner (2005) predicts that the greatest risk for suicide transpires when perceived burdensomeness, thwarted belongingness, and acquired capability are simultaneously present in an individual. Previous research has identified associations between each of the components (e.g. perceived burdensomeness, thwarted belongingness, and acquired capability) in addition to associations between the three components and suicide.

The interaction between acquired capability and perceived burdensomeness was shown to significantly predict clinician ratings of suicide risk among psychiatric outpatients (Van Orden et al., 2008). Joiner and colleagues (2009) found support for the three-way interaction of perceived burdensomeness, thwarted belongingness, and acquired capability amongst a group of individuals experiencing suicidal crises. Specifically, they found those individuals who reported previous suicidal attempts in conjunction with elevated levels of perceived burdensomeness and thwarted belongingness predicted whether the individuals' current crises involved a suicide attempt (Joiner et al., 2009). Gordon and colleagues (2011) found preliminary data suggesting exposure to natural disasters may decrease perceptions of thwarted belongingness and perceived burdensomeness; however, natural disaster exposure increases levels of acquired capability. Though decreased levels of thwarted belongingness and perceived burdensomeness provide protection against suicide in the short-term, the presence of acquired capability may increase risk for suicide in the long-term as the buffer provided by the interpersonal factors subsides (Gordon et al., 2011).

Davidson and colleagues (2010) found the interaction between thwarted belongingness and acquired capability to predict suicidal ideation. Similarly, the authors

found the interaction between perceived burdensomeness and acquired capability predicted suicidal ideation. Finally, Davidson and colleagues (2010) found the interaction of all three components (perceived burdensomeness by thwarted belongingness by acquired capability) to predict suicidal ideation. The interaction between the desire components and the acquired capability component supports the literature suggesting that the simultaneous presence of all three constructs presents the highest risk for suicide (Joiner, 2005; Ribeiro & Joiner, 2009; Van Orden et al., 2010). These findings support the three-way interaction as a proximal risk factor for suicidal behavior; however, no research currently exists attesting to the ability of the interaction to predict suicidal behavior over time. In addition, more recent hypotheses in the literature suggest that the simultaneous presence of thwarted belongingness, perceived burdensomeness, hopelessness regarding change in the interpersonal risk factors, and acquired capability should predict all individuals who engage in lethal or near lethal suicidal behavior.

The Current Study

The current study seeks to test several hypotheses regarding suicidal behavior. In a recent overview of IPTS, Van Orden and colleagues (2010) discussed distinctions between active and passive suicidal desire. Specifically, they hypothesized that passive suicidal ideation surmounts from the simultaneous presence of thwarted belongingness and perceived burdensomeness. Both perceived burdensomeness and thwarted belongingness are presumed to be dynamic and changing states which varying based on interpersonal and intrapersonal variables. Van Orden and colleagues thus proposed that passive suicidal desire occurs when feelings of thwarted belongingness and perceived burdensomeness vacillate in severity over time. The interpersonal factors are proximal

predictors of passive suicidal ideation and may be limited as distal predictors of suicidal ideation due to changing cognitive states. Cognitions indicating passive suicidal desire are reflected in statements such as, “Others would be better off if I were dead” and “I want it to be over.” However, Van Orden and colleagues proposed that when an individual perceives the states to be unchangeable, active suicidal desire develops. More specifically, it is hypothesized that when the states of perceived burdensomeness and thwarted belongingness are perceived as unlikely to change (hopeless), active suicidal desire results. Active suicidal desire is reflected in statements such as, “I want to kill myself” and “I want to die.”

Van Orden and colleagues (2010) therefore hypothesized that individuals develop active suicidal desire when there is a simultaneous presence of global perceived burdensomeness, complete thwarted belongingness, and hopelessness regarding future changes in interpersonal relationships. Therefore, it is the addition of hopelessness that moves an individual from passive suicidal desire to active suicidal desire. Though Van Orden and colleagues suggest that hopelessness regarding the states of perceived burdensomeness and thwarted belongingness creates active suicidal desire, one could argue that general hopelessness about the future might lead to active suicidal desire by activating and intensifying these negative cognitive states. Previous research has examined the relationship between the interpersonal risk factors and hopelessness finding the factors to be related in the prediction of suicidal behavior (Cox et al., 2011; Joiner et al., 2009; Rasmussen et al., in preparation). Therefore, hopelessness as conceptualized by Beck (1963) could provide insight into the development of active suicidal ideation as proposed by Van Orden and colleagues (2010).

The previous literature on the construct of hopelessness suggests that it is a robust predictor of suicidal ideation (Beck et al., 1975; Beck et al., 1985; Kazdin et al., 1983; Minkoff et al., 1973), just as the literature on IPTS suggests that the interaction of perceived burdensomeness and thwarted belongingness predicts suicidal desire (Davidson et al., 2011; Rasmussen et al., in preparation; Joiner et al., 2009; Van Orden et al., 2008). Additionally, the construct of hopelessness has been shown to affect interpersonal correlates and stressors (Cox et al., 2011; Joiner et al., 2009; Joiner, Wingate, Gencoz, & Gencoz, 2005; Joiner, Wingate, & Otamendi, 2005; Rasmussen et al., in preparation). For example, Rasmussen and colleagues (in preparation) found that hopelessness predicted incremental variance in thwarted belongingness and perceived burdensomeness above and beyond the effects of depression.

Overall, there is evidence to suggest the relationship between the interpersonal risk factors for suicide, hopelessness, and suicidal ideation although the impact of these relationships remains imprecise. Providing a prospective analysis of the relationship between the interpersonal risk factors, hopelessness, and suicidal ideation would significantly add to the literature. Specifically, how does the presence of hopelessness affect the relationship between the interpersonal risk factors (perceived burdensomeness and thwarted belongingness) and suicidal ideation longitudinally? Therefore the current study seeks to examine this relationship. However, before examining the effects of hopelessness on the prospective relationship between the interpersonal risk factors and suicide, the current study will examine the three-way interaction of thwarted belongingness, perceived burdensomeness, and acquired capability over time as it predicts suicidal ideation and behavior. There are presently no studies that have examined

the three-way interaction over time as it predicts suicidal ideation and suicidal behavior. Though the three-way interaction has been confirmed as a proximal risk factor for suicidal behavior, it is important to understand the interaction's ability to more distally predict suicidal ideation and behavior due to the dynamic versus stable traits of each construct. Therefore, the current study hypothesizes that the simultaneous presence of perceived burdensomeness, thwarted belongingness, and acquired capability will cross-sectionally (time one) predict suicidal *ideation*, predict ideation at four weeks (time two), and distally predict ideation at eight weeks (time three). Secondly, the current study hypothesizes that the simultaneous presence of perceived burdensomeness, thwarted belongingness, and acquired capability will cross-sectionally (time one) predict suicidal *behavior*, predict behavior at four weeks (time two), and distally predict behavior at eight weeks (time three). Though the interpersonal constructs are considered to be dynamic and subject to change over time, acquired capability, once gained, is considered to be a constant variable. Because the theory contains both dynamic and stable traits, it is important to understand its ability to predict suicide risk over time. It is hypothesized that the three-way interaction will significantly predict suicide risk over time; however, as time passes the strength of the prediction will diminish as levels of the interpersonal risk factors wax and wane.

Lastly, the current study hypothesizes that the relationship between perceived burdensomeness and thwarted belongingness with distal levels of suicidal ideation (at eight weeks) will be moderated by the presence of cross-sectional levels of hopelessness. Although the interpersonal risk factors may vary over time as a function of environmental factors, some evidence suggests that prolonged exposure to various indices of the

interpersonal risk factors can have serious deleterious effects (Cacioppo et al., 2006; Motto & Bostrom, 1990). Therefore, it is hypothesized that perceived burdensomeness and thwarted belongingness are not only proximal causes of suicidal ideation, but they may also exist as distal predictors of suicidal ideation. In addition, the association of the interpersonal risk factors with suicidal ideation may vary as a function of activated interpersonal schemas such as hopelessness. The initial presence of cognitive misperceptions about one's environment and situational cues may imbue the activation of the hopeless schema. This may then lead to the stabilization of perceptions of burdensomeness and feelings of thwarted belongingness, thereby making them more resistant to change over time. The literature has also proven the ability of distal levels of hopelessness to predict eventual death by suicide (Beck et al., 1989; Beck et al., 1985; Kuo et al., 2004).

Because of these factors, it is again hypothesized that the presence of hopelessness will moderate the relationship between the interaction of perceived burdensomeness by thwarted belongingness and more distal levels of suicidal ideation. Therefore, the relationship between perceived burdensomeness and thwarted belongingness (time one) and ideation severity (eight weeks) will be affected by the initial presence of hopelessness (time one). It is hypothesized that the relationship between the interpersonal risk factors and levels of suicidal ideation will be strengthened by the presence of high levels of hopelessness. Alternatively, the relationship between the interpersonal risk factors and suicidal ideation will be weakened by the presence of low levels of hopelessness. As an additional step, a mediation analysis will be conducted to examine whether levels of hopelessness (time one) mediates the relationship between the

interpersonal risk factors (time one) and distal levels of suicidal ideation (eight weeks). This analysis will be run, in effect, to examine whether the hopelessness not only impacts the relationship between the interpersonal risk factors and suicidal ideation, but also whether the relationship merely exists due to the presence of hopelessness. This examination can help to test whether it is the presence of trait-like hopelessness that accounts for the prospective relationship between the state-like interpersonal variables and suicidal ideation. Each of these hypotheses should provide a test of IPTS and answer questions regarding the theoretical components in relation to suicidal ideation and suicidal behavior through prospective analyses.

CHAPTER III

METHODS

Participants and Procedure

Participants ($n = 210$) in the current study were recruited from an undergraduate subject pool at a large Midwestern university. The study was an online longitudinal design with three distinct data collection time points (time one, time two, time three). Each time point was separated by four weeks. A four week interval was chosen based on existing literature that has used the same time-frame to examine psychological constructs in a prospective manner (see Joiner, Wingate, Gencoz, & Gencoz, 2005; Joiner, Wingate, & Otamendi, 2005). In all, participants were asked to participate in the study over an eight week period of time.

Participants initially enrolled themselves in the study. Once participants completed the online questionnaires at time one, they were compensated for their participation and were sent an email requesting they return for a second time. Only participants who completed the questionnaires at time one were emailed and asked if they wished to continue their participation in four weeks (time two). It was assumed that individuals who did not complete the questionnaires at time one chose to withdraw their participation from the study. Participants who wished to continue in the study were

enrolled by a researcher through a subject pool and were asked to continue their participation again in four weeks. Once enrolled in the second time point of the study, participants were reminded of their participation via email one week before their participation date. On the week of their participation, participants were emailed the link to the online time two questionnaires. The questionnaires at time two did not differ from the questionnaires filled out at time one of the study. The same procedure was followed for time three.

Of the individuals who participated at time one ($n = 689$), only 218 participants completed all three time points of the study. Of note, eight of the participants who completed all three time points were not used in the final analyses due to incomplete questionnaires or not participating within the four week time interval. The excluded participants were similar to those who completed all three time points on every measured variable at time one except acquired capability for suicide (see Table 1).

Overall, 479 participants did not return for either the second or third time point. Only those participants who completed all three time points were used in the analyses. The participants who completed all three time points ($n = 210$) were similar to those in the attrition group on every variable measured at time one. Chi-square revealed significant relationships between gender and ethnicity. It is important to note that the attrition rate between time one and time three was 69.5%. Though attrition rate can have potentially negative effects on the overall conclusions drawn from the analyses, there were non-significant differences between the two groups on all measured variables of interest (see Table 2).

Again, the current study utilized those individuals who completed the questionnaires at all three time points (n = 210). Of the participants in the sample, 49 identified as male (19.5%) and 169 identified as female (80.5%). The participants ranged in age from 18 to 30 with a mean age of 19.33. One-hundred and fifty-six participants identified as Caucasian (74.3%), twenty-one as American Indian (10.0%), nine as African-American/Black (4.3%), seven as Hispanic/Latino (3.3%), seven as Asian/Asian-American (3.3%), five as biracial (2.4%), and two as “other” (1.0%) (see Table 2).

Measures

Demographics Questionnaire. Demographic information was acquired from participants in regards to age, sex, ethnicity, and education.

Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2008). The Interpersonal Needs Questionnaire is an 18-item self-report measure which assesses an individual’s level of perceived burdensomeness and thwarted belongingness. The thwarted belongingness subscale assessed the extent to which an individual feels as though they belong to peers, family, and society. The perceived burdensomeness subscale assesses the extent to which an individual feels as though he/she is a burden on others and assesses the belief that others would benefit from his/her death. Nine items on the scale assess for the construct of perceived burdensomeness (1-9) and nine items on the scale assess for the construct of thwarted belongingness (10-18). The scale utilizes a seven point Likert rating system and responses range from 1 = “not at all true for me,” to 7 = “very true for me.” Scores on the scale range from 9 to 63, with higher scores indicative of higher levels of thwarted belongingness and perceived burdensomeness.

Previous studies have found support for the construct validity of the scale (Van Orden et al., 2008). The scale has been tested amongst undergraduate students and outpatient psychology clinic patients (Van Orden et al., 2008), those presenting for opiate addiction treatment (Conner et al., 2007), elderly adults (Cukrowicz, Cheavens, Van Orden, Ragain, & Cook, 2011) and has been shown to have adequate internal consistency and reliability. The thwarted belongingness subscale was found to have strong convergent and discriminant validity and while also predicting suicidal ideation (Van Orden, 2009). Perceived burdensomeness was found to be related to measures of self-esteem and both subscales were found to be related yet distinct constructs (Van Orden, 2009). Moreover, the interaction of the two subscales at high levels has been found to be predictive of increased risk for suicide (Davidson et al., 2011; Rasmussen et al., in preparation). Additional studies have found non-significant correlations between the Interpersonal Needs Questionnaire subscales and the Acquired Capability for Suicide Scale. These findings suggest that the INQ measures different constructs (i.e. the desire for suicide) than the ACSS (i.e. the ability for suicide). In the current study the measure at each time point (T1 $\alpha = .95$, T2 $\alpha = .96$, T3 $\alpha = .96$) and the individual subscales of perceived burdensomeness (T1 $\alpha = .94$, T2 $\alpha = .94$, T3 $\alpha = .95$) and thwarted belongingness (T1 $\alpha = .92$, T2 $\alpha = .93$, T3 $\alpha = .93$) had good reliability.

Acquired Capability for Suicide Scale (ACSS; Bender et al., 2010; Bender, Gordon, & Joiner, 2007; Van Orden et al., 2008). The Acquired Capability for Suicide Scale is a 20-item self-report measure. The 20-item ACSS was adapted from the original 5 item measure. The scale was designed to assess for the capability to enact lethal self-injury and measures the degree to which an individual has habituated to the emotional

and physical pain that is present in suicidal behavior. The scale uses a 5-point Likert-type scale with responses ranging from 0 = “not at all like me,” to 4 = “very much like me.” Scores on the scale range from 0 to 80 with higher scores on the measure indicating increased levels of acquired capability for suicide.

The original five item scale was correlated with the item on the Beck Suicide Scale (BSS) that describes the courage it takes to kill oneself ($r = .79$; Bender et al, 2007; Van Orden et al., 2008). It was also correlated with the Fear of Suicide ($r = .48$; Bender et al., 2007) subscale from the Reasons for Living Inventory (Linehan, Goodstein, Nielsen, & Chiles, 1983). The scale has been shown to have adequate discriminant validity between other measures such as the Beck Depression Inventory and the Beck Suicide Scale (Van Orden et al., 2008). The original scale was shown to have adequate reliability ($\alpha = .67$). In the current study, the measure had good reliability at each time point (T1 $\alpha = .85$, T2 $\alpha = .87$, T3 $\alpha = .87$).

Hopelessness Depression Symptom Questionnaire-Suicidality Subscale (HDSQ-SS; Metalsky & Joiner, 1997). The Hopelessness Depression Symptom Questionnaire-Suicidality Subscale is a four item self-report measure designed to assess suicidal ideation. The questionnaire is part of a larger measure that was designed to assess hopelessness depression. Items on the questionnaire assess the severity and frequency of suicidal ideation within the past two weeks. Responses on the items range from 0 to 3 with each number representing a separate response. Scores on the scale range from 0 to 12, where higher scores indicate elevated levels of suicidal ideation. Previous research has found the subscale to have adequate reliability (Joiner & Rudd, 1996). In the current

study, the measure had adequate reliability at each time point (T1 $\alpha = .74$, T2 $\alpha = .75$, T3 $\alpha = .83$).

Additionally, four questions were added to the end of the questionnaire which assessed for suicidal behaviors and attempts. Two questions assessed for lifetime history of suicidal behaviors (“Have you ever engaged in self-harming behavior [e.g., cutting, burning, swallowing a harmful object]?” and “If you answered yes to the above question, please indicate the number of times you engaged in these behaviors.”). Two questions assessed for lifetime history of suicide attempts (“Have you ever attempted suicide?” and “If you answered yes to the above question, please indicate the total number of times you attempted suicide.”). Total suicidal behavior was calculated by summing the answers to the total number of suicidal behaviors and suicide attempts.

Beck Hopelessness Scale (Beck, Weissman et al., 1974). The Hopelessness Scale is a 20 item self-report measure composed of true-false items which tap into the general construct of hopelessness. Each question targets positive and negative views about the future (Beck & Steer, 1988). Responses on items are scored as either 0 or 1 and the scores are summed together in order to obtain a total score. Nine items are keyed as “false” and eleven are keyed as “true”. Total scores can range from 0 to 20 with higher scores indicating higher levels of hopelessness.

The scale has been shown to have adequate reliability and validity in multiple studies (Beck & Steer, 1988; Durham, 1982; Jahn et al., 2010; Metalsky & Joiner, 1992) as well as convergent and discriminative validity (Thackston-Hawkins, Compton, & Kelly, 1994). In prospective studies of both psychiatric inpatients and outpatients, cutoff scores of nine or more on the BHS was predictive of eventual suicide (Beck et al., 1985;

Beck et al., 1989; Beck et al., 1990). Although further studies have found that a cutoff score of nine on the BHS results a high probability for false positive identification (Weishaar & Beck, 1992), it is still considered to be predictive of high risk for suicide (Beck et al., 1990). In the current study, the measure had good reliability at each time point (T1 $\alpha = .84$, T2 $\alpha = .86$, T3 $\alpha = .87$).

Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977).

The CES-D is a 20-item self-report measure of depressive symptoms. Respondents are asked to reflect on symptoms experienced over the past week. Response options for each item range on a four point Likert-type scale from “0 = rarely or none of the time” to “3 = most or all of the time.” Total scores on the measure can range from 0 to 60. Higher scores indicate more self-reported symptoms of depression. Previous studies have found scores of 16 or above are suggestive of significant levels of distress (Mulrow et al., 1995; Zich, Attkisson, & Greenfield, 1990). The scale contains four subscales which are usually summed in order to gain a total score. The subscales of the CES-D are Depressed Affect (5 items), Positive Affect (4 items), Somatic and Vegetative Activity (7 items), and Interpersonal Symptoms (4 items). The CES-D has been shown to have high levels of reliability (Breslau, 1985; Radloff, 1977) and internal consistency (Radloff, 1977; Roberts, 1980; Santor & Coyne, 1997; Sheehan, Fifield, Reisine, & Tennen, 1995). In the current study, the measure had good reliability at each time point (T1 $\alpha = .86$, T2 $\alpha = .88$, T3 $\alpha = .89$).

CHAPTER IV

RESULTS

Means, standard deviations, and intercorrelations for all variables used in the current analyses can be found in Table 3. A priori power analyses were conducted to determine the sample size necessary in order to find a moderate effect ($f^2 = 0.15$) with an alpha of 0.05 and power of 0.80. Results indicated a total of 114 participants were needed. The current study therefore exceeded this need by obtaining a sample size of 210.

Regression Analyses

To examine the hypothesis that the three-way interaction of time one perceived burdensomeness, thwarted belongingness, and acquired capability for suicide would predict suicidal ideation or suicidal behavior over three distinct time points (e.g. T1 = time one, T2 = time two, T3 = time three), a series of hierarchical linear regression equations were constructed. All first order and second order terms of the three-way interaction were entered into each regression equation in addition to controlling for initial levels (T1) of depression and hopelessness. Each regression equation predicting suicidal ideation or suicidal behavior over time was constructed as follows. Both T1 depression and hopelessness variables were centered and entered in the first step of the regression equation. The first order terms of T1 thwarted belongingness, perceived burdensomeness, and acquired capability for suicide were centered and entered in the second step of the regression

equation. All second order T1 effects (e.g. perceived burdensomeness by thwarted belongingness, perceived burdensomeness by acquired capability, and thwarted belongingness by acquired capability) were centered and entered in the third step of the regression equation. Finally, the three-way interaction of perceived burdensomeness, thwarted belongingness, and acquired capability (e.g. PBxTBxAC) was centered and entered in the fourth step of the regression equation. Uncentered, self-reported levels of suicidal ideation or suicidal behavior over time (e.g. T1, T2, and T3) served as the dependent variables in each of the equations.

Suicidal Ideation

The first hierarchical linear regression examined the three-way interaction of T1 PBxTBxAC as it predicts T1 suicidal ideation, while controlling for T1 depression and hopelessness. Overall, the squared multiple correlation coefficient was significantly different from zero $F(9, 200) = 3.740, p < .001$. The final predictor set accounted for approximately 14.4% of the variance in T1 suicidal ideation ($R^2 = .144$). Results indicated that the three-way interaction of T1 PBxTBxAC did not predict suicidal ideation at T1 ($sr = .094, t = 1.439, p = .152$). In this regression model, T1 hopelessness proved to be a robust predictor of T1 suicidal ideation above and beyond depression, the first and second order terms, and the three-way interaction term ($sr = .141, t = 2.152, p = .033$). See Table 4.

The second hierarchical linear regression examined the three-way interaction of T1 PBxTBxAC as it predicts T2 suicidal ideation (four weeks later), while controlling for T1 depression and hopelessness. Overall, the squared multiple correlation coefficient was significantly different from zero $F(9, 200) = 3.081, p = .002$. The final predictor set

accounted for approximately 12.2% of the variance in T2 suicidal ideation ($R^2 = .122$). Results indicated that the three-way interaction of T1 PBxTBxAC did not predict T2 suicidal ideation ($sr = .116, t = 1.746, p = .082$). However, in this equation, T1 acquired capability significantly predicted T2 suicidal ideation ($sr = -.136, t = -2.053, p = .041$). Additionally, the two-way interaction of T1 perceived burdensomeness by acquired capability significantly predicted T2 suicidal ideation ($sr = -.143, t = -2.154, p = .032$). See Table 5.

The final hierarchical linear regression examined the three-way interaction of T1 PBxTBxAC as it predicts T3 suicidal ideation (eight weeks later), while controlling for T1 depression and hopelessness. Overall, the squared multiple correlation coefficient was significantly different from zero $F(9, 200) = 3.791, p < .001$. The final predictor set accounted for approximately 14.6% of the variance in T3 suicidal ideation ($R^2 = .146$). Results indicated that the three-way interaction of T1 PBxTBxAC did not predict T3 suicidal ideation ($sr = -.001, t = -.022, p = .983$). No additional variables emerged as significant predictors in the final predictor set. See Table 6.

Overall, results of three separate hierarchical linear regression analyses did not find support for the central tenet of IPTS. Namely, the current study found that the three-way interaction of perceived burdensomeness, thwarted belongingness, and acquired capability did not predict suicidal ideation proximally or distally.

Suicidal Behavior

To examine the hypothesis that the three-way interaction of perceived burdensomeness, thwarted belongingness, and acquired capability for suicide would predict suicidal behavior over three distinct time points, a series of hierarchical linear

regression equations were constructed. Each regression equation followed the same steps as the previous analyses examining suicidal ideation. Self-reported levels of suicidal behavior over time (e.g. T1, T2, T3 suicide attempts) served as the dependent variables in the equation.

The first hierarchical linear regression examined the three-way interaction of T1 PBxTBxAC as it predicts T1 suicidal behavior, while controlling for T1 depression and hopelessness. Overall, the squared multiple correlation coefficient was significantly different from zero $F(9, 200) = 22.066, p < .001$. The final predictor set accounted for approximately 49.8% of the variance in T1 suicidal behavior ($R^2 = .498$). Results indicated that the three-way interaction of T1 PBxTBxAC significantly predicted suicidal behavior at T1 ($sr = .304, t = 6.065, p < .001$). Additionally, T1 acquired capability for suicide ($sr = -.120, t = -2.389, p = .018$) and two-way interaction of T1 perceived burdensomeness by thwarted belongingness ($sr = .171, t = 3.411, p = .001$) significantly predicted suicidal behavior at T1. See Table 7.

The second hierarchical linear regression examined the three-way interaction of T1 PBxTBxAC as it predicts T2 suicidal behavior (four weeks later), while controlling for T1 depression and hopelessness. Overall, the squared multiple correlation coefficient was significantly different from zero $F(9, 200) = 3.442, p = .001$. The final predictor set accounted for approximately 13.4% of the variance in T2 suicidal behavior ($R^2 = .134$). Results indicated that the three-way interaction of T1 PBxTBxAC did not predict suicidal behavior at T2 ($sr = -.054, t = -.815, p = .416$). Time one hopelessness ($sr = -.065, t = 2.511, p = .013$), T1 perceived burdensomeness by acquired capability ($sr = .247, t = 3.758, p < .001$), and T1 thwarted belongingness by acquired capability ($sr = -.210, t = -$

3.198, $p = .002$) interactions emerged as significant predictors of T2 suicidal behavior. See Table 8.

The final hierarchical linear regression examined the three-way interaction of T1 PBxTBxAC as it predicts T3 suicidal behavior (eight weeks later), while controlling for T1 depression and hopelessness. Overall, the squared multiple correlation coefficient was not significantly different from zero $F(9, 200) = 1.206, p = .293$. The final predictor set accounted for approximately 5.1% of the variance in T3 suicidal behavior ($R^2 = .051$). Additionally, results indicated that the three-way interaction of T1 PBxTBxAC did not predict suicidal behavior at T3 ($sr = .095, t = 1.379, p = .169$). No additional variables emerged as significant predictors in the final predictor set. See Table 9.

In summation, when examined proximally, the central tenet of IPTS was supported. More specifically, the simultaneous presence of perceived burdensomeness, thwarted belongingness, and acquired capability for suicide were proximally predictive of suicidal behavior. However, as the suicidal behaviors became more distal (e.g. four weeks and eight weeks), the three-way interaction was no longer predictive.

Moderation Analysis

Next, the current study examined the relationship between the two-way interaction of T1 perceived burdensomeness by thwarted belongingness (PBxTB) and T3 suicidal ideation (eight weeks later) as it is moderated by levels of T1 hopelessness. Therefore, the T1 PBxTB interaction was used as the initial predictor variable. The interaction was treated as a continuous variable and additionally was considered a first order term. Because the interaction term was treated as a continuous variable and first order term, the lower order individual terms of T1 perceived burdensomeness and T1

thwarted belongingness were not included in the regression equation individually. Time one hopelessness served as the moderator variable and T3 suicidal ideation served as the dependent variable in the regression analysis. In addition, T3 PBxTB, T3 hopelessness, and T1 suicidal ideation were statistically controlled in the equation. Following the guidelines of Aiken and West (1991), all predictor variables were centered to reduce the occurrence of multicollinearity between variables when examining interaction effects.

A hierarchical linear regression was conducted to test the hypothesis. Time one suicidal ideation, T3 hopelessness, and T3 PBxTB were entered in Step 1 of the regression analysis. Time one suicidal ideation ($\beta = .608, t(206) = 12.629, p < .001$), T3 hopelessness ($\beta = .154, t(206) = 2.659, p = .008$), and T3 PBxTB ($\beta = .194, t(206) = 3.375, p = .001$) each significantly predicted T3 suicidal ideation. The T1 interaction of PBxTB, T1 hopelessness, and their interaction (e.g. T1 PBxTB x T1 hopelessness) were entered into Step 2 of the regression analysis. This equation establishes the moderator relationship which can then be further examined if a moderation effect is discovered. Results revealed that neither T1 PBxTB ($\beta = .178, t(203) = 1.691, p = .092$) nor T1 hopelessness ($\beta = -.165, t(203) = -1.957, p = .052$) predicted T3 suicidal ideation after controlling for the aforementioned variables. Additionally, it was determined that T1 hopelessness did not significantly moderate the effect of T1 PBxTB on T3 suicidal ideation ($\beta = -.138, t(203) = -1.207, p = .229$). See Table 10.

Mediation Analysis

It was additionally hypothesized that hopelessness may not only affect the relationship between the interpersonal risk factors and distal levels of suicidal ideation, but also that it might actually account for the relationship between the two variables.

Specifically, it was hypothesized that T1 hopelessness would mediate the relationship between interaction of T1 PBxTB and T3 suicidal ideation. To test for the hypothesized mediation effects, the steps outlined by Baron and Kenny (1986) were followed. In Step 1 of the analysis, the initial predictor variable is regressed on to the outcome variable ensuring that the predictor variable actually predicts the outcome variable. In the current analysis, T3 PBxTB, T3 hopelessness, and T1 suicidal ideation were also entered into the equation as statistical controls. Results of the initial analyses revealed that after controlling for time T3 PBxTB, T3 hopelessness, and T1 suicidal ideation, the interaction of T1 PBxTB did not significantly predict T3 suicidal ideation ($\beta = -.019$, $t(205) = -.395$, $p = .720$). Because the initial predictor variable failed to predict the outcome variable after controlling for the aforementioned variables, no further regression analyses were conducted (see Figure 1).

CHAPTER V

DISCUSSION

General Discussion

Suicide is both a national and global concern. As such, continued research into the correlates and causes of suicidal behavior is warranted. The Interpersonal-Psychological Theory of Suicidal Behavior (IPTS) serves as one explanation of how individuals may die by suicide. The constructs of perceived burdensomeness and thwarted belongingness are hypothesized to elicit the desire for suicide, while acquired capability for suicide enables individuals to inflict lethal or near lethal self-harm (Joiner, 2005). These constructs have gained support for their ability to predict suicidal ideation and suicidal behavior (Davidson et al., 2010; Joiner et al., 2009; Van Orden et al., 2008). Another robust predictor of suicide is hopelessness (Beck et al., 1975; Beck et al., 1985; Joiner & Rudd, 1996). Van Orden and colleagues (2010) suggested risk for suicide increases (passive suicidal ideation to active suicidal ideation) as a function of both the desire to die and the presence of hopelessness regarding their perceptions of being a burden and feelings of thwarted belongingness. The current study sought to satisfy two gaps in the existing body of literature surrounding IPTS. First, the present study sought to examine the ability of the simultaneous presence of perceived burdensomeness, thwarted belongingness, and acquired capability for suicide (PBxTBxAC) to predict suicidal

ideation and suicidal behavior over time. After review of the extant literature, no study has examined this in a prospective design. Second, the present study took the initial proposal by Van Orden and colleagues (2010) and used it as a basis to examine the role of hopelessness as it affects the relationship between the interpersonal risk factors for suicide (PBxTB) and distal levels of suicidal ideation. The current study therefore attempted to add to the current literature and answer questions that have emerged as a result of the burgeoning utilization of IPTS.

For the first hypothesis, a series of regression analyses were constructed which examined the three-way interaction of thwarted belongingness, perceived burdensomeness, and acquired capability for suicide as it predicts suicidal ideation and behavior over time. The initial regression analyses examining the three-way interaction of PBxTBxAC as it predicts suicidal ideation prospectively found minimal support for the initial hypotheses. Specifically, it was hypothesized that the three-way interaction of PBxTBxAC for suicide at time one would predict suicidal ideation at cross-sectionally (T1), at four weeks (T2), and at eight weeks later (T3). Results indicated that the three-way interaction failed to predict suicidal ideation over the three separate time points when controlling for time one first order terms, second order terms, depression, and hopelessness.

Although the overall model (*F* statistic) for the final set in each regression equation was statistically different from zero indicating that the regression equation provided a better-than-chance prediction of the dependent variable, the three-way interaction did not significantly predict suicidal ideation at T1, T2, or T3. However, other factors included in the analyses as control variables (e.g. time one first order terms,

second order terms, depression, and hopelessness) emerged as significant predictors of suicidal ideation in the final regression analyses. This occurrence likely accounts for the significance of the overall model. For example, T1 hopelessness predicted T1 suicidal ideation, while T1 acquired capability and T1 perceived burdensomeness by acquired capability predicted T2 suicidal ideation.

Proximally, it appears that T1 hopelessness emerged as a significant predictor above and beyond the three-way interaction, the first and second order terms, and depression. This finding is consistent with the literature suggesting hopelessness is a robust predictor of suicidal ideation (Beck et al., 1985; Beck et al., 1975; Kazdin et al., 1983; Kuo et al., 2004); however, this is in opposition to some of the existing literature on IPTS (Cukrowicz et al., 2011; Joiner et al., 2002; Van Orden et al., 2006).

Additionally, it should be noted that acquired capability for suicide emerged as a significant predictor of suicidal ideation individually and when simultaneously present with perceived burdensomeness. Acquired capability is considered to be a stable trait that once gained, has additive properties across time (Smith & Cukrowicz, 2010). These findings may provide support for the more constant properties of the construct, relative to the vacillating properties of the interpersonal risk factors.

A second series of regression analyses were constructed which examined the three-way interaction of thwarted belongingness, perceived burdensomeness, and acquired capability (PBxTBxAC) for suicide as it predicts suicidal behavior over time. Regression analyses revealed that the three-way interaction of PBxTBxAC proximally predicted suicidal behavior. However, further analyses revealed that the three-way interaction did not significantly predict suicidal behavior more distally at T2 and T3. This

finding is important and supports previous research suggesting the simultaneous presence of all three components of IPTS, cross-sectionally, represents the highest risk for suicide. Although other variables also emerged as significant predictors of T1 suicidal behavior, the three-way interaction emerged as the most important factor accounting for the highest unique relationship with outcome variable ($sr = .304$). Again, these findings are congruent with previous cross-sectional research findings (Joiner et al., 2009).

As with the previous set of regression analyses, control variables as well as first and second order terms also emerged as significant predictors of T1 and T2 suicidal behavior. Specifically, T1 acquired capability and T1 perceived burdensomeness by thwarted belongingness significantly predicted T1 suicidal behavior while T1 hopelessness, T1 burdensomeness by acquired capability, and T1 belongingness by acquired capability significantly predicted T2 suicidal behavior. These results suggest the robustness of the variables and their ability to predict suicidal behavior both proximally and more distally. Similar to the regression equations examining the ability to predict suicidal ideation prospectively, acquired capability emerged as a significant predictor both individually (T1 AC) and within second order interactions (i.e. T1 PBxAC, T1 TBxAC). This, again, may provide support for the more constant properties of the acquired capability construct.

Finally, both moderation and mediation analyses examining the effect of hopelessness on the relationship between the simultaneous presence of perceived burdensomeness and thwarted belongingness with distal levels of suicidal ideation were conducted. The results did not find support for either model. In the moderation analysis, both the time one interaction term and time one hopelessness failed to predict time three

suicidal ideation after controlling for time three hopelessness, the time three interaction term, and time one suicidal ideation. Furthermore, results indicated that hopelessness did not moderate the effect of the interaction term on distal levels of suicidal ideation. Also, when conducting the mediation analysis, the first step establishing the relationship between the variables to be mediated (i.e. T1 PBxTB and T3 SI) failed to be satisfied and so no further analyses were conducted.

These results may lend support for the changing nature of the interpersonal risk factors over time. Based on the results of the first step in the moderation analysis, the ability of the perceived burdensomeness by thwarted belongingness interaction (T3) to predict suicidal ideation (T3), cross-sectionally, was supported. This provides support for previous cross-sectional research findings (Davidson et al., 2011; Van Orden et al., 2008) and has theoretical implications. However, the purpose of the final hypotheses was to examine how a trait-like construct such as hopelessness might intensify and prolong the perceptions of burdensomeness and thwarted belongingness thereby imbuing higher levels of suicidal ideation.

It was noted that the current study took the initial proposal by Van Orden and colleagues (2010) and used it as a basis for the proposed moderation and mediation analyses. As such, it did not fully address the Van Orden and colleagues' proposal that it is the presence of hopelessness *regarding* perceptions of being a burden and feelings of thwarted belongingness that intensifies suicidal ideation (e.g. active suicidal ideation). Though the findings of the present study did not find support for the hypotheses proposed, it provided important information about the predictive ability of the constructs over time and supplied information that can inform future research into this area.

Limitations

No study is exempt from limitations. Although the aforementioned results may provide basic support for the constructs of IPTS, it is important to consider inherent problems within the current analyses.

For the current study, the most notable limitation was the restriction of range within both dependent and independent variables of interest. The primary problem of range restriction is the alteration of the correlation coefficients. Alterations cause the correlation coefficients to be either enhanced or reduced depending on the data, but typically the results are reductions in the correlation coefficients (Howell, 2007). Each of the measures utilized in the current study have ranges signifying a broad spectrum of symptoms. However, the sample being analyzed represented only the lower range of possible scores on the measures. Because correlation coefficients form the foundation for each regression model, the correlation coefficients affected by restricted range may be inappropriate for the question being answered in the analyses (Howell, 2007).

For example, in the current study scores could range from 0 to 12 on one of the primary dependent variables of interest, suicidal ideation. In the sample analyzed, scores on suicidal ideation ranged from 0 to 7 (T1), 0 to 8 (T2), and 0 to 11 (T3) across the three times points respectively. However, the means and standard deviations for the three time points were $\mu_{T1} = 1.767$ and $SD_{T1} = 1.252$, $\mu_{T2} = 1.824$ and $SD_{T2} = 1.250$, and $\mu_{T3} = 1.857$ and $SD_{T3} = 1.500$. Similar restrictions on range were observed on each of the measured variables in the study. For the first hypothesis, the question being asked was how the three components of IPTS predicted suicidal ideation over time; however, the results observed may represent an answer to a different question. Due to the restriction of range

on each of the variables, the current study may have instead answered the question, “How well do the three components of IPTS predict suicidal ideation amongst individuals endorsing little to no suicidal ideation?”

Restriction of range is particularly pernicious when examining interaction effects. In order to accurately detect interactions, the distribution of the predictor variables must include an adequate number of cases at both ends of a normal distribution (Cohen, Cohen, West, & Aiken, 2003). In other words, the sample must contain individuals who score low on the predictor variables and individuals who score high on the predictor variables. Therefore, as Cohen and colleagues (2003) stated, “the power to detect interactions...varies as a function of the distribution of predictors, particularly the extent to which there are scores at the extremes of the predictor distributions” (p. 301). In the current study, the predictors were restricted to the low end of the distribution as is evidenced by the means. With a greater distribution of the predictor scores, the study may have had more statistical power to detect the presence of an interaction.

Additionally, some of the results may be the product of inherent problems encountered when using multiple regression. Tabachnick and Fidell (2007) describe regression equations as being particularly sensitive to the combination of variables that are included in the final model. Consequently, it is important to only enter variables into the equation if there is sufficient theory to support being in the equation. In the current analyses, first and second order terms had to be entered into the equation in order to control for their effects as suggested by Aiken and West (1991). Additionally, there was sufficient theoretical reasoning to enter both hopelessness and depression into the equation as controls. Although guidelines were followed, the regression models contained

a significant number of predictor variables measuring various levels of the same important facet being examined in the outcome variable. Moreover, both depression and hopelessness are robust predictors of suicidal ideation and behaviors and, as such, are strict controls.

As has been discussed, the current study utilized a series of regression equations in an effort to examine the ability of the simultaneous presence of perceived burdensomeness, thwarted belongingness, and acquired capability to predict suicidal ideation and suicidal behavior over time (T1, T2, T3). Also, the current study utilized both moderation and mediation analyses in order to examine the impact of hopelessness on the relationship between the simultaneous presence of perceived burdensomeness and thwarted belongingness and distal levels of suicidal ideation. In each of these cases, perhaps more precise data analytic methods could be utilized and some of the inherent problems with multiple regression could have been avoided. For example, the longitudinal differences in ability of the three-way interaction (PBxTBxAC) to predict both suicidal ideation and suicidal behavior across three time points could be examined through a structural equation modeling analysis. Also, such a procedure would provide a more parsimonious method for testing both the direct and indirect effects of hopelessness on the relationship between the perceived burdensomeness by thwarted belongingness interaction and suicidal ideation over time. These methods might lead to a better understanding of the longitudinal relationship of these variables and help clarify theoretical model conceptualization.

Another limitation in the current study was the time frame for reassessment. The time frame for reassessment in the current study, although adequate for a college sample,

may not be suitable to assess for the stability of suicidal ideation within other samples. For example, a four week time lapse between three assessment points fits within the scope of one semester for college students. It should be noted that the reassessment interval was based on the empirical literature suggesting four weeks was an appropriate time frame within collegiate samples (Joiner, Wingate, Gencoz, & Gencoz, 2005; Joiner, Wingate, & Otamendi, 2005). Depending on the population being sampled (e.g. non-clinical, clinical outpatient, inpatient) and the nature of the research question, the frequency of the reassessment period may vary. For example, reassessment on an acute inpatient unit might occur upon admission, at some point in the middle of their stay, and upon discharge from the unit. Length of stay on an inpatient psychiatric unit is typically brief and focused on stabilization, so an eight day stay would not be unlikely. Review of the literature regarding longitudinal study of suicidal ideation and suicide attempts, reveals varying lengths between reassessment. Studies within clinical samples range from one month follow-up assessment (Ribeiro et al., 2012) to 2.5 year follow-up assessments (May, Klonsky, & Klein, 2012), with a variety of ranges in between (Guan, Fox, & Prinstein, 2012; Prinstein et al., 2008; Taylor et al., 2011).

For the purposes of the current study, the reassessment time interval proved appropriate given the sample being studied and the empirical literature. Suicidal ideations and behaviors often take place in concert with the experience of significant mood symptoms. Fluctuations in mood symptoms can occur within a matter of weeks. Additionally, significant life stressors and events may also transpire within this time period. Taken together, this time frame would appear to capture the relative stability, or

conversely, instability of these constructs over time. However, future studies might seek to refute this statement through varying reassessment intervals.

Other limitations to the study include the use of a college sample with relative homogeneity regarding educational status, race, ethnicity, and age. Future studies would be well advised to replicate the findings in more heterogeneous samples with varying levels of psychopathology (i.e. clinical outpatient and clinical inpatient samples). Also, the measures utilized in the study could also be considered a limitation. A well-validated measure of suicidal behavior was not used in the current study. Rather, a series of questions thought to assess levels of suicidal behavior were used. It is important to recognize these limitations and interpret the findings of the current study with caution as they may not generalize to other populations based on the inherent limitations described.

Clinical Implications

Clinical implications can be drawn from the current study. The central tenet of the IPTS was supported, providing further evidence to the critical nature of perceived burdensomeness, thwarted belongingness, and acquired capability in the prediction of increased risk for suicide. Again, this supports the premise that the simultaneous presence of perceived burdensomeness and thwarted belongingness create the desire for suicide whereas acquired capability for lethal self-harm provides the ability to act on such desires. The current study, again, bolstered the already existing evidence of the theory's proximal ability to predict suicidal behavior; however, it did little to support the theory's ability to predict, with precision, suicidal ideation or behavior prospectively. For clinicians, it grants support for the need of continued suicide risk assessment at each session with at risk patients.

Suicide risk assessment is a critical component in a clinician's responsibilities; however, the clinician must also provide therapeutic interventions aimed at reducing the patient's symptomatology and suicidal behavior. Theory suggests that perceptions of burdensomeness and feelings of thwarted belongingness vacillate over time and are subject to change. Acquired capability is proposed to be an additive, stable trait. Both of these tenets appear to have gained support given the interpretations of the findings in the current study. Therefore, perceptions of burdensomeness and feelings of thwarted belongingness are potential targets for treatment. Patients that realize these are states and are therefore transitory may have better prognostic outcomes for behavior change. Specific interventions may target perceptions of burdensomeness and feelings of thwarted belongingness in an effort to prevent future suicidal behavior. Intervention aimed at increasing social integration, contributions to society at large, or increased social connections may reduce both perceptions of burdensomeness and feelings of thwarted belongingness. Behavioral activation and behavioral experiments could provide symptom reduction by getting the patient to engage in activities on a regular basis and help to challenge faulty cognitions concerning their relations with others.

Although perceptions of burdensomeness and feelings of thwarted belongingness can be targets for intervention, patients may hold hopeless beliefs regarding change in these states. Van Orden and colleagues (2010) acknowledge that feelings of hopelessness may increase ideational severity and can be a more stable schema (Beck, 1987; Young et al., 1996) that when activated, may be more difficult to alter. As such, this may change case conceptualization, treatment planning, and treatment implementation.

Future Research

Future research might seek to better examine the hypotheses proposed by Van Orden and colleagues (2010) through the development of procedures that more accurately assess global perceived burdensomeness, global thwarted belongingness, the perceived stability of these constructs over time, and the presence of hopeless thoughts specific to perceptions of being a burden and lack of belonging. For example, assessing global perceived burdensomeness would need to satisfy the condition “those who perceive themselves as a burden on all significant others and who experience a nonzero degree of self-hate secondary to these perceptions” (Van Orden et al., 2010, p. 589). Theory posits that perceived burdensomeness is a combination of perceptions of liability (“others would be better off without me”) and inward self-hatred (“I am worthless and incompetent”). Therefore, future studies should assess for individuals’ levels of global liability (e.g. items from the INQ) in addition to the magnitude of self-hatred present. Self-hatred could be assessed by simply asking a true/false question such as “I hate myself,” or it could be assessed further by examining the areas of self-esteem, self-blame, shame, and agitation that are proposed to contribute to self-hate. By assessing for all of these areas, researchers might be able to better identify individuals who hold global perceptions of burdensomeness rather than simply nonzero degrees of perceived burdensomeness.

In order to assess global thwarted belongingness, research would need to assess for “those holding perceptions that all meaningful and reciprocally caring relationships are absent” (Van Orden et al., 2010, p. 589). More specifically, theory suggests that the most severe form of thwarted belongingness occurs when individuals perceive consequential and equally supportive bonds with others as *completely* absent while

suicidal ideation increases also as a function of the chronic nature of these views. Individuals may engage in self-defeating behaviors such as social isolation and non-engagement in affiliative behaviors (thereby reducing the likelihood of positive social interactions occurring). Currently, the Interpersonal-Needs Questionnaire asks questions such as “These days, I rarely interact with people who care about me” (Item 12), “These days, I am fortunate to have many caring and supportive friends” (Item 13), and “These days, I feel that there are people I can turn to in times of need” (Item 16). Even if an individual endorses the highest levels of thwarted belongingness possible on the INQ, these questions may not fully address the issue of “global thwarted belongingness.” Also, as Van Orden and colleagues (2010) state “the presence of perceptions of connections to others does not equate with meeting the need to belong. In other words, the construct of thwarted belongingness is not synonymous with a lack of human connections, and conversely, the need to belong is not fulfilled by the mere presence of perceptions of connections to others” (p. 585). Therefore, it may be prudent to assess for both physical human connections present within the individual’s life (e.g. number of friends, number of family members, frequency of contact with people, etc.) as well as the perception of connections to others (e.g. highest possible score on INQ thwarted belongingness questions).

The perceived stability of these constructs could then be studied by asking individuals to rate their belief that current feelings of burdensomeness and thwarted belongingness are likely or consequently, unlikely, to change over time. This could be assessed in a dichotomous or nonzero method by asking a question such as “I believe that I will always be a burden on people in my life (true/false)” or “I believe that I will never

belong (true/false).” Alternately, these questions could be assessed on a continuum such as with a Likert scale. Follow-up questions could also assess how long individuals perceive these states might last (e.g. a few days, weeks, months, years, never ending).

Part of this recommendation is already underway. The author of this manuscript has begun construction and validation of a measure of hopelessness specific to perceptions of burdensomeness and thwarted belongingness. The measure is a 10 item true/false questionnaire which was constructed by using the Interpersonal-Needs Questionnaire and the Beck Hopelessness Scale to guide item development. Examples of item content are, “There's no use in really trying to contribute to society because I probably won't succeed” and “My past experiences have made me aware that I will never be able to turn to anyone in times of need.” Studies examining the factor structure and construct validity of the measure are currently being proposed. If this measure proves to be a beneficial and valid tool for assessing feelings of hopelessness specific to states of perceived burdensomeness and thwarted belongingness and is discriminant from other measures, future research may be able to better delineate what moves an individual from passive to active suicidal ideation and more accurately predict those individuals at higher risk for suicide. Although the current study attempted to examine general levels of hopelessness in conjunction with the interpersonal risk factors for suicide longitudinally, the study was unable to fully assess Van Orden and colleagues’ (2010) premise. Based on the results and recommendations of this study, future research may be better equipped to examine testable hypotheses surrounding the Interpersonal-Psychological Theory of Suicidal Behavior.

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APPENDICES

APPENDIX A

TABLES

Table 1
Comparison of three time completers and “discarded” group on demographic information and time one self-report measures.

Variables	Completers (n = 210)		Discarded (n = 8)		χ^2	t	p
	M	SD	M	SD			
Sex					1.924 ^a		.165
Male	41 (19.5)		0 (0)				
Female	169 (80.5)		8 (100)				
Age	19.33	1.897	19.88	2.588		-.786	.432
Ethnicity					6.493 ^a		.370
Caucasian	156 (74.3)		5 (62.5)				
American Indian	21 (10.0)		3 (37.5)				
African American/Black	9 (4.3)		0 (0)				
Asian/Asian American	7 (3.3)		0 (0)				
Hispanic/Latino	7 (3.3)		0 (0)				
Biracial	5 (2.4)		0 (0)				
Other	2 (1.0)		0 (0)				
Grade					3.847 ^a		.427
Freshman	108 (51.4)		4 (50.0)				
Sophomore	58 (27.6)		1 (12.5)				
Junior	28 (13.3)		1 (12.5)				
Senior	15 (7.1)		2 (25.0)				
Graduate	1 (.5)		0 (0)				
T1 BHS	2.505	3.140	3.000	4.175		-.433	.666
T1 CESD	13.352	9.220	11.375	10.042		.585	.559
T1 PB	15.891	9.033	16.250	9.765		-.107	.915
T1 TB	20.214	10.960	16.750	11.647		.869	.386
T1 AC	42.771	13.281	32.625	17.435		2.093	.037*
T1 SI	1.767	1.252	2.750	3.012		-.920 ^b	.388
T1 SX	.13	.730	.13	.354		.014	.989

Note. T1 CESD = Time One Depression, T1 BHS = Time One Hopelessness, T1 PB = Time One Perceived Burdensomeness, T1 TB = Time One Thwarted Belongingness, T1 AC = Time One Acquired Capability for Suicide, T1 SI = Time One Suicidal Ideation, T1 SX = Time One Suicidal Behavior. Percentages are in parentheses. ^a = 1 or more cells had an expected count of less than 5. ^b = Levene’s test for equality of variances was violated and equal variances were not assumed. * $p < .05$, ** $p < .01$

Table 2
Comparison of three time completers and attrition group on demographic information and time one self-report measures.

<i>Variables</i>	<i>Completers (n = 210)</i>		<i>Attrition (n = 479)</i>		χ^2	<i>t</i>	<i>p</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Sex					4.989		.026*
Male	41 (19.5)		124 (25.9)				
Female	169 (80.5)		354 (73.9)				
Age	19.33	1.897	19.58	2.42		1.306	.192
Ethnicity					12.970 ^a		.044*
Caucasian	156 (74.3)		398 (83.1)				
American Indian	21 (10.0)		24 (5.0)				
African American/Black	9 (4.3)		19 (4.0)				
Asian/Asian American	7 (3.3)		11 (2.3)				
Hispanic/Latino	7 (3.3)		8 (1.7)				
Biracial	5 (2.4)		10 (2.1)				
Other	2 (1.0)		8 (1.7)				
Grade					1.331 ^a		.856
Freshman	108 (51.4)		244 (50.9)				
Sophomore	58 (27.6)		119 (24.8)				
Junior	28 (13.3)		67 (14.0)				
Senior	15 (7.1)		43 (9.0)				
Graduate	1 (.5)		5 (1.0)				
T1 BHS	2.505	3.140	2.818	3.496		1.117	.264
T1 CESD	13.352	9.220	13.347	10.279		-.007	.994
T1 PB	15.891	9.033	16.747	9.506		1.106	.269
T1 TB	20.214	10.960	20.608	11.309		.424	.672
T1 AC	42.771	13.281	43.466	13.272		.632	.528
T1 SI	1.767	1.252	1.891	1.602		1.002	.316
T1 SX	.13	.730	.08	.469		-.899 ^b	.369

Note. T1 CESD = Time One Depression, T1 BHS = Time One Hopelessness, T1 PB = Time One Perceived Burdensomeness, T1 TB = Time One Thwarted Belongingness, T1 AC = Time One Acquired Capability for Suicide, T1 SI = Time One Suicidal Ideation, T1 SX = Time One Suicidal Behavior. Percentages are in parentheses. ^a = 1 or more cells had an expected count of less than 5. ^b = Levene's test for equality of variances was violated and equal variances were not assumed. * $p < .05$, ** $p < .01$

Table 3

Means, standard deviations, and zero-order correlations for uncentered variables utilized in the analyses.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. T1 CESD	1														
2. T1 BHS	.585**	1													
3. T1 SI	.263**	.319**	1												
4. T2 SI	.269**	.251**	.707**	1											
5. T3 SI	.293**	.291**	.673**	.822**	1										
6. T1 SX	.289**	.295**	.347**	.287**	.279**	1									
7. T2 SX	.059	.188**	.122	.099	.138*	.349**	1								
8. T3 SX	.164*	.158*	.356**	.262**	.323**	.454**	.600**	1							
9. T1 PB	.576**	.623**	.245**	.245**	.290**	.263**	.125	.118	1						
10. T1 TB	.671**	.598**	.250**	.206**	.271**	.272**	.124	.133	.708**	1					
11. T1 AC	-.173*	-.078	-.094	-.102	-.070	.053	.087	-.027	-.023	-.101	1				
12. T1 PBxTB	.651**	.691**	.301**	.258**	.319**	.414**	.113	.113	.916**	.858**	-.046	1			
13. T1 PBxAC	.412**	.483**	.155*	.144*	.191**	.312**	.180**	.076	.856**	.566**	.435**	.778**	1		
14. T1 TBxAC	.479**	.459**	.168*	.119	.197**	.304**	.136*	.092	.609**	.810**	.418**	.733**	.769**	1	
15. T1 PBxTBxAC	.550**	.591**	.256**	.204**	.260**	.491**	.133	.086	.836**	.762**	.203**	.928**	.885**	.850**	1
Mean	13.329	2.505	1.767	1.824	1.857	0.13	0.10	0.09	15.900	20.191	42.762	0.000	0.000	0.000	0.000
SD	9.238	3.140	1.252	1.250	1.500	0.730	0.531	0.529	9.029	10.970	13.290	448.205	448.540	538.922	21146.237

Note. T1 CESD = Time One Depression, T1 BHS = Time One Hopelessness, T1 SI = Time One Suicidal Ideation, T2 SI = Time Two Suicidal Ideation, T3 SI = Time Three Suicidal Ideation, T1 SX = Time One Suicidal Behavior, T2 SX = Time Two Suicidal Behavior, T3 SX = Time Three Suicidal Behavior, T1 PB = Time One Perceived Burdensomeness, T1 TB = Time One Thwarted Belongingness, T1 AC = Time One Acquired Capability for Suicide, T1 PBxTB = Time One Interaction of Perceived Burdensomeness and Thwarted Belongingness, T1 PBxAC = Time One Interaction of Perceived Burdensomeness and Acquired Capability, T1 TBxAC = Time One Interaction of Thwarted Belongingness and Acquired Capability, T1 PBxTBxAC = Time One Three-Way Interaction of Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability, SD = Standard Deviation. * $p < .05$ two-tailed, ** $p < .01$ two-tailed.

Table 4

Three-way interaction of time one perceived burdensomeness, thwarted belongingness, and acquired capability for suicide predicting time one suicidal ideation, controlling for time one depression and time one hopelessness.

	R^2 for set	F for set	β	t -value	p -value	Correlations		
						Zero-order	Partial	Part
1	.110	12.855**						
T1 CESD			.117	1.446	.150	.263	.100	.095
T1 BHS			.250	3.097	.002**	.319	.210	.203
2	.115	5.304**						
T1 CESD			.080	.846	.398	.263	.059	.056
T1 BHS			.228	2.511	.013*	.319	.173	.165
T1 PB			.035	.345	.731	.245	.024	.023
T1 TB			.028	.269	.789	.250	.019	.018
T1 AC			-.059	-.875	.382	-.094	-.061	-.058
3	.135	3.928**						
T1 CESD			.082	.867	.387	.263	.061	.057
T1 BHS			.174	1.836	.068	.319	.128	.120
T1 PB			-.046	-.421	.647	.245	-.030	-.028
T1 TB			.032	.301	.764	.250	.021	.020
T1 AC			-.074	-1.097	.274	-.094	-.077	-.072
T1 PBxTB			.173	1.893	.060	.292	.132	.124
T1 PBxAC			-.100	-1.031	.304	-.044	-.073	-.068
T1 TBxAC			.068	.703	.483	-.007	.050	.046
4	.144	3.740**						
T1 CESD			.063	.658	.511	.263	.046	.043
T1 BHS			.211	2.152	.033*	.319	.150	.141
T1PB			.011	.096	.924	.245	.007	.006
T1 TB			.016	.155	.877	.250	.011	.010
T1 AC			-.154	-1.764	.079	-.094	-.124	-.115
T1 PBxTB			.069	.588	.557	.292	.042	.038
T1 PBxAC			-.196	-1.667	.097	-.044	-.117	-.109
T1 TBxAC			.078	.803	.423	-.007	.057	.053
T1			.173	1.439	.152	.064	.101	.094
PBxTBxAC								

Note. T1 CESD = Time One Depression, T1 BHS = Time One Hopelessness, T1 PB = Time One Perceived Burdensomeness, T1 TB = Time One Thwarted Belongingness, T1 AC = Time One Acquired Capability for Suicide, T1 PBxTB = Time One Interaction of Perceived Burdensomeness and Thwarted Belongingness, T1 PBxAC = Time One Interaction of Perceived Burdensomeness and Acquired Capability, T1 TBxAC = Time One Interaction of Thwarted Belongingness and Acquired Capability, T1 PBxTBxAC = Time One Three-Way Interaction of Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability. * $p < .05$ two-tailed, ** $p < .01$ two-tailed.

Table 5

Three-way interaction of time one perceived burdensomeness, thwarted belongingness, and acquired capability for suicide predicting time two suicidal ideation, controlling for time one depression and time one hopelessness.

	R^2 for set	F for set	β	t -value	p -value	Correlations		
						Zero-order	Partial	Part
1	.086	9.714**						
T1 CESD			.187	2.278	.024*	.269	.156	.151
T1 BHS			.142	1.729	.085	.251	.119	.115
2	.097	4.359**						
T1 CESD			.165	1.724	.086	.269	.120	.115
T1 BHS			.110	1.194	.234	.251	.083	.079
T1 PB			.129	1.268	.206	.245	.088	.084
T1 TB			-.069	-1.644	.520	.206	-.045	-.043
T1 AC			-.069	-1.016	.311	-.102	-.071	-.068
3	.108	3.054**						
T1 CESD			.167	1.737	.084	.269	.122	.116
T1 BHS			.077	.802	.424	.251	.056	.053
T1 PB			.098	.882	.379	.245	.062	.059
T1 TB			-.064	-.593	.554	.206	-.042	-.039
T1 AC			-.083	-1.215	.226	-.102	-.085	-.081
T1 PBxTB			.076	.816	.415	.219	.057	.054
T1 PBxAC			-.139	-1.407	.161	-.076	-.099	-.094
T1 TBxAC			.077	.775	.439	-.031	.055	.052
4	.122	3.081**						
T1 CESD			.143	1.482	.140	.269	.104	.098
T1 BHS			.122	1.232	.219	.251	.087	.082
T1 PB			.168	1.430	.154	.245	.101	.095
T1 TB			-.083	-.769	.443	.206	-.054	-.051
T1 AC			-.181	-2.053	.041*	-.102	-.144	-.136
T1 PBxTB			-.053	-.446	.656	.219	-.032	-.030
T1 PBxAC			-.256	-2.154	.032*	-.076	-.151	-.143
T1 TBxAC			.089	.899	.370	-.031	.063	.060
T1			.213	1.746	.082	.022	.123	.116
PBxTBxAC								

Note. T1 CESD = Time One Depression, T1 BHS = Time One Hopelessness, T1 PB = Time One Perceived Burdensomeness, T1 TB = Time One Thwarted Belongingness, T1 AC = Time One Acquired Capability for Suicide, T1 PBxTB = Time One Interaction of Perceived Burdensomeness and Thwarted Belongingness, T1 PBxAC = Time One Interaction of Perceived Burdensomeness and Acquired Capability, T1 TBxAC = Time One Interaction of Thwarted Belongingness and Acquired Capability, T1 PBxTBxAC = Time One Three-Way Interaction of Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability. * $p < .05$, ** $p < .01$

Table 6

Three-way interaction of time one perceived burdensomeness, thwarted belongingness, and acquired capability for suicide predicting time three suicidal ideation, controlling for time one depression and time one hopelessness.

	R^2 for set	F for set	β	t -value	p -value	Correlations		
						Zero-order	Partial	Part
1	.107	12.455**						
T1 CESD			.186	2.300	.022*	.293	.158	.151
T1 BHS			.182	2.249	.026*	.291	.154	.148
2	.117	5.428**						
T1 CESD			.131	1.386	.167	.293	.097	.091
T1 BHS			.124	1.365	.174	.291	.095	.090
T1 PB			.124	1.234	.219	.290	.086	.081
T1 TB			.017	.163	.871	.271	.011	.011
T1 AC			-.033	-.490	.625	-.070	-.034	-.032
3	.146	4.287**						
T1 CESD			.136	1.445	.150	.293	.101	.094
T1 BHS			.081	.860	.391	.291	.061	.056
T1 PB			.081	.746	.456	.290	.053	.049
T1 TB			.027	.255	.799	.271	.018	.017
T1 AC			-.056	-.827	.409	-.070	-.058	-.054
T1 PBxTB			.098	1.084	.280	.267	.076	.071
T1 PBxAC			-.227	-2.351	.020*	-.103	-.164	-.153
T1 TBxAC			.159	1.640	.103	-.012	.115	.107
4	.146	3.791**						
T1 CESD			.136	1.430	.154	.293	.101	.093
T1 BHS			.081	.823	.411	.291	.058	.054
T1 PB			.080	.692	.490	.290	.049	.045
T1 TB			.027	.255	.799	.271	.018	.017
T1 AC			-.054	-.623	.534	-.070	-.044	-.041
T1 PBxTB			.100	.859	.391	.267	.061	.056
T1 PBxAC			-.225	-1.919	.056	-.103	-.134	-.125
T1TBxAC			.159	1.630	.105	-.012	.115	.107
T1			-.003	-.022	.983	-.028	-.002	-.001
PBxTBxAC								

Note. T1 CESD = Time One Depression, T1 BHS = Time One Hopelessness, T1 PB = Time One Perceived Burdensomeness, T1 TB = Time One Thwarted Belongingness, T1 AC = Time One Acquired Capability for Suicide, T1 PBxTB = Time One Interaction of Perceived Burdensomeness and Thwarted Belongingness, T1 PBxAC = Time One Interaction of Perceived Burdensomeness and Acquired Capability, T1 TBxAC = Time One Interaction of Thwarted Belongingness and Acquired Capability, T1 PBxTBxAC = Time One Three-Way Interaction of Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability. * $p < .05$ two-tailed, ** $p < .01$ two-tailed.

Table 7

Three-way interaction of time one perceived burdensomeness, thwarted belongingness, and acquired capability for suicide predicting time one suicidal behavior, controlling for time one depression and time one hopelessness.

	R^2 for set	F for set	β	t -value	p -value	Correlations		
						Zero-order	Partial	Part
1	.108	12.467**						
T1 CESD			.177	2.182	.030*	.289	.150	.143
T1 BHS			.192	2.368	.019*	.295	.162	.155
2	.121	5.623**						
T1 CESD			.154	1.631	.104	.289	.113	.107
T1 BHS			.152	1.682	.094	.295	.117	.110
T1 PB			.040	.403	.688	.263	.028	.026
T1 TB			.058	.550	.583	.272	.038	.036
T1 AC			.098	1.468	.144	.053	.102	.096
3	.406	17.168**						
T1 CESD			.151	1.923	.056	.289	.134	.105
T1 BHS			.008	.097	.923	.295	.007	.005
T1 PB			-.279	-3.089	.002**	.263	-.213	-.168
T1 TB			.041	.466	.642	.272	.033	.025
T1 AC			.098	1.751	.081	.053	.123	.095
T1 PBxTB			.641	8.468	.000**	.561	.513	.460
T1 PBxAC			.319	3.971	.000**	.245	.270	.216
T1 TBxAC			-.155	-1.917	.057	.136	-.134	-.104
4	.498	22.066**						
T1 CESD			.088	1.211	.227	.289	.085	.061
T1 BHS			.126	1.680	.095	.295	.118	.084
T1 PB			-.095	-1.074	.284	.263	-.076	-.054
T1 TB			-.009	-.110	.913	.272	-.008	-.005
T1 AC			-.160	-2.389	.018*	.053	-.167	-.120
T1 PBxTB			.304	3.411	.001**	.561	.234	.171
T1 PBxAC			.010	.112	.911	.245	.008	.006
T1 TBxAC			-.123	-1.655	.100	.136	-.116	-.083
T1			.560	6.065	.000**	.563	.394	.304
PBxTBxAC								

Note. T1 CESD = Time One Depression, T1 BHS = Time One Hopelessness, T1 PB = Time One Perceived Burdensomeness, T1 TB = Time One Thwarted Belongingness, T1 AC = Time One Acquired Capability for Suicide, T1 PBxTB = Time One Interaction of Perceived Burdensomeness and Thwarted Belongingness, T1 PBxAC = Time One Interaction of Perceived Burdensomeness and Acquired Capability, T1 TBxAC = Time One Interaction of Thwarted Belongingness and Acquired Capability, T1 PBxTBxAC = Time One Three-Way Interaction of Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability. * $p < .05$ two-tailed, ** $p < .01$ two-tailed.

Table 8

Three-way interaction of time one perceived burdensomeness, thwarted belongingness, and acquired capability for suicide predicting time two suicidal behavior, controlling for time one depression and time one hopelessness.

	R^2 for set	F for set	β	t -value	p -value	Correlations		
						Zero-order	Partial	Part
1	.039	4.224*						
T1 CESD			-.078	-.925	.356	.059	-.064	-.063
T1 BHS			.233	2.776	.006**	.188	.189	.189
2	.051	2.171						
T1 CESD			-.096	-.975	.331	.059	-.068	-.067
T1 BHS			.206	2.186	.030*	.188	.151	.149
T1 PB			.002	.023	.982	.125	.002	.002
T1 TB			.073	.664	.507	.124	.046	.045
T1 AC			.094	1.345	.180	.087	.094	.092
3	.131	3.796**						
T1 CESD			-.106	-1.116	.266	.059	-.078	-.073
T1 BHS			.268	2.823	.005**	.188	.195	.186
T1 PB			.067	.614	.540	.125	.043	.040
T1 TB			.056	.528	.598	.124	.037	.035
T1 AC			.132	1.945	.053	.087	.136	.128
T1 PBxTB			-.140	-1.534	.127	.039	-.108	-.101
T1 PBxAC			.389	4.004	.000**	.130	.272	.263
T1 TBxAC			-.307	-3.151	.002**	-.050	-.217	-.207
4	.134	3.442**						
T1 CESD			-.095	-.989	.324	.059	-.070	-.065
T1 BHS			.247	2.511	.013*	.188	.175	.165
T1 PB			.035	.298	.766	.125	.021	.020
T1 TB			.065	.607	.544	.124	.043	.040
T1 AC			.177	2.018	.045	.087	.141	.133
T1 PBxTB			-.081	-.691	.490	.039	-.049	-.045
T1 PBxAC			.444	3.758	.000**	.130	.257	.247
T1 TBxAC			-.313	-3.198	.002**	-.050	-.221	-.210
T1			-.099	-.815	.416	.046	-.058	-.054
PBxTBxAC								

Note. T1 CESD = Time One Depression, T1 BHS = Time One Hopelessness, T1 Burden = Time One Perceived Burdensomeness, T1 Belong = Time One Thwarted Belongingness, T1 ACSS = Time One Acquired Capability for Suicide, T1 BuxBe = Time One Interaction of Perceived Burdensomeness and Thwarted Belongingness, T1 BuxAc = Time One Interaction of Perceived Burdensomeness and Acquired Capability, T1 BexAc = Time One Interaction of Thwarted Belongingness and Acquired Capability, T1 BxBxA = Time One Three-Way Interaction of Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability. * $p < .05$, ** $p < .01$

Table 9

Three-way interaction of time one perceived burdensomeness, thwarted belongingness, and acquired capability for suicide predicting time three suicidal behavior, controlling for time one depression and time one hopelessness.

	R^2 for set	F for set	β	t -value	p -value	Correlations		
						Zero-order	Partial	Part
1	.033	3.501*						
T1 CESD			.108	1.283	.201	.164	.089	.088
T1 BHS			.095	1.128	.261	.158	.078	.077
2	.033	1.384						
T1 CESD			.105	1.060	.290	.164	.074	.073
T1 BHS			.096	1.010	.314	.158	.071	.070
T1 PB			-.012	-.115	.908	.118	-.008	-.008
T1 TB			.014	.124	.902	.133	.009	.009
T1 AC			.000	-.003	.998	-.027	.000	.000
3	.042	1.114						
T1 CESD			.107	1.070	.286	.164	.075	.074
T1 BHS			.123	1.231	.220	.158	.086	.085
T1 PB			.045	.395	.693	.118	.028	.027
T1 TB			.017	.157	.876	.133	.011	.011
T1 AC			-.001	-.013	.989	-.027	-.001	-.001
T1 PBxTB			-.117	-1.218	.225	.036	-.086	-.084
T1 PBxAC			-.067	-.660	.510	-.054	-.047	-.046
T1 TBxAC			.043	.422	.673	-.035	.030	.029
4	.051	1.206						
T1 CESD			.087	.867	.387	.164	.061	.060
T1 BHS			.160	1.550	.123	.158	.109	.107
T1 PB			.103	.844	.400	.118	.060	.058
T1 TB			.002	.017	.987	.133	.001	.001
T1 AC			-.081	-.887	.376	-.027	-.063	-.061
T1 PBxTB			-.223	-1.814	.071	.036	-.127	-.125
T1 PBxAC			-.164	-1.327	.186	-.054	-.093	-.091
T1 TBxAC			.053	.518	.605	-.035	.037	.036
T1			.175	1.379	.169	-.009	.097	.095
PBxTBxAC								

Note. T1 CESD = Time One Depression, T1 BHS = Time One Hopelessness, T1 PB = Time One Perceived Burdensomeness, T1 TB = Time One Thwarted Belongingness, T1 AC = Time One Acquired Capability for Suicide, T1 PBxTB = Time One Interaction of Perceived Burdensomeness and Thwarted Belongingness, T1 PBxAC = Time One Interaction of Perceived Burdensomeness and Acquired Capability, T1 TBxAC = Time One Interaction of Thwarted Belongingness and Acquired Capability, T1 PBxTBxAC = Time One Three-Way Interaction of Perceived Burdensomeness, Thwarted Belongingness, and Acquired Capability. * $p < .05$ two-tailed, ** $p < .01$ two-tailed.

Table 10

Relationship of time one perceived burdensomeness by thwarted belongingness and time three suicidal ideation as moderated by time one hopelessness.

	R^2	df	F	B	$SE B$	B	t	P
Step 1	.544	3, 206	82.048					
T1 SI				.728	.058	.608	12.629	< .001**
T3 BHS				.070	.026	.154	2.659	.008**
T3 PBxTB				.002	.000	.194	3.375	.001**
Step 2	.562	6, 203	43.436					
T1 PBxTB				.002	.001	.178	1.691	.092
T1 BHS				-.079	.040	-.165	-.1957	.052
T1				.000	.000	-.138	-1.207	.229
PBxTBxBHS								

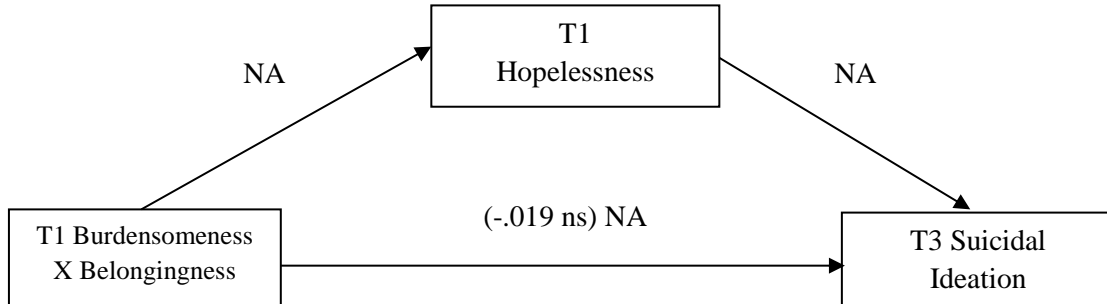
Note. T1 SI = Time One Suicidal Ideation, T1 BHS = Time One Hopelessness, T3 BHS = Time Three Hopelessness, T1 PBxTB = Time One Interaction of Perceived Burdensomeness by Thwarted Belongingness, T3 PBxTB = Time Three Perceived Burdensomeness by Thwarted Belongingness, T1 PBxTBxBHS = Time One Interaction of Perceived Burdensomeness and Thwarted Belongingness by Time One Hopelessness. * $p < .05$ two-tailed, ** $p < .01$ two-tailed.

APPENDIX B

FIGURES

Figure 1

Relationship of time one perceived burdensomeness by thwarted belongingness and time three suicidal ideation as mediated by time one hopelessness



Note: Numerical values are the standardized regression coefficients and the number in parentheses represents the unmediated path. * $p < .05$, ** $p < .01$, *** $p < .001$, ns = non-significant.

APPENDIX C
IRB APPROVAL

Oklahoma State University Institutional Review Board

Date: Tuesday, September 21, 2010
IRB Application No AS1084
Proposal Title: An Examination of Mood Over Time

Reviewed and Processed as: Expedited

Status Recommended by Reviewer(s): Approved Protocol Expires: 9/20/2011

Principal Investigator(s):
LaRicka R. Wingate
216 N. Murray
Stillwater, OK 74078
Meredith Slish
215 North Murray
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 219 Cordell North (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,



Shelia Kennison, Chair
Institutional Review Board

VITA

Meredith Leigh Slish

Candidate for the Degree of

Doctor of Philosophy

Thesis: FACTORS BETWEEN MALADAPTIVE PERFECTIONISM AND SUICIDE:
THE ROLE OF THE INTERPERSONAL-PSYCHOLOGICAL THEORY OF
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Completed the requirements for the Doctor of Philosophy in Clinical Psychology at Oklahoma State University, Stillwater, Oklahoma in May, 2013.

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Tucker, R. P., & Wingate, L. R., O'Keefe, V. M., Judah, M., Slish, M. L., & Rhoades-Kerswill, S. (2013). The moderating effect of humor styles on the relationship between interpersonal predictors of suicide and suicidal ideation. *Personality and Individual Differences, 54*, 610-615.

Rasmussen, K. A., Slish, M. L., Wingate, L. R., Davidson, C. L., & Grant, D. M. (2012). Can perceived burdensomeness explain the relationship between suicide and perfectionism? *Suicide and Life-Threatening Behavior, 42*, 121-128.

Davidson, C. L., Wingate, L. R., Slish, M. L., & Rasmussen, K. A. (2010). The great black hope: Hope and its relation to suicide risk among African Americans. *Suicide and Life-Threatening Behaviors, 40*, 170-180.

Davidson, C. L., Wingate, L. R., Rasmussen, K. A., & Slish, M. L. (2009). Hope as a predictor of interpersonal suicide risk. *Suicide and Life-Threatening Behaviors, 39*, 449-507.

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American Association of Suicidology—AAS