SUICIDAL BEHAVIOR IN ADOLESCENCE: INVESTIGATION OF THE INTERPERSONAL PSYCHOLOGICAL THEORY IN A HIGH RISK SAMPLE

A dissertation submitted to Kent State University in partial fulfillment of the requirements for the degree of Doctor of Philosophy

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August, 2014
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With love and enduring gratitude to my family—Corey, Mom, Dad, Johnny, Christy, Mike, Henry, Couper, and Hootie.
CHAPTER 1

INTRODUCTION

Suicide is a major public health concern during adolescence when it is responsible for over 4000 deaths per year, making it the third leading cause of death (Center for Disease Control, 2010). Statistics on suicidal behaviors in American high school students indicate that 13.8 percent of adolescents experienced serious suicidal thoughts (that is, ideations) in the past year. Approximately six percent of adolescents reported at least one suicide attempt within the past year. Overall, 1.9 percent of adolescents made a suicide attempt in the past year requiring medical attention. It is estimated that there are between 100 and 200 suicide attempts for each completed suicide among young people between the ages of 15 and 24 (CDC, 2010). Both male and female adolescents experience suicidal thoughts and behaviors, although females tend to attempt suicide at three times the rate of males (CDC, 2010). On the other hand, males die by suicide at four times the rate of females due the lethality of their method choice (Stack & Wasserman, 2009).

Among adolescents, firearms are the primary method of completed suicide, followed by suffocation and poisoning.

The CDC outlines the following risk factors for adolescent suicide: history of previous suicide attempts, incarceration, substance abuse, family history, history of mental illness, stressful life events, access to lethal methods (CDC, 2012). Clearly, research on suicidality in adolescents covers a broad range of cognitive, behavioral, and
affective risk factors. However, research on these risk factors and others is often disjointed and unguided by theoretical grounding (Rogers, 2001). Historical and existing theories of suicide also tend to be disjointed and unidimensional; they do not seem to be helpful in developing a comprehensive understanding of suicide in adolescence. The purpose of this research is to test a conceptual model of adolescent suicide guided by one current theory of suicidality and current empirical evidence on adolescent suicide.

**Existing Theories of Suicide**

Several theories have historically sought to explain suicidal behavior, although these theories are not often cited as guiding contemporary empirical research. For instance, Durkheim claimed in the late 1800s that suicide results from two social forces: social integration and moral regulation (Durkheim, 1897, as discussed in Joiner, 2005). Social integration concerns feelings of connection within the society. Moral regulation reflects the level that one’s individual goals align with social goals. According to Durkheim, extreme (high or low) levels of either increases the risk for suicide.

Meanwhile, Shneidman—the “father of contemporary suicidology”—suggested that thwarted human needs lead to suicide through psychache, which is described as an intense emotional pain (Leenaars, 2010, pp.5; Shneidman, 1998). Psychoanalysts, on the other hand, theorized that suicide is the result of hostility turned toward oneself, emphasizing the role of aggression and violence in suicidality (Joiner, 2005). Lastly, Beck and colleagues claimed that suicide results from hopelessness, or a negative cognitive state characterized by desperation and a lack of optimism about the future (Beck, Brown, Berchick, Stewart, & Steer, 1990; Joiner, 2005).
While these theories have been tested empirically (e.g. Durkehim: Pescosolido & Georgianna, 1989; Shneidman: Pompili, Lester, Leenaars, Tatarelli, & Girardi, 2008; Psychoanalysts: Apter, Plutchik, Sevy, Korn, Brown, & van Praag, 1989; Beck: Beck, Brown, & Steer, 1989), they are limited in presenting a comprehensive picture of risk for suicide. Shneidman, Beck, and the psychoanalysts’ theories all focus on only one factor to exclusion of other risks. Even Durkehim’s theory, which focuses exclusively on societal constructs, has been criticized for its underlying unidimensional nature (Johnson, 1965). In order to overcome this limitation and present a more comprehensive theory of suicidality, Joiner (2005) proposed the Interpersonal Psychological Theory of Suicide (IPT).

**The Interpersonal Psychological Theory of Suicide**

The IPT (Joiner, 2005) is a multi-faceted theory that is based partly on contributions of past theories while also seeking to provide a comprehensive and inclusive model. The IPT has undergone empirical testing almost exclusively in adult samples (e.g. Anestis & Joiner, 2011; Bender, Gordon, Bresin, & Joiner, 2011; Joiner, Hollar, & van Orden, 2006; van Orden, Witte, James, Castro, Gordon, Braithwaite, et al., 2008; van Orden, Lynam, Hollar, & Joiner, 2006). However, the IPT appears promising in explaining adolescent suicide as well, as it aims to identify risks for suicide using both individual and social constructs.

The IPT posits that suicide risk involves both (a) the desire to attempt suicide and (b) the ability to attempt suicide (see Figure 1). The desire to attempt suicide is explained through the constructs of thwarted belongingness and perceived burdensomeness. The
ability to attempt suicide is defined through the construct of the acquired capability to self-injure.

Figure 1. The Interpersonal Psychological Theory (IPT)

Desire for Suicide

Joiner proposes that the desire for suicide is cultivated through feelings of both thwarted belongingness and perceived burdensomeness. Thwarted belongingness occurs when a person experiences a lack of social connection and/or a lack of positive social interactions (Joiner, 2005). Loneliness, lack of social support, and a lack of meaningful relationships characterize thwarted belongingness.

Perceived burdensomeness, on the other hand, reflects feelings of burdensomeness in relationships with family and friends. A person who feels like a burden may feel like their presence worsens the lives of others or that they are unimportant or undervalued in a relationship (Joiner, 2005; van Orden, Witte, Gordon, Bender, & Joiner, 2010). One can perceive that they are a burden in many contexts, such as emotionally, financially, or medically.
**Ability for Suicide**

The IPT proposes that the ability to physically injure oneself is developed over time through repeated exposure to painful or provocative experiences (Joiner, 2005). Repeated experiences with pain or exposure to violence decrease the fear and taboo typically associated with pain and death. Practice in hurting oneself (e.g. high risk physical activities) can also increase pain tolerance (Joiner, Conwell, Fitzpatrick, Witte, Schmidt, Berlim, et al., 2005). Recently, Joiner and colleagues have expanded this definition to include the contributions of history of maltreatment, previous suicide attempts, and impulsivity (van Orden, Witte, Gordon, Bender, & Joiner, 2010; Anestis & Joiner, 2011). One does not necessarily need to be the victim of a painful experience to increase their capability for suicide. Witnessing violence that is occurring to another person (e.g. seeing another person get shot) can also desensitize a person to provocative experiences and increase the acquired capability for suicide (van Orden, Witte, Gordon, Bender, & Joiner, 2010).

**Empirical Evidence in Adults**

While the Interpersonal Psychological Theory places importance on all three constructs listed above, the majority of research on this theory has emphasized the roles of thwarted belongingness and the acquired capability to self-injure. Several studies of the IPT in adult samples support the claim that thwarted belongingness and the acquired capability to self-injure, or a combination of these constructs are associated with increased risk for suicide (Joiner, Hollar, & van Orden, 2006; van Orden, Witte, James, Castro, Gordon, Braithwaite, et al., 2008; Bender, Gordon, Bresin, & Joiner, 2011;
Studies on thwarted belongingness. Researchers have studied the concept of thwarted belongingness across varied adult populations. In a study of 309 undergraduates, Van Orden and colleagues (2008) administered the ten-item Interpersonal Needs Questionnaire and the Beck Scale for Suicidal Ideation at three points throughout the year: fall semester, spring semester, and during the summer. They found that students reported the lowest levels of belongingness and the highest levels of suicidal ideation during the summer. Mediation analyses revealed that belongingness mediated the link between semester and suicidal ideation, suggesting that the differences in suicidal ideation across semesters seem to be accounted for by feelings of belongingness. Van Orden and colleagues suggested that belongingness decreases during the summer months because most university organizations that provide a sense of togetherness (e.g. sororities and fraternities) take breaks during this time.

Joiner, Holler, and van Orden (2006) considered togetherness by investigating how suicide rates fluctuate with local sports team performance. They suggested that people tend to “pull together,” and thus experience more belongingness, during important sporting events. In the first study reported in this paper, Joiner and colleagues used Department of Health information on deaths by suicide for the towns of Columbus, Ohio, Gainesville, Florida, and Miami, Florida. After controlling for economic variations in these towns, Joiner found that lower team rankings were correlated with higher suicide
rates in the two towns where football is an important tradition (Columbus- Ohio State Buckeyes; Gainesville- Florida Gators). In a second study, these researchers considered the “Miracle on Ice,” or the USA hockey defeat over the USSR during the 1980 Winter Olympics, which took place on February 22. They discovered that fewer suicides occurred on February 22, 1980 than any other February 22 in the 1970s and 1980s. In a third study, they reported that suicide rates are consistently lower on Super Bowl Sundays (a day characterized by feelings of togetherness in rooting for a football team) versus comparable Sundays. Taken together, these studies provide evidence of the association between low levels of belongingness and death and by suicide.

Studies on acquired capability to self-injure. In 2005, Joiner and colleagues examined the role of acquired capability to self-injure in suicidality using four diverse samples, including clinical inpatient and outpatients, undergraduate students, and the military. They hypothesized that past suicide attempts serve as strong predictors of future attempts because past attempts function as painful and provocative experiences. In the first study, the researchers tested this hypothesis using a sample of 297 young adults, the majority of whom were young males in military. After controlling for psychosocial variables, depression, hopelessness, and a host of other covariates (i.e. family history of suicide, alcohol and drug use and dependence, bipolar disorder, legal trouble, problem solving, negative life events), previous suicide attempt remained a significant predictor of current suicide ideation. Similar results were replicated in a sample of 98 undergraduates, 60 outpatients from Brazil, and 77 American inpatients. Overall, the connection between
history of suicide attempts and current suicidality remained, even when controlling for
the contributions of several variables known to be related to suicidality.

Bender, Gordon, Bresin, and Joiner (2011) studied acquired capability to self-
injure and its relationship to impulsivity. These researchers administered the Barratt
Impulsivity Scale, the Painful and Provocative Events Scale, a pressure algometer to
measure pain tolerance, and the recently developed Acquired Capability for Suicide Scale
to a sample of 182 undergraduates. They found that impulsivity did not directly predict
acquired capacity for self-injury. However, impulsivity was associated with painful and
provocative experiences and painful and provocative experiences were associated with
acquired capacity for self-injury. Those participants who endorsed more painful and
provocative experiences had higher levels of pain tolerance. These findings were
replicated in the same study in a large adult outpatient sample using a different
impulsivity measure, the Urgency, Premeditation, Perseverance, and Sensation Seeking
Impulsive Behavior Scale. These studies show that impulsivity is implicated in self-
injury, but only in that impulsivity makes one more likely to engage in risk-taking
behaviors. Van Orden and colleagues (2008) also researched acquired capability to self-
injure and impulsivity using a sample of 228 adult outpatients. Higher scores on the
Painful and Provocative Events Scale and the Impulsive Behavior Scale predicted scores
on the Acquired Capability for Suicide Scale.

Studies Using Both Constructs

A study of undergraduates by Gordon, Bresin, Dombeck, Routledge, and
Wonderlich (2011) focused on Joiner’s three constructs, but had no information on
suicide. These researchers investigated the theory in the context of a natural disaster and found self-reported volunteering to be associated with lower levels of thwarted belongingness, likely because volunteers felt an important and stronger connection to their community through their work. However, volunteering was associated with higher levels of acquired capability for self-injury, a statistical trend that led these researchers to suggest that exposure to tragedy and disaster can decrease fear about death.

In another study, Anestis and Joiner (2011) measured all three constructs of the IPT in conjunction with negative urgency, or rash acts that help deal with negative emotions. Anestis and Joiner found interactions between thwarted belongingness (measured using the Interpersonal Needs Questionnaire), acquired capability for self-injury (measured through the Acquired Capability for Suicide Scale) and negative urgency (measured through items that inquire about the tendency to act rashly when upset). Increased levels on each of these variables led to the highest risk for suicidal ideation. The authors believe that negative urgency amplifies the risk for suicide, in addition to the risk already predicted by the two other original constructs.

To date, the literature examining the validity of the IPT has been primarily supportive in adult samples. Research on thwarted belongingness suggests that a lack of belongingness can correspond to both suicidal ideation and attempt. Research on the acquired capability to self-injure in adults suggests that previous painful experiences (e.g. past suicide attempts, impulsive behaviors) are positively associated with suicidality across demographic groups.
Building a Conceptual Model of Suicide in Adolescence

Research to date provides substantial support for the IPT, specifically in regard to the constructs of thwarted belongingness and acquired capability to self-injure. However, these facets of the IPT have yet to be measured in conjunction during adolescence, and research on adolescent suicide has identified additional risk factors that should be considered as important potential additions to the theory. Guided by the IPT and research to date, I conceptualized a modified model of suicidality for use in adolescence. This proposed model (see Figure 2) builds on Joiner’s original model (2005) by proposing three substantive changes: 1) the inclusion of suicidal ideation as a focus of inquiry, 2) the inclusion of behavior problems into the model as predictor variables, and 3) the examination of the constructs of thwarted belongingness and acquired capability to self-injure.

Inclusion of Suicidal Ideation

One major change in the proposed model—compared to Joiner’s original model—is the inclusion of suicidal ideation as well as suicidal behavior. The original IPT (2005) applied only to suicidal behaviors, or acts that are aimed at injuring oneself with the intent to die. However, recent empirical evidence suggests that the risk factors associated with the IPT constructs are related to suicidal ideation in addition to suicidal behaviors (e.g. Brezo, Paris, Vitaro, Hebert, Tremblay, & Turecki, 2008; Eisenberg, Ackard, & Resnick, 2007; Klonsky & May 2010; Riesch, Jacobson, Sawdy, Anderson, & Henriques, 2008; Rivers & Noret, 2010).
Inclusion of Behavior Problems

Behavior problems are included in the proposed conceptual model because they are often examined as additional variables by suicide researchers and often explain the link between other risk factors and suicide (e.g., Jones, Schinka, van Dulmen, Bossarte, & Swahn, 2011; Prinstein, Boergers, Spirito, Little, & Grapentine, 2000; Riesch, Jacobson, Sawdy, Anderson, & Henriques, 2008). These behavior problems, as originally conceptualized by Achenbach (Achenbach & Edelbrock, 1978), represent the way one exhibits distress. Internalizing behavior problems reflect distress expressed within the individual, defined typically through symptoms of depression or anxiety, such as social withdrawal or feelings of worthlessness. Externalizing behavior problems, on the other
hand, reflect distress and its interaction with outside environment. As such, externalizing problems may include issues in interpersonal relationships, substance use, and conduct problems. Both types of behavior problems have been associated with maladjustment later in life (Guttmannova, Szanyi, & Kali, 2007). Prevalence rates of behavior problems vary across populations, but recent information from self-reported Youth Self Report data estimated that as many as 8.5 percent of adolescents experience externalizing behavior problems and 11.4 percent reported internalizing behavior problems (Mathyssek, Olina, Verhust, & van Oort, 2012).

Internalizing behavior problems are often included in research studies on suicide because of the strong link between depression and suicide. Internalizing behavior problems are often conceptualized as mediating risk factors and have been shown to account for relationships between interpersonal variables and suicidality. One such study found that internalizing behavior problems mediated the longitudinal relationship between loneliness variables and suicidality in a sample of adolescents (Jones, Schinka, van Dulmen, Bossarte, & Swahn, 2011). Prinstein and colleagues found that the relationship between another interpersonal construct (peer rejection) and suicidal ideation was mediated via internalizing symptoms (Prinstein, Boergers, Spirito, Little, & Grapentine, 2000). Another study showed that suicidal early adolescents reported higher levels of internalizing symptoms compared to non-suicidal early adolescents (Riesch, Jacobson, Sawdy, Anderson, & Henriques, 2008).

Empirical studies on substance use, impulsivity, violence perpetration, and antisocial behavior support the link between suicide and externalizing behaviors in
adolescence. This link tends to be robust, as it holds up across clinical and community samples and when different informants are used (Bossarte & Swahn, 2011; Horesh, 1999; Horesh, 2001; Swahn & Bossarte, 2007; Verona, Sachs-Ericsson, & Joiner, 2004). For example, Prinstein and colleagues (2000) found that externalizing problems, including substance use and deviant behaviors, mediated the relationship between interpersonal variables and suicidal ideation. Further, in a sample of over 1500 adolescents, Lewinsohn and colleagues (1994) found externalizing behavior problems to positively predict future suicide attempts above and beyond depression. A study investigating antisocial behavior in adolescents found increases in that variable to predict suicidal behavior, especially in conjunction with increased alcohol abuse (Marttunen, Aro, Henriksson, & Lonnquist, 1994).

**Facets of Thwarted Belongingness and Acquired Capability to Self-Injure**

Lastly, I will examine thwarted belongingness and acquired capability to self-injure as latent constructs and therefore investigate variables that may comprise facets of these constructs.

**Thwarted belongingness.** The construct of thwarted belongingness is based on the notion that poor functioning in interpersonal relationships can lead to negative outcomes, including suicidality. Negative outcomes can result from negative social experiences or general struggle with social development (Borowsky, Ireland, & Resnick, 2001; Hall-Lande, Eisenberg, Christenson, Neumark-Sztainer, 2007; Heinrich & Gullone, 2006). In adolescents, variables related to thwarted belongingness include loneliness,
peer rejection, romantic relationships struggles, and other struggles connecting to peers and family.

Loneliness is conceptualized as a type of thwarted belongingness because it concerns one’s perception that their interpersonal relationships do not meet their expectations (Peplau & Perlman, 1982). Recent studies have linked perceptions of loneliness with suicidal ideation and suicide attempts in adolescents. One such study (Schinka, van Dulmen, Mata, Bossarte, Swahn, 2013) linked trajectories of loneliness (stable low, decreasing, moderate increasing, high increasing, chronic high) with suicidality in a large national sample. Adolescents who reported increasing or chronic amounts of loneliness from grade three to age 15 were more likely to report suicidal ideation at age 15. Another study used a similar sample to investigate concurrent and longitudinal links between loneliness and suicide (Schinka, van Dulmen, Swahn, & Bossarte, 2012). This study found increased loneliness scores during adolescence to be concurrently related to suicidal ideation and suicide attempt at age 15. Further, increased loneliness in middle childhood longitudinally predicted reports of suicide attempt at age 15.

Another type of thwarted belongingness occurs when adolescents are rejected by peers, such as through bullying. Bullying has been associated with suicide in a number of cross-sectional studies (Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007; Klomek, Sourander, & Gould, 2010; Klomek, Sourander, Niemela, Kumpulainen, Piha, Tamminen, et al., 2009). In one such study, 400 adolescents reported how often they were the victim of traditional (face-to-face) or cyber (internet) bullying (Hay & Meldrum,
Frequent victims of both types of bullying were more likely to report suicidal ideation and self-harming behaviors.

Peer rejection can also be related to dissolution of a romantic relationship. Vajda and Steinbeck (2000) reviewed the medical records of a clinical sample of adolescents who were admitted to a hospital after a suicide attempt. They found that the majority of these adolescents (over 75 percent) reported that the precipitating factor for their suicide attempt was either romantic relationship dissolution or problems in the relationship.

While feelings of thwarted belongingness (e.g. loneliness, peer rejection) appear to increase risk for suicidality, feelings of belongingness and connection may mitigate this risk. Connectedness to family, school, and extracurricular activities serve as protective factors against adolescent suicidality (Eisenberg, Ackard, & Resnick, 2007; Kaminski, Puddy, Hall, Cashman, Crosby, & Ortega, 2010; Kidd, Henrich, Brookmeyer, Davison, King, & Shahar, 2006; Mata, van Dulmen, Schinka, Swahn, Bossarte, & Flannery, 2012; Riesch, Jacobson, Sawdy, Anderson, & Henriques, 2008; Neumark-Sztainer, Story, French, & Resnick, 1997). In particular, a warm and caring connection with one’s parents and family has been longitudinally associated with decreased risk for suicide attempts, as well as decreased risk of suicidal ideation, suicide plans, and self-injurious behaviors (Kaminski, Puddy, Hall, Cashman, Crosby, & Ortega, 2010; Kidd, Henrich, Brookmeyer, Davison, King, & Shahar, 2006).

School connectedness has also been linked to lower levels of suicidal ideation (Kaminski, Puddy, Hall, Cashman, Crosby, & Ortega, 2010). An investigation of the role of extracurricular activity involvement in suicide revealed that school belongingness
likely mediates this relationship (Mata, van Dulmen, Schinka, Swahn, Bossarte, & Flannery, 2012). Using data from the National Longitudinal Study of Adolescent Health, Mata and colleagues found that involvement in most extracurricular activities (including sports, academic clubs, musical groups, and creative organizations) leads to fewer instances of suicidal ideation and suicide attempt indirectly through feelings of school belongingness.

While all of the above mentioned variables (i.e. loneliness, bullying, family connection, school connectedness) appear to represent aspects of thwarted belongingness, it is unclear empirically if they—as a whole—truly represent the underlying construct of thwarted belongingness. In the proposed study I will investigate whether these various risk factors all contribute to one construct.

**Acquired capability to self-injure.** Repeated exposure to painful experiences over time increases one’s ability to self-harm (Joiner, 2005). The empirical evidence supporting the link between physical and sexual abuse, substance use, injury, and violence with increased suicidality support the theoretical role of acquired capability to self-injure in adolescent suicide.

Empirical research has shown a strong link between physical and sexual abuse and suicidality. It appears that exposure to pain experienced from abuse increases the risk for both suicidal ideation and suicidal attempt. One retrospective study found that participants who experienced childhood physical or sexual abuse were more likely to experience suicidal ideation and to make a suicide attempt later in life (Brezo, Paris, Vitaro, Hebert, Tremblay, & Turecki, 2008). Participants’ risk increased if they had
experienced repeated instances of abuse; this finding supports Joiner’s theory (2005) that multiple and repeated painful experiences increase suicide risk.

In addition to physical and sexual abuse, substance use in adolescence is associated with suicidality. In fact, a large percentage of suicide attempts occur in the context of alcohol use (some estimates are greater than 50 percent) (CDC, 2006). The association between substance use and suicidality has been found among clinical and community samples. Swahn and Bossarte (2007), for instance, used a large sample of adolescents from the Youth Risk Behavior Surveillance System to investigate self-reports of alcohol use and suicidality. Compared to abstinent adolescents, adolescents who reported alcohol use were more likely to experience both suicidal ideation and suicide attempt. Among alcohol drinking adolescents, those who initiated their substance use earlier in life (prior to age 13) were more likely to report suicidal ideation and suicide attempts compared to adolescents who initiated use later. Further, among a clinical sample of depressed adolescents, suicide attempts were more prevalent among participants who reported alcohol use prior to age 13 (Bossarte & Swahn, 2011).

Other painful and provocative experiences that adolescents are exposed to include unintentional injuries and risk-taking behaviors, which are often the result of impulsivity (Dougherty, Mathias, Marsh-Richard, Prevette, Dawes, Hazris, et al., 2009). For example, when children experience accidents that result in physical injury, they are at an increased risk for suicidal behaviors in adolescence (van Dulmen, Karazsia, Schinka, Bossarte, & Swahn, 2009). In two separate studies using clinical samples of adolescents, Horesh and colleagues (1999; 2001) found impulsivity to be significantly associated with
suicidality, particularly in males. Inpatient adolescent participants who reported suicidality were more likely to self-report impulsivity and also to be rated highly on impulsivity by clinicians and a computerized measure. The link between impulsivity and increased suicidal ideation and attempt also held up in a community sample (Klonsky & May, 2010).

Several studies document the association between suicide and other types of violent behavior, such as dating violence and aggression. For instance, cross-lagged analyses of a sample of adolescents from the AddHealth Study found experiences of violence during adolescence to increase risk for suicidal ideation later in life (van Dulmen, Mata, Schinka, Klipfel, Claxton, Bossarte, & Swahn, 2012). Bossarte, Simon, and Swahn (2008) studied violence toward peers and dating partners in a sample of high-risk high school students. Cluster analysis results indicated that adolescents who reported the highest levels of both peer and dating violence also reported the highest rates of suicidal ideation, suicidal plan, suicide attempt, and attempt requiring medical attention. In a similar study, Swahn and colleagues (2010) found that both victimization and perpetration of violence in peer and dating relationships predicted self-harming behaviors. Notably, this study also found that the self-harming adolescents were more likely to have experienced a history of abuse, used drugs, or to be impulsive—all of which are considered painful and provocative experiences.

Finally, exposure through witnessing violence has been linked with suicidality. For instance, witnessing parental domestic violence is associated with increased suicidality. Afifi and colleagues (2008) used the US National Comorbidity Survey to
investigate outcomes of adverse childhood experiences and found that witnessing domestic violence between parents during childhood longitudinally predicted suicidal ideation and attempt, such that those witnessing the violence were more likely to report both types of suicidality. Carlson (1990) had previously documented this link, but found that only male children who witnessed spousal violence between parents were more likely to express suicidal ideation, and to become more violent themselves. Studies using community samples have researched other types of witnessed violent behavior and suicidality. For instance, Flannery and colleagues (2001) investigated violent high schoolers (those who reported a history of stabbing or shooting another person). Compared to their non-violent peers, the violent adolescents were more likely to have witnessed violence, and the female violent adolescents were more likely to report suicidal ideation compared to all of the other participants. Another study examining exposure to violence in adolescents compared those who had witnessed violence in the past, been moderately victimized, or had been severely victimized. All three groups reported increased suicidality, although risk for suicidal ideation increased with level of exposure (i.e. witnessing violence increased risk overall, although not as much as being a victim of violence). Taken together, these studies support the concept of acquired capability to self-injure, or that experiences with or exposure to violent behaviors increase risk of suicide.

Aspects of the acquired capability to self-injure may include physical abuse, sexual abuse, impulsivity, and violence. These aspects may measure one underlying construct, or they may not work together in this way and be multidimensional instead. In
the current study I plan to investigate whether acquired capability in adolescence is a unidimensional or multidimensional construct.

**Restrictions on the Proposed Model**

Research on the IPT has focused almost exclusively on the roles of thwarted belongingness and the acquired capability to self-injure in suicidal behavior. Even in the current dataset only one item seemed to adequately reflect the original definition of perceived burdensomeness (“My family lets me know they think I’m a worthwhile/valuable person,” from the Provisions of Social Relations measure by Turner, Frankel, & Levin, 1983). Because of the limited research attention dedicated to perceived burdensomeness (and inadequate conceptual measure of this construct in this dataset), the proposed model focuses on investigating the IPT constructs of thwarted belongingness, acquired capability to self-injure, and the modifications to the theory as described above.

It is important to note that the following risk factors pertain to suicidal thoughts and behaviors and not non-suicidal self-injury (NSSI). Suicidal behaviors differ from non-suicidal self-injury (NSSI) in that NSSI includes harm to the body without the intent to die. In addition, suicidal behavior and NSSI differ in both their function and correlates. As such, the current study is contributing to research focused on those behaviors that include the intent to die.

**Design and Measurement Limitations of Current Research on Adolescent Suicide**

As outlined above, recent empirical research on adolescent suicide has covered a wide range of constructs. Variables that reflect a lack of belonging, including loneliness,
peer rejection, bullying, and romantic break-up are associated with increased suicidality. In addition, studies exploring abuse, substance use, risk-taking behaviors, exposure to violence, and impulsivity support the notion that the acquired capability to self-injure increases risk for suicidality. However, these studies have several problems that limit thorough understanding of why some adolescents are more at risk for suicide than others. Mainly, this research lacks theoretical grounding that is integrative. Thus far, studies have provided the field of suicide research with information on numerous and varied risk factors; however, little information is available on how to consider these risk factors together as system nor is this research useful in guiding future studies. We have little idea about how risk factors across different domains work together. Instead of a comprehensive field of research, we are left with a disjointed series of findings (Rogers, 2001).

Other limitations are evident, as well. Many studies document the association between certain risk factors and suicidal ideation or suicidal behavior only, instead of including measures of both (e.g. Elliot, Colangelo, & Gelles, 2005; Riesch, Jacobson, Sawdy, Anderson & Henriques, 2008; Rivers & Nore, 2010). Risk factors may be differently associated with varying severity levels of suicidality. For example, one study that used suicidal ideation and suicidal behavior as outcome variables found that increased loneliness in middle childhood longitudinally predicted suicidal behavior—but not suicidal ideation—in adolescents (Schinka, van Dulmen, Swahn, & Bossarte, 2012).

A last weakness in this research is the use of primarily cross-sectional or retrospective studies. This is particularly true in studies on interpersonal factors (i.e.
bullying: Klomek, Sourander, & Gould, 2010; connectedness: Elliott, Colangelo, & Gelles, 2005), abuse (Brezo, Paris, Vitaro, Hebert, Tremblay, & Turecki, 2008), and impulsivity (Horesh, 2001; Klonsky & May, 2010). The use of primarily cross-sectional studies limits understanding of strong causal relationships. Longitudinal research is necessary to further explore and understand the temporal relationship between risk factors and suicidality over time.

The current study aimed to move research in this area forward in several ways. First, the proposed conceptual model was guided by both a current theory of suicide and by robust empirical research. The conceptual model is comprehensive in that it integrates several facets across two broad domains of risk (thwarted belongingness and acquired capability to self-injure), as well as including the role internalizing and externalizing behavior problems. Second, the proposed model includes both suicidal ideation and suicidal behavior as outcome variables. These outcomes were conceptualized as latent variables and will thus contain information on a breadth of items related to suicide. Finally, the proposed model will be longitudinally tested across three waves of data collection. Information on risk factors will come from wave one of data collection, internalizing/externalizing behavior problem data will come from wave two of data collection, and suicide will be measured at wave three.

The Current Study

There is strong empirical evidence to support the links between suicide and various variables that are related to the IPT’s constructs of thwarted belongingness and acquired capability to self-injure. However, the majority of these variables have been
studied in isolation; few studies have given a comprehensive picture of suicide risk in adolescents using both thwarted belongingness and acquired capability to self-injure. Further, many studies have used only suicidal ideation or suicidal behaviors/attempt as the outcome variable. Often, these outcome variables are dichotomous, limiting the information available about the spectrum of suicidal thoughts and behaviors. Finally, longitudinal research is lacking.

The current study addressed these limitations by comprehensively investigating suicide in adolescents using two main constructs from the Interpersonal Psychological Theory. Figure 2 illustrates the proposed model used to investigate this theory in adolescents. The longitudinal design of this study aimed to best capture the role of risk factors earlier in life in predicting suicidality in adolescence. In addition, by expanding my outcome measures to include items associated with both suicidal ideation and suicidal behavior, I attempted to glean a better picture of how risk factors are associated with a range of suicidality.

**Aims and Hypotheses**

**Aim 1. Investigate the underlying structure of suicidality using confirmatory factor analysis.**

Despite attempts to streamline definitions regarding suicidality, some confusion remains (Silverman, Berman, Sanddal, O’Carroll, & Joiner, 2007). This aim seeks to understand the construct of suicidality by exploring how included items map onto the latent constructs of suicidal ideation and suicidal behavior. The data used for the current
study allow exploration of several items concerning suicidality, including serious thoughts, suicidal plans, suicide attempts, and attempts that require medical attention. Many research studies related to aspects of thwarted belongingness and acquired capability to self-injure use either suicidal ideation or suicide attempt as outcome variables (e.g. Brezo, et al., 2008; Eisenberg, Ackard, & Resnick, 2007; Klonsky & May 2010; Riesch, Jacobson, Sawdy, Anderson, & Henriques, 2008; Rivers & Noret, 2010). These results show that risk factors relating to the Interpersonal Psychological Theory (e.g. feelings of disconnection, history of abuse, impulsivity) are just as likely to predict thoughts about suicide as suicidal acts.

On the other hand, many researchers maintain that suicidality is quite varied and that there is a fundamental difference between suicidal thoughts (ideations) and suicidal behaviors. Many more adolescents (approximately 14% nationally) experience suicidal ideation compared to those who report a suicide attempt (approximately 6% nationally) (CDC, 2010). Further, suicide ideation is often a precursor to a suicide attempt, so risk factors for ideation are important to know and apply to prevention efforts (Lewinsohn, Rohde, & Seeley, 1994). Thus, it is important to use the multiple items in the dataset to explore the structure of suicidality. The following hypotheses are guided by a revised nomenclature presented by Silverman and colleagues (2007). This group suggested that suicidality be divided into suicidal thoughts, which include ideations (private thoughts) and communications (thoughts expressed interpersonally), and suicidal behaviors. Since information on suicidal communication was not available in the current dataset, I referred
only to suicidal ideations and suicidal behavior. The revised nomenclature guided the following hypotheses:

**Hypothesis 1.** I predict that the CFA will show the underlying structure of suicidality to include unique yet correlated factors of suicidal ideation and suicidal behavior.

**Hypothesis 1a.** Items regarding thoughts of death, serious thoughts of killing self, and suicide plan will load on a first factor of suicidal ideation.

**Hypothesis 1b.** Items regarding an attempt to kill self and medical attention as the result of a suicide attempt will load on a second factor of suicidal behavior.

**Aim 2. Investigate the structure of the constructs of thwarted belongingness and acquired capability to self-injure.**

The second aim of this study focused on determining the underlying structure of thwarted belongingness and the acquired capability to self-injure. The structure of these unique dimensions has not been empirically tested. Based on Joiner’s original conceptualization of the IPT (2005), I expected that these two constructs each would be unidimensional.

**Hypothesis 2.** Items regarding feelings of connection/disconnection will unidimensionally load on one factor of thwarted belongingness.

**Hypothesis 3.** Items regarding painful or provocative experiences will unidimensionally load on one factor of acquired capability to self-injure.
Aim 3. Investigate the proposed conceptual model. (see Figure 2)

Hypothesis 4. The IPT model including indirect links with behavior problems will fit the data well and better an alternative model.

The third aim focuses on testing the proposed conceptual model in order to investigate proposed pathways of risk for suicidality. The following hypotheses were contingent on the confirmation of my hypotheses for aim 2 that the constructs of thwarted belongingness and acquired capability to self-injure will be unidimensional. Depending on the confirmation of this hypothesis, I then planned to test the proposed model with an alternative model that does not include indirect links with behavior problems.

**Hypothesis 4a.** Thwarted belongingness will longitudinally predict suicidality.

**Hypothesis 4b.** Acquired capability will longitudinally predict suicidality.

Hypotheses 4a and 4b are guided by the general principles of the IPT and empirical evidence found in adolescence, which suggest that increased loneliness, peer rejection, physical abuse, substance use, risk-taking behavior, exposure to violence, and impulsivity increase risk for suicide (Bossarte, Simon, & Swahn, 2008; Bossarte & Swahn, 2011; Brezo, Paris, Vitaro, Hebert, Tremblay, & Turecki, 2008; Eisenberg, Ackard, & Resnick, 2007; Elliot, Colangelo, & Gelles, 2005; Hay & Meldrum, 2010; Hiramura, Shono Tanaka, Nagata, & Kitamura, 2008; Horesh, Gothelf, Ofek, Weizman, & Apter, 1999; Horesh, 2001; Joiner & Rudd, 2000; Joiner, 2005; Kaminski, Puddy, Hall, Cashman, Crosby, & Ortega, 2010; Kidd, Henrich, Brookmeyer, Davison, King, & Shahar, 2006; Klomek, Marrocco, Kleinman, Schonfeld, & Gould, 2007; Klomek, Sourander, Niemela, Kumpulainen, Piha, Tamminen, et al., 2009; Klonsky & May, 2010;

**Hypothesis 4c.** Internalizing behavior problems will mediate the relationship between thwarted belongingness and suicidality.

**Hypothesis 4d.** Internalizing behavior problems will mediate the relationship between acquired capability and suicidality.

**Hypothesis 4e.** Externalizing behavior problems will mediate the relationship between thwarted belongingness and suicidality.

**Hypothesis 4f.** Externalizing behavior problems will mediate the relationship between acquired capability and suicidality.

The second part of this aim and hypotheses 4c through 4f concern whether the presence of internalizing and externalizing behavior problems increase risk for suicidality. Previous empirical research has supported these links in adolescents (internalizing: Jones, Schinka, van Dulmen, Bossarte, & Swahn, 2011: Prinstein, Boergers, Spirito, Little, & Grapentine, 2000; Riesch, Jacobson, Sawdy, Anderson, & Henriques, 2008; externalizing: Bossarte & Swahn, 2011; Horesh, 1999; Horesh, 2001;
Lewinsohn, Rhode, & Seeley, 1994; Marttunen, Aro, Henriksson, & Lonnquist, 1994; ;
CHAPTER 2

METHOD

Participants

The current study used data from the Project on Human Development in Chicago Neighborhoods (PHDCN), which is part of the Inter-University Consortium for Political and Social Research. PHDCN data consist of information from children in 343 urban Chicago neighborhood clusters. The current sample included data from 1548 children in 80 neighborhood clusters, because these children participated in the longitudinal cohort portion of the study. To be included in the current sample, participants had to have information on at least one of the suicide items. The age cohorts for the longitudinal study were as follows: less than six months old, age three, age six, age nine, age twelve, age fifteen, and age eighteen.

The analyses were conducted on participants from three age cohorts: 9 (N = 569), 12 (N = 545), 15 (N = 434). Data from these children were collected at three waves. Wave one data collection took place from 1994 to 1997. Wave two data collection took place from 1997 to 2000. Wave three data collection took place from 2000-2002. The mean age of participants across each wave was as follows: 11.9 years at wave one, 13.9 years at wave two, and 16.5 years at wave three. The total sample was 50.5 percent female and 49.5 percent male. Participants reported belonging to the following ethnic
groups: 46.8 percent Hispanic, 34.3 percent Black, 15.1 percent White, 1.0 percent Asian, 1.1 percent Native American, 0.2 percent Pacific Islander, and 1.4 percent Other.

Procedure

The current study used information from interviews and questionnaires administered to study children at waves one, two, and three and to parents at wave one.

Measures

Covariate/Control Variables

Control variables were chosen on the basis of existing evidence for association with suicidal ideation and behaviors. Covariates included gender, ethnicity, and socioeconomic status (SES). Data for all covariates were taken from wave one of data collection.

Gender. Gender was included as a covariate because adolescent suicide rates differ by gender. Females typically report attempting suicide at three times the rate of males (CDC, 2012). However, males are four times more likely to die from a suicide attempt, usually due to the lethality of male method choice.

Ethnicity. Ethnicity was included as a covariate because differences in suicide across ethnic groups are common. Among adolescents, American Indian and Alaskan Natives have the highest rates of suicide (CDC, 2010). In addition, other minority groups including Hispanic and Black adolescents have higher rates of suicide than White adolescents.
Socioeconomic status. Socioeconomic status was selected as a covariate because there is evidence that adolescents in lower income families have higher rates of suicide (Groholt, Ekeberg, Wichstrom, Haldorsen, 2000; Lewis, Johnson, Cohen, Garcia, & Velez, 1988). In these analyses, two separate proxies for socioeconomic status were used from an interview with primary caregivers regarding employment and income. Primary caregivers reported their total household income for the previous year on a scale of one to seven (1=less than $5,000, 2=$5,000- $9,999, 3=$10,000 - $19,999, 4=$20,000 - $29,999, 5=$30,000 - $39,999, 6=$40,000 - $49,999, 7 = more than $50,000). In the current sample, median income was in the $20,000-29,999 range. In addition, maternal education level was reported at wave one. Mothers reported which level of education they attained: “less than high school,” “some high school,” “finished high school,” “some more than high school” or “bachelor’s degree or more.” The majority of mothers in this sample reported achievement of some education past high school (30.8%) followed by less than high school (21.7%).

Thwarted Belongingness

Items contributing to the thwarted belongingness construct came from wave one of data collection. Joiner’s definition of thwarted belongingness was used to guide selection of items (Joiner, 2005) and appropriate items were selected based on face validity with this definition. Items were selected from various measures used at wave one. The following items from the Emotionality, Activity, Sociability, and Impulsivity Temperament Survey (Buss & Plomin, 1984) were answered by primary caregivers in all cohorts: “makes friends easily (reflected),” “prefers playing with others rather than
playing alone (reflected),” “when alone, child feels isolated.” Responses ranged from one (“uncharacteristic”) to five (“characteristic”). The following items from the Provision of Social Relations measure (Turner, Frankel, & Levin, 1983) were answered by study children in all cohorts: “I have at least one friend I can tell anything to,” “I feel very close to some of my friends,” “Even when I am with my friends, I feel alone (reflected).” Responses ranged from one (“very true”) to three (“not true”). Due to scaling difference on these items, all variables were transformed into z-score values.

**Acquired Capability to Self-Injure**

Items contributing to the acquired capability construct came from wave one of data collection. Again, items were selected because of their fit with Joiner’s definition of acquired capability to self-injure (2005).

Study children and parents in all cohorts responded to the following questions from the My Exposure to Violence Measure: “have you/has child ever seen or been present when somebody was shoved, kicked, or punched?” “have you/has child ever seen or been present when someone was attacked with a knife?” “have you/has child ever heard a gunshot?” (Buka, Selner-O’Hagan, Kindlon, & Earls, 1997; Selner-O’Hagan, Buka, Kindlon, Raudenbush, & Earls, 1998; Taylor, Zuckerman, Harik, & Groves, 1994). Responses to all of the above items were dichotomous: “yes” or “no.” Examination of the My Exposure to Violence Measure has shown sound psychometric properties, including high levels of reliability and construct validity (Selner-O’Hagan, Buka, Kindlon, Raudenbush, & Earls, 1998).
Additional items concerning the impulsivity aspect of the acquired capability to self-injure were selected from the Emotionality, Activity, Sociability, Impulsivity Temperament Measure (Buss, & Plomin, 1984). A parent (for cohorts 9, 12, and 15) answered the following questions using a one (uncharacteristic; not at all like child/self) to five scale (characteristic; very much like child/self): “child often acts on the spur of the moment,” “child generally seeks new and exciting experiences and sensations,” “child has trouble controlling his/her impulses.” Due to scaling differences on items, all continuous variables were transformed into z-score values.

Study children reported on their substance use by answering “yes” or “no” to the following items: “have you ever smoked cigarettes?” “have you ever taken or used smokeless tobacco?” “have you ever had a drink of beer, wine, wine cooler, or hard liquor—not just a sip or taste?” “have you ever used cocaine or coke in any form?” “have you ever used crack?” “Have you ever inhaled or sniffed anything like glue, gasoline, paint, or markers to get high?” “have you ever used marijuana or hashish?” “have you ever used psychedelic drugs or hallucinogens?” “have you ever used barbiturates without a doctor’s prescription?” (National Institute on Drug Abuse, 1991).

Finally, parents for cohorts 9, 12, and 15 reported on conflict with the study child in the past year via items on the Conflict Tactics Scale (Straus, Hamby, Finkelhor, Moore, & Runyun, 1998; Straus, Hamby, Boney-McCoy, & Sugarman, 1996). Items were answered on the following scale: 0= never, 1 = once, 2= twice, 3 = 3-5 times, 4 = 6-10 times, 5 = 11-20 times, 6 = more than 20 times. Items included: “how many times did you throw something at the child?” “How many times did you push, grab, or shove
child?” “How many times did you slap or smack child with an open palm?” “How many times did you kick, bite, or hit child with a fist?” “How many times did you try to hit child with something?” “How many times did you beat child up?” “How many times did you burn or scald child?”

**Behavior Problems**

Study participants in cohorts 9, 12, and 15 answered questions regarding their own internalizing and externalizing behaviors using the Youth Self Report (YSR; Achenbach, 1991) at wave two of data collection. Respondents answered questions about their behaviors in the previous six months. Responses ranged from two (very true or often true), one (somewhat or sometimes true), and zero (not true). At wave two, the 54 items on the YSR were divided into six subscales: withdrawn, somatic complaints, anxiety and depression, attention problems, aggressive behavior, and delinquent behaviors. In accordance with common practice, the first three subscales were used to measure internalizing problems while the latter three will be used to measure externalizing behaviors (Achenbach & Rescorla, 2001).

**Suicidal Ideation**

At wave three, the study child answered the following questions related to suicidal ideation: “have you thought about death or dying the last year?” “have you seriously thought about killing yourself in the last year?” “in the last year, did you have a plan for exactly how you would kill yourself?” Responses to all items were dichotomous, with study children answering “yes” or “no.” These questions were adapted
from the DISC-IV (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) by members of the PHDCN scientific group. In the current sample, 41.3 percent of adolescents (N = 640) endorsed having thoughts of death or dying, 5.8 percent (N = 90) reported serious thoughts of killing themselves, and 1.2 percent endorsed a suicidal plan (N = 18).

**Suicidal Behavior**

At wave three, the study child answered the following questions regarding suicidal behavior: “in the last year, have you tried to kill yourself?” “in the last year, did you see a doctor, go to an emergency room, or go into the hospital because of this [i.e. trying to kill yourself]?” Responses to these items were dichotomous, with study children answering “yes” or “no.” These questions were adapted from the DISC-IV (Shaffer, Fisher, Lucas, Dulcan, & Schwab-Stone, 2000) by members of the PHDCN scientific group. In the current sample, 3.6 percent of adolescents (N = 55) endorsed a suicide attempt, and 1.4 percent (N = 22) reported a suicide attempt that required medical care. (See Tables 1 and 2.)
Table 1. Correlations for Predictor Variables.

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Note: Variables names are Zey10=makes friends easily (reflected); zey31=prefers playing with others than alone (reflected); zps6=have at least 1 friend could tell anything to (reflected); zps9=feels very close to some friends (reflected); zey2=often acts on spur of moment; zey13=seeks new and exciting experiences; zey25=has trouble controlling impulses; sul10=ever smoked cigarettes; sul20=ever used smokeless tobacco; sul30=ever drank alcohol; sul7a2=ever used marijuana; sul8a2=ever used cocaine; sul10a=ever inhaled glue; sul11a=ever used other drugs; eb10=ever saw someone shoved/kicked/punched (child); eb17=ever saw someone attacked with knife (child); eb25=ever hear a gunshot (child); ea10=child ever see someone shoved/kicked/punched (parent); ea17=child ever see someone attacked with knife (parent); ea25=child ever hear gunshot (parent); zcu11=times threw something at subject; zcu12=# times pushed/grabbed subject; zcu13=times slapped subject; zcu14=# times kicked/bit/hit subject; zcu15=# times hit subject with something; zcu16=# times beat subject up; zcu17=# times burnt/scalded subject; whdwy2=YSR withdrawn subscale; somaty2=YSR somatization subscale; anxdpwy2=YSR anxiety/depression subscale; deliny2= YSR delinquiry subscale; agrey2= YSR aggression subscale
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Table 2. Means and Standard Deviations for Unstandardized Predictor Variables
CHAPTER 3

RESULTS

Attrition Analyses

Attrition analyses were conducted to compare those who were included in the analyses (N=1548) with those who were not (N=797). The large number of participants who were not included as part of these analyses had missing data on all suicide items. Results indicated that participants included in analyses had slightly higher income (Mean=3.99 not included, Mean=4.21 included; p = .01). Although statistically significant, this difference was not meaningful for these analyses as the effect size was minimal (d =.12). The two groups did not differ on any other variables, including gender, ethnicity, and mother education.

Bivariate Analyses

Bivariate analyses were conducted to investigate the relationships between predictor variables and the outcome variable. Results pertaining to both suicidal ideation and suicide attempt are reported here, although the suicidal ideation variable was the only outcome variable included in SEM analyses (more details on this alteration are presented below). Among the thwarted belongingness variables, two variables were positively associated with suicidal ideation. These variables were “prefers playing with others than alone (reflected),” t (1483) = 2.07, p =.04, and “has at least one friend could tell anything
to (reflected),” $t(1483) = 1.88, p = .05$. Several of the acquired capability to self-injure
variables were also positively associated with suicidal ideation. Among the impulsivity
items, these included two items “often acts on the spur of the moment,” $t(1483) = 2.60, p$
= .01, and “has trouble controlling impulses,” $t(1483) = 2.01, p = .04$. Both child and
parent endorsement of “ever saw someone shoved/kicked/punched” were positively
associated with suicidal ideation ($\chi^2(1) = 7.60, p = .01$ and $\chi^2(1) = 8.43, p < .001$,
respectively). Both child and parent endorsement of “ever saw someone attacked with a
knife” were positively associated with suicidal ideation ($\chi^2(1) = 5.44, p = .02$ and $\chi^2(1) =$
$3.83, p = .05$, respectively). Endorsement of three substance use variables were positively
associated with suicidal ideation: “ever smoked cigarettes,” $\chi^2(1) = 31.54, p < .001$; “ever
used drank alcohol,” $\chi^2(1) = 14.16, p < .001$; “ever used marijuana,” $\chi^2(1) = 13.49, p <$
$.001$.

Concerning the suicide attempt variable, none of the thwarted belongingness
items were significantly related to suicide attempt. Among the impulsivity items,
endorsement of “often acts on the spur of the moment” was positively associated with
suicide attempt $t(1519) = 2.68, p = .01$. Both parent and child report of “ever saw
someone shoved/kicked/punched” was positively associated with suicide attempt ($\chi^2(1) =$
$11.52, p = .02; \chi^2(1) = 18.75, p = .001$). In addition, both parent and child report of “ever
saw someone attacked with a knife” was associated with suicide attempt ($\chi^2(1) = 22.04,$
$p < .001; \chi^2(1) = 20.30, p < .001$). Finally, both parent and child reports of “ever heard a
gunshot,” were related to suicide attempt ($\chi^2(1) = 10.10, p = .04; \chi^2(1) = 18.58, p =$
$.001$). Among the substance use variables, two items were positively associated with
suicide attempt, including “ever smoked cigarettes,” ($\chi^2 (1) = 30.22, p < .001$) and “ever drank alcohol,” ($\chi^2 (1) = 17.34, p = .002$).

All of the internalizing behavior problem subscale variables were positively associated with suicidal ideation and suicide attempt: including withdrawn ($t(1298) = 1.07, p < .001$; $t(1298) = 2.97, p = .01$, respectively), somatization ($t(1298) = 1.22, p < .001$; $t(1298) = 3.65, p < .001$), and anxiety/depression ($t(1298) = 2.85, p < .001$; $t(1298) = 4.68, p < .001$). Likewise, all externalizing behavior problem variables were positively associated with suicidal ideation and suicide attempt: attention ($t(1298) = 1.5, p < .001$; $t(1298) = 3.16, p = .002$), delinquency ($t(1298) = 1.07, p < .001$; $t(1298) = 3.62, p < .001$), and aggression ($t(1298) = 2.01, p < .001$; $t(1298) = 4.52, p < .001$).

Among the covariate control variables, both gender and age cohort were significantly associated with suicidal ideation. For gender, female participants were more likely to report suicidal ideation compared to males, $\chi^2 (1) = 18.23, p < .001$. Members of the older cohort (cohort 15) were also more likely to report suicidal ideation compared to members of cohort 9, $\chi^2 (2) = 22.41, p < .001$. For suicide attempt, only gender held a significant association, with female participants more likely to report suicide attempt compared to males, $\chi^2 (1) = 22.35, p < .01$. 
Aim 1 Analyses

Investigate the underlying structure of suicidality using confirmatory factor analysis.

Hypothesis 1. I predict that the CFA will show the underlying structure of suicidality to include unique yet correlated factors of suicidal ideation and suicidal behavior.

Hypothesis 1a. Items regarding thoughts of death, serious thoughts of killing self, and suicide plan will load on a first factor of suicidal ideation.

Hypothesis 1b. Items regarding an attempt to kill self and medical attention as the result of a suicide attempt will load on a second factor of suicidal behavior.

Aim 1 sought to investigate the underlying structure of suicidality using five suicidality items. Confirmatory factor analysis (CFA) was initially used to investigate the underlying factor structure of suicidality by comparing my hypothesized model with an alternative model. It was hypothesized that the suicidality items would indicate two latent constructs of suicidal thoughts and suicidal behavior.

Unfortunately, the hypotheses were unable to be tested in this case, as the confirmatory factor analysis consistently resulted in errors regarding an empty cell of the bivariate table. This error occurred because of the non-independence of the variables; that is, there was significant overlap in the percentage of participants who thought of death and also thought of suicide, and those who thought of suicide and also attempted suicide. Additionally, skip rules used in the administration of the questionnaire data precluded
participants who denied suicide ideation from answering any further items, including any relating to suicide attempts.

Based on these results, I proceeded without statistically considering the underlying structure of suicidality. Considering the skip rule problems, I made the decision to proceed with analyses using the approach regularly used in this field of research, including only the two manifest variables regarding (1) ever thinking seriously of suicide and (2) ever attempting suicide.

**Aim 2 Analyses**

**Investigate the structure of the constructs of thwarted belongingness and acquired capability for to self-injure.**

Aim 2 sought to determine the underlying structure of the thwarted belongingness and acquired capability constructs of the IPT. Similar to Aim 1, I planned to conduct confirmatory factor analysis (CFA) in order to investigate the nature of the desire for suicide and the ability for suicide. In primary consideration of this aim, I ran one confirmatory factor analysis that included all variables hypothesized to be a part of either thwarted belongingness or acquired capability. This original analysis yielded a model that did not fit the data well. Instead of continuing investigation of this more-involved model, I decided to run separate exploratory factor analyses for the thwarted belongingness variables and the acquired capability variables. This method aimed to simplify the process.

All factor analysis models were evaluated based on chi-square values, Comparative Fit Index (CFI), and Root Mean Squared Error of Approximation
RMSEA). A smaller chi-square statistic indicates a better fit, although the chi-square statistic may be sensitive to flaws in the model since the current sample size is quite large (Hancock & Mueller, 2011). CFI compares the current model fit to a null model; a CFI larger than .95 indicates excellent fit while models with CFI values of .90 or larger indicate good fit (Hancock & Mueller, 2011). RMSEA is a popular model fit index. Smaller RMSEA models (<.06) indicate excellent fit (Hancock & Mueller, 2011). Thus, the model with the best fit was expected to yield a significantly smaller chi-square statistic, a larger CFI value, and a smaller RMSEA value, compared to the alternative model.

**Hypothesis 2. Items regarding feelings of connection/disconnection will unidimensionally load on one factor of thwarted belongingness.**

The first two CFAs investigated the structure of thwarted belongingness. One CFA tested my hypothesized model, such that all items loaded onto one latent construct of thwarted belongingness. The second CFA tested an alternative model of thwarted belongingness with a two-dimensional structure consisting of loneliness and sociability (two facets of thwarted belongingness; see Figure 2). My hypothesis was not supported since the unidimensional solution yielded a poor model fit ($\chi^2 (9) = 164.06, \text{CFI} = .60, \text{RMSEA} = .11$). The two-factor model, on the other hand, had a comparatively slightly better although the model fit was still poor ($\chi^2 (8) = 139.80, \text{CFI} = .66, \text{RMSEA} = .10$.

In order to fully examine the two-factor model, I examined the factor loadings for each item and found that two items had very low loadings (below a cutoff value of .2). These items (“feels isolated when alone” and “even with friends, feels alone”) were
subsequently dropped from analyses. As noted, the four variables that remained in the
analysis loaded well onto two factors. However, these factors were distinguished by
informant (parent report and child report of belongingness), and not by sociability and
loneliness as potentially expected. As a result, the finalized thwarted belongingness CFA
with two factors by informant yielded excellent model fit ($\chi^2 (1) = 1.56$, CFI = .99,
RMSEA = .02). “Makes friends easily [reflected]” and “prefers playing with others than
alone [reflected]” loaded onto one factor of parent report while “I have at least one friend
I could tell anything to [reflected]” and “I feel very close to some friends [reflected]”
loaded onto a second factor of child report. These two factors—heretofore referred to as
the latent variables “parent report of thwarted belongingness” and “child report of
thwarted belongingness”—were used in all subsequent analyses.

**Hypothesis 3. Items regarding painful or provocative experiences will
unidimensionally load on one factor of acquired capability to self-injure.**

Next, I conducted a CFA to investigate the underlying structure of the acquired
capability to self-injure. I hypothesized that all items would load onto one latent construct
of acquired ability to self-injure, and the first CFA tested this model. The alternative CFA
model tested if the ability for suicide may be better conceptualized as four latent
constructs of impulsivity, substance use, physical abuse, and violence. Models were again
compared based on model fit (smaller chi-square, larger CFI, smaller RMSEA).

Comparison of models did not support my original hypothesis concerning a
unidimensional structure, as the one-factor solution had a poor model fit ($\chi^2 (75) =
1316.56$, CFI = .57, RMSEA = .10). The CFA with four factors, on the other hand, did
have a more adequate model fit ($\chi^2 (74) = 461.53$, CFI = .87, RMSEA = .06). The four factors corresponded to those potentially expected through the alternative model: physical abuse, substance use, violence, and impulsivity.

However, since these fit indices did not quite reach the range of good fit, I decided to further investigate how to improve this solution. Correlations and item loadings were inspected further to see if improvements could be made in model fit. Since the physical abuse and substance use factors were not correlated ($r=.004$, $p=.86$), I set the correlation between these variables to zero to save a degree of freedom. In addition, standardized loadings showed that the item “number of times burnt/scalded subject” had a very low loading (0.11, $p = .16$) so it was removed from analyses. Finally the variable “ever used crack” was not included because no participants endorsed this item. Further, modification indices revealed that model fit could be improved if several pairs of error terms were correlated. Criteria for decisions regarding which error terms to correlate included determining that the variables were on different factors and determining methodological justification. The following correlations reflect variables that load on separate factors. In addition, I felt comfortable correlating these error terms since I originally anticipated that these variables would be loading unidimensionally on one factor of acquired capability.

- “ever used cocaine” correlated with child report “ever saw someone shoved/kicked/punched”
- “ever used cocaine” correlated with child report “ever hear a gunshot”
- “number of times beat child up” correlated with “ever used smokeless tobacco”
The four-factor acquired capability CFA was re-analyzed after these error terms were correlated in the model. The finalized acquired capability CFA with four factors of physical abuse, impulsivity, substance use, and violence yielded a good model fit ($\chi^2 (68) = 336.88$, $CFI = .91$, $RMSEA = .05$).

All of the results of abovementioned series of CFAs informed the conceptual model that was tested in aim 3. Thus, the originally proposed model required alterations, including the inclusion of two latent variables of parent and child report of belongingness and four latent variables related to acquired capability to self-injure. In addition, outcomes included only observed, dichotomous suicide ideation and suicide attempt data.

**Aim 3 Analyses**

**Investigate the proposed conceptual model.**

Aim 3 focused on testing the proposed conceptual model in order to investigate proposed pathways of risk for suicidality. The original proposed model described longitudinal pathways of suicide risk including the latent variable constructs of thwarted belongingness and acquired capability to self-injure as well as internalizing and externalizing behavior problems as mediating variables. However, the full model significantly changed from the proposed model due to the results of analyses of previous aims. The outcome variable was modified to include two variables of suicidal ideation
and suicide attempt, instead of a latent suicidality variable. Instead of a unidimensional thwarted belongingness variable, the new model includes two separate latent variables measuring thwarted belongingness as reported by primary caregivers and study children. Likewise, the acquired capability to self-injure is represented by the presence of four latent variables instead of a unidimensional construct. These variables included physical abuse, substance use, violence, and impulsivity. The revised model is illustrated in Figure 3. Hypotheses for aim 3 were altered significantly considering the results of aims 1 and 2; these changes are reflected in specific results sections below.

**Hypothesis 4. The IPT model including indirect links with behavior problems will fit the data well and better than several alternative models.**

Structural equation modeling (SEM) was used to test the modified conceptual model. SEM is a powerful way to investigate the relationships among observed and latent variables, and allows testing of many of the proposed relationships in the model simultaneously. In a series of SEM analyses, the proposed model (see Figure 3) was compared to an alternative model (Figure 4) which excluded the relationships with internalizing and externalizing behavior problems.

Similar to aims 1 and 2, these models were compared with each other based on assessment of fit indices, including chi-square statistic, CFI, and RMSEA. While many models may fit the data well, my hypothesis was that the modified proposed model would best fit the data (hypothesis four). I expected this hypothesis to be confirmed if analyses
Figure 3. Modified and tested conceptual model.
Figure 4. Alternative model.
for this model revealed a smaller chi-square, a larger CFI, and a smaller RMSEA compared to the alternative model.

As a first step in analyzing the full model, I confirmed that the measurement model fit the data well ($\chi^2 (105) = 415.30$, CFI = .91, RMSEA = .04). The measurement model tested all of the confirmatory factor analyses (i.e. acquired capability and thwarted belongingness) in the same model without any direct or indirect associations specified.

As an additional test, the measurement model was reanalyzed after setting the correlations between the thwarted belongingness and acquired capability latent variables to zero because these constructs are not theoretically correlated in the IPT. However, these specifications reduced the measurement model fit. Further consideration resulted in the decision to allow these variables to correlate with each other, as more recent empirical evidence suggests a relationship between the thwarted belongingness and acquired capability constructs (van Orden, Witte, Gorden, Bender, Joiner, 2008).

Next, I tested the full structural model by specifying direct effects in the model. The maximum likelihood process terminated before convergence, with an error message stating that the maximum number of iterations had been reached. Byproduct messages of parameter specification problems and a reduction in observations were also reported, reflecting that the process terminated before all parameters could be fit (and therefore reduced the count of observations, which are a function of the number of parameters). Following guidelines by Muthen and Muthen (1998-2012), this problem was addressed by first increasing the maximum number of iterations. This solution was unsuccessful and indicated that the nonconvergence occurred because a fit could not be found regardless of
the number of iterations. Again following the guidelines by Muthen and Muthen, this failure of convergence was then addressed by examination of the variable distribution characteristics. This review of variables did not result in identification of obvious problem variables. In order to simplify the SEM process and address the convergence problem, I finally proceeded through testing the structural model in a step-like fashion, examining simple models one at a time. Multiple models were tested, each incorporating an additional pathway. The models tested were as follows (see Table 3):

Table 3. *Fit Index Comparisons for Structural Models.* N=1548

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</table>

- The first model included the measurement model plus direct effects between the outcome variables (suicidal ideation and suicide attempt) and the thwarted belongingness latent variables (parent and child). This model did not include direct effects related to acquired capability variables, control variables, direct effects related to the behavior problem variables, or any indirect effects. Results indicated errors suggesting that the covariate matrix was not positive definite, indicating a likely problem with the data and/or specification of the model. In
addition, the estimates of the parent latent variables were small and negative. To better understand why the model was not converging, and what could potentially be the cause of this problem, I proceeded to run additional models.

- The second model therefore excluded the parent variable. However, results still indicated errors regarding the covariance matrix, particularly in regards to the suicide attempt outcome variable.

- Despite multiple attempts at new models, it became clear that there were consistent issues with the suicidal attempt variable, so I examined models testing suicidal thoughts and suicide attempts separately. This effort resulted in the finding that the convergence issues were due to the very low base rate of endorsement of the suicide attempt variable (N = 55; 3.6%). As a result of the various unalterable errors associated with the various suicidality items, it was apparent that the feasibility of meaningful analysis was unlikely if the suicide attempt variable was included. Subsequent analyses therefore focused only on the suicidal ideation variable.

- The third model re-introduced the parent variable but excluded the suicide attempt variable. Model fit was adequate (CFI=.89, RMSEA=.05), but the estimates of the parent latent variable remained negative.

- Model four therefore excluded the direct effect between the parent variable and the suicide ideation outcome variable. Results indicated that the model did not change at all (CFI=.89, RMSEA=.05), so subsequent analyses continued with the parent direct effects included.
• The fifth model was similar to the third model while also adding in direct effects of the acquired capability variables. Control variables, behavior problem variables, and indirect effects were not included. Model fit was improved and represented a good fit (CFI = .90, RMSEA = .04). This model represented the one proposed alternative model (see Figure 4).

• In order to continue testing model in simple steps and to catch potential model errors, model six built on model five by incorporating the direct effects of suicide ideation on externalizing and internalizing latent variables. This had a minimal impact on the fit indices (CFI = .91, RMSEA = .04).

• Model seven built on model six by adding in direct effects of the internalizing and externalizing variables on child, impulsivity, substance use, violence, and physical abuse. Fit indices were not substantially affected (CFI = .91, RMSEA = .04).

• Model eight included all pathways of model eight, plus the control variables (which were regressed on the outcome variables). Errors included that one of the cohort variables had a variance of zero. In addition, the number of observations significantly declined, and variables correlated to one. I reran the model using dummy cohort variables, but received the same errors. I reran this model again excluding the cohort variable, with the same results and an additional error concerning the suicide ideation variable from wave two. Additional analyses of this model without the cohort variable increased the number of observations but all other errors remained.
• For model nine I removed all control variables and added in all indirect effects. The model converged and model fit was good (CFI=.91, RMSEA=.04).

• Once all direct and indirect effects were incorporated in model nine, several subsequent models were examined in which the covariate control variables were added. All of these attempts produced a reduction in model fit.

• After examination of all of the above models, it was determined that the model that best fit the data was model nine. This model incorporated all of the proposed direct and indirect effects while maintaining good model fit.

**Direct Effects**

Hypotheses 4a and 4b concerned direct links between predictor variables and suicidality. As mentioned above, these hypotheses were altered as a result of the CFAs conducted in aim two. Hypothesis 4a originally stated that thwarted belongingness would longitudinally predict suicidality. This hypothesis assumed that the variables connected to thwarted belongingness would yield a unidimensional underlying structure. Since these analyses actually suggested a two-factor structure of parent report and child report of thwarted belongingness, the revised hypothesis 4a was changed to:

**4a. Parent report and child report of thwarted belongingness will each longitudinally predict suicidality.**

Analysis of direct effects did not reveal a statistically significant relationship between either child report of thwarted belongingness and suicidal ideation (regression estimate = .09, p = .27) or parent report of thwarted belongingness and suicidal ideation (regression estimate = .05, p = .53).
Similarly, hypothesis 4b, which proposed that a latent acquired capability variable would predict suicidality, was altered due to the four factor solution that was found:

4b. Variables of impulsivity, physical abuse, substance use, and violence will each longitudinally predict suicidality.

Of the four latent variables, only increased substance use predicted suicidal ideation over time (regression estimate = .43, \( p < .001 \)). Statistically significant associations were not present for impulsivity (regression estimate = .08, \( p = .29 \)), physical abuse (regression estimate = .08, \( p = .24 \)), or violence (regression estimate = .05, \( p = .62 \)).

Although original hypotheses were not made regarding direct links between behavior problems, the other predictor variables, and suicidal ideation, I decided to explore these associations. Substance use at wave one predicted internalizing behavior problems at wave two (regression estimate = .12, \( p = .04 \)). Multiple wave one variables predicted externalizing behavior problems at wave two, including parent report of thwarted belongingness (regression estimate = -.10, \( p = .04 \)), substance use (regression estimate = .42, \( p < .001 \)), violence (regression estimate = .16, \( p = .005 \)), and physical abuse (regression estimate = .10, \( p = .03 \)). Regarding the outcome variable, both substance use (regression estimate = .43, \( p < .001 \)) and internalizing behavior problems (regression estimate = .32, \( p = .001 \)) were directly predictive of suicidal ideation. Figure 5 illustrates the statistically significant direct effects described above.
Figure 5. Direct and indirect effects in model.
**Indirect Effects**

There were twelve indirect effects in the structural model. Hypotheses regarding these relationships were reflected in hypotheses 4c, 4d, 4e, and 4f. Similar to changes to hypotheses 4a and 4b, these hypotheses were altered based on the results of aim 2.

**4c. Internalizing behavior problems will mediate the relationship between parent report of thwarted belongingness and suicidality.** Internalizing behavior problems will mediate the relationship between child report of thwarted belongingness and suicidality.

No statistically significant indirect effects were observed between these variables. Internalizing behavior problems did not mediate the relationship between parent report of thwarted belongingness and suicidal ideation (regression estimate = -.04, p = .18) or child report of thwarted belongingness and suicidal ideation (regression estimate = .02, p = .21).

**Hypothesis 4d. Internalizing behavior problems will mediate the individual relationships between (i) impulsivity, (ii) physical abuse, (iii) substance use, (iv) violence and suicidality.**

Results showed a mediating role of internalizing behavior problems between substance use of suicidal ideation (regression estimate = .04, p = .05; See Figure 5). Other results where statistically non-significant; internalizing behavior problems did not mediate the relationships between suicidal ideation and impulsivity (regression estimate = .02, p = .37), physical abuse (regression estimate = .03, p = .24), or violence (regression estimate = .03, p = .45).
Hypothesis 4e. Externalizing behavior problems will mediate the relationship between parent report of thwarted belongingness and suicidality. Externalizing behavior problems will mediate the relationship between child report of thwarted belongingness and suicidality.

No statistically significant indirect effects were observed between these variables. Externalizing behavior problems did not mediate the relationship between parent report of thwarted belongingness and suicidal ideation (regression estimate = .03, p = .22) or child report of thwarted belongingness and suicidal ideation (regression estimate = -.01, p = .54).

Hypothesis 4f. Externalizing behavior problems will mediate the individual relationships between (i) impulsivity, (ii) physical abuse, (iii) substance use, (iv) violence and suicidality.

Results did not indicate any statistically significant relationships among these variables. Externalizing behavior problems did not mediate the relationship between impulsivity and suicidal ideation (regression estimate = -.03, p = .23), physical abuse and suicidal ideation (-.04, p = .20), substance use and suicidal ideation (regression estimate = -.09, p = .12), or violence and suicidal ideation (regression estimate = -.06, p = .17).
CHAPTER 4

DISCUSSION

This study sought to investigate a proposed model of suicide risk in adolescents using the guiding constructs of the Interpersonal Psychological Theory (Joiner, 2005). While the findings were not generally supportive of the proposed comprehensive model as a whole, two latent constructs were important longitudinal predictors of adolescent suicidal ideation. Of interest, internalizing behavior problems mediated the longitudinal relationship between early adolescent substance use and suicidal ideation in later adolescence. In addition, this study advanced current research by investigating the underlying structure of the thwarted belongingness and acquired capability constructs of the IPT in adolescents.

The Underlying Structure of Suicidality

The goal of aim one was to conceptualize suicidality as a latent variable and subsequently determine its underlying structure. I hoped to use the variables available in the dataset (i.e. thoughts about death/dead people, thought seriously of suicide, suicide plan, attempted suicide, and needed medical attention after a suicide attempt) to examine if suicide was indeed a unidimensional structure with variables contributing to the construct, or if it was multidimensional, with possible constructs consisting of suicidal
thoughts and suicidal behaviors. However, problems with the data distributions of key variables prevented successful execution of the proposed analyses for this aim.

The troubles encountered in this study are not novel. Many studies in the past have had to rely on single dichotomous suicide items as their outcome variables. Many times, this single variable relates to suicidal thoughts/ideation and not to suicidal behaviors or attempts. In the past, there have been several explanations for this limitation. Notably, suicide attempt is a lower base rate behavior compared to suicidal ideation, and so data on suicidal thoughts are more readily available for analysis. The data in this study were consistent with this trend; only 55 participants (3.6%) endorsed a suicide attempt in the past year, while 90 participants (5.8%) reported suicidal ideation in the past year. The other main issue in the current study was one of non-independence. As noted earlier, suicidal ideation is often a precursor to suicidal behavior, and thus the participants who endorsed suicide attempt had to have also reported suicidal ideation. Unfortunately, this measurement issue is likely to continue plaguing suicide researchers.

Due to the lack of findings regarding Aim 1, it is still unclear whether suicide can be conceptualized as a unidimensional concept. If it were, we would be able to extrapolate that those adolescents who are at risk would be at risk across suicidal domains. At this point, the assumption is questionable. Taken together, many studies have found similar risk factors (e.g. violence, Bossarte, Simon, & Swahn, 2008; alcohol use, Swahn & Bossarte, 2007; childhood abuse, Brezo, Paris, Vitaro, Hebert, Tremblay, & Turecki, 2008; bullying, Hay & Meldrum, 2007) to predict both suicidal ideation and suicide attempt. This is not sufficient evidence, however, to show that suicidal ideation is
not a unique construct apart from suicide attempt. By nature, suicide ideation is less severe and also more prevalent than suicide attempts. We know that many people who have suicidal thoughts go on to make a suicide attempt. However, the large majority do not, indicating a fundamental difference in risk factors for these constructs (CDC, 2012).

**The Underlying Structure of Thwarted Belongingness**

The first part of aim 2 focused on examining the structure of thwarted belongingness. Findings generally supported that thwarted belongingness is not a unidimensional construct, as originally hypothesized. However, the multidimensional structure revealed in the factor analysis was unique in that it was also not one of the anticipated alternative models. The suggested alternative model included latent constructs of loneliness and sociability. However, the variables associated with thwarted belongingness were in fact best captured by two latent constructs: self-reported thwarted belongingness and primary caregiver-reported thwarted belongingness. It is interesting to note this differentiation, although the items were not identical for participants and primary caregivers. Participants self-reported regarding (1) having at least one friend to tell anything to and (2) feeling very close to some friend. Primary caregivers reported if the child (1) makes friends easily and (2) prefers playing with others than alone. At face value, these items seem very similar to each other and seem to represent a broad sense of belongingness. On closer inspection, it is possible that the items represented different underlying concepts. That is, items reported on by the participants were more reflective of strong, quality friendship, even if the child has only one friend. The primary caregiver items, on the other hand, seemed to be reflective of sociability on a broader level. For
instance, there is a difference between making friends (plural) easily and having one friend that one feels is a confidant. Further, it is possible that the data separated this way due to inherent issues in multiple informant data. Parents are likely to only witness their children’s level of sociability or belongingness in certain contexts, and thus their perception of these traits may differ from the child’s own perception. In fact, previous research on multiple informants has shown a lack of strong agreement across informant report of behavior problems (Bird, McConaughy, & Howell, 1987; Grills & Ollendick, 2003). Attempts at combining data from multiple sources have shown to produce similar results in terms of predictive validity to single informant data, unless specific and careful weighting procedures are considered (Bird, Gould, & Staghezza, 1992; van Dulmen & Egeland, 2011). Thus, overall, the differentiation between these two constructs could be due to the difference in informant or a underlying conceptual difference in the items.

The Underlying Structure of the Acquired Capability to Self-Injure

Similar to the thwarted belongingness results, the pattern of results related to the acquired capability to self-injure were not as expected. Four latent variables of physical abuse, substance use, violence, and impulsivity best fit the data. These four constructs were somewhat anticipated, as they were introduced as the originally proposed alternative model. The results suggest that each of these constructs works as an independent risk factor in the model instead of contributing to the overall construct of acquired capability to self-injure. Taken together, then, these results do not support this aspect of the IPT nor that acquired capability as a whole increases risk for suicide. Independently, each of the four constructs has already been supported as risk factors for suicide; however, this study
did not give additional support to the majority of these links (with the exception of substance use).

**Conceptual Model**

Although the full structural model provided a good fit for the data, it was clear there was very little evidence found to support the IPT as a whole. Figure 5 illustrates the overall structural model, with all predictor variables and internalizing and externalizing behavior problems included. When all of the risk factors were examined together in this comprehensive model, only one of the latent variables related to acquired capability to self-injure (substance use) longitudinally predicted risk for suicidal ideation. Neither of the thwarted belongingness related constructs and none of the other acquired capability related constructs were longitudinally associated with suicidal ideation. Among the various predicted pathways of risk, one main pathway stands out: internalizing behavior problems mediated the association between substance use and suicidal ideation.

The statistically significant results concerning substance use and internalizing behavior problems are expected and consistent with previous empirical findings. Internalizing behavior problems have repeatedly been associated with suicidality in cross-sectional and longitudinal studies (e.g. Prinstein, Boergers, Spirito, Little, & Grapentine, 2000; Riesch, Jacobson, Sawdy, Anderson, & Henriques, 2008; Jones, Schinka, van Dulmen, Bossarte, & Swahn, 2011). In addition, substance use is consistently seen as a risk factor for suicide (e.g., CDC, 2006; Swahn & Bossarte, 2007). However, the specific pathway from substance use to internalizing behavior problems to suicidal ideation is a novel and interesting finding. It is important to reiterate that substance use was measured
at wave one, when participants were only approximately 12 years old. Substance use at this early of an age has been studied and linked to more negative outcomes compared to adolescents who initiate substance use at a later age (e.g. after age 13) (Bossarte & Swahn, 2011). The results in this study support that research, since the early substance users were more likely to report both internalizing and externalizing behavior problems at wave two (when the average age was almost 14 years) and suicidal ideation at wave three (average age 16.5). While it was expected that both types of behavior problems would potentially mediate the relationship between substance use and suicidal ideation, only the internalizing behavior problems pathway was supported. In consideration of this pathway, it is possible that the early age substance use could have been related to underlying mood symptomatology, such that substance use was used as a coping mechanism. Subsequently, these negative emotions were demonstrated by increased internalizing behavior problems over time and ultimately thoughts of killing oneself.

Figure 5 also illustrates the lack of other statically significant relationships in the structural model. While many of the expected links between the latent risk constructs and suicidal ideation were not supported, some relationships did stand out as important. Of note, all of the constructs related to the acquired capability to self-injure (physical abuse, impulsivity, substance use, and violence) were directly predictive of the externalizing behavior problems construct. Interestingly, parent report of thwarted belongingness was also related to externalizing behavior problems, such that lower levels of thwarted belongingness (i.e. less loneliness) were predictive of increased externalizing problems. Although problems with peer relations (such as peer rejection) are usually associated with
increases in externalizing behavior problems (e.g. Hymel, Rubin, Rowden, & LeMare, 1990), there is some indication that patterns of peer relationships and sociability place children at risk for delinquency and aggression (Kupersmidt, Burchinal, and Patterson, 1995). Considering that the participants in this study came from an urban, lower-income area, it is possible that increased belonging or “fitting in” is characterized by taking part in delinquent activities. While it makes sense that these wave one risk factors longitudinally predicted externalizing behavior problems, it is unclear why externalizing behavior problems did not predict suicidal ideation over time. Previous empirical evidence has supported the association between externalizing behavior problems and suicidality, so it is necessary to consider other factors that might have been at work in this specific sample (e.g. Prinstein et al., 2000; Lewinsohn, et al., 1994). For instance, although this sample was not “high risk” in terms of levels of reported suicidality, other high risk behaviors related to delinquency or violence may have been more prevalent in these adolescents. Therefore, increased levels of externalizing behavior problems at wave two may have represented more normalized functioning and may not have necessarily been maladaptive (in terms of suicidality) in the long-term.

Finally, the lack of relationships between most of the acquired capability to self-injure constructs (physical abuse, impulsivity, violence) and suicidality may be accounted for through a developmental consideration of the IPT. Joiner (2005) claimed that the acquired capability to self-injure results from repeated exposure to painful and provocative experiences. It is the repetition of these experiences that causes habituation to the fear of pain and self-harm. By nature of their age, the young adolescents in this
study have not had as many opportunities for these experiences. Therefore, the habituation that Joiner describes in adults may not be developed in adolescents; this fact brings to question the developmental appropriateness of the acquired capability to self-injure construct in children and adolescents.

**Conclusion**

Two main conclusions follow from the results of this study. First, there was no substantive evidence for the IPT in these analyses using adolescent data. Specifically, there was little evidence to support the validity of the IPT predictor constructs of thwarted belongingness and the acquired capability to self-injure. Examination of variables related to thwarted belongingness did not demonstrate an underlying unidimensional structure. Instead, analyses revealed a multidimensional latent structure defined by type of informant (self and primary caregiver report). Further, the latent structure of acquired capability to self-injure construct was not unidimensional. Analyses of variables related to the acquired capability to self-injure resulted in four latent constructs including physical abuse, substance use, impulsivity, and exposure to violence. Finally, latent structure of the suicidality construct was not indicated. Rather, persistent convergence problems during analyses resulted in use of only the dichotomous suicidal ideation variable. In conjunction with latent constructs of internalizing and externalizing behavior problems, the revised constructs related to thwarted belongingness and acquired capability to self-injure did not work together well in a model longitudinally predicting suicidal ideation. These findings suggest that—at the very least—major modifications to the IPT would be needed in order to have value in the prediction of adolescent suicidality.
Second, while the overall proposed model fit the data well in this study, few variables were directly predictive of risk for suicidal ideation. Specifically, substance use and internalizing behavior problems longitudinally predicted suicidal ideation, but other individual components of the model were not equally supported. These findings give support for the fact that certain specific risk factors or pathways of risk may, in fact, be more important in their prediction of suicide.

**Strengths**

These findings are consistent with other previous studies linking various psychosocial risk factors with suicidal ideation (Jones, Schinka, van Dulmen, Bossarte, & Swahn, 2011; Riesch, Jacobson, Sawdy, Anderson, & Henriques, 2008; Swahn & Bossarte, 2007; Bossarte & Swahn, 2011). However, this study expands upon the current literature in several important ways. Most notably, this research is—to my knowledge—the first to longitudinally test a comprehensive, integrated model of adolescent suicidality. Previous studies have used simple models focusing on single or few variables. The current study included several variables but also conceptualized their contributions to suicide risk simultaneously in the same model. A large part of the current model was based on a widely-used and empirically supported theory of adult suicidality (i.e. IPT) that was yet to be applied to adolescents. However, even this model was limited by the practice of choosing single variables (albeit systematically) suggested to measure one of the constructs of thwarted belongingness or acquired capability to self-injure. In this study, thwarted belongingness and acquired capability to self-injure were conceptualized as latent constructs, allowing for investigation of their underlying structure.
analysis results revealed that, in fact, these constructs were not unidimensional and instead consisted of multiple latent constructs. This suggests that while the IPT construct components are related to each other in a face valid way, they should not be treated equally or thought of as each contributing to a whole.

Finally, it is important to again note the ethnic composition of this sample. While previous studies have been mostly homogenous, the majority of this sample was made up of Hispanic and Black adolescents living in a lower socioeconomic status area. Due to these characteristics, it was initially expected that suicide rates would be higher compared to the national trends. Nationally, approximately 14 percent of adolescents reported suicidal ideation in the past year and approximately six percent of adolescent reported suicide attempt in past year. National statistics further suggest that Black adolescents are more likely to make a suicide attempt compared to White, non-Hispanic adolescents (CDC, 2012). Researchers have also suggested that suicide rates are increased for low-income families (Groholt, Ekeberg, Wichstrom, Haldorsen, 2000; Lewis, Johnson, Cohen, Garcia, & Velez, 1988). To the contrary, however, adolescents in the current sample were at lower risk with endorsed rates of suicidal ideation and suicide attempt even lower than national averages (5.8% and 3.6% respectively). In addition to the unexpectedly lower level of occurrence of suicidality, ethnicity may also be involved in the notably limited number of statistically significant pathways of risk. Several other studies have found links between included predictor variables and suicide that did not hold up in this study. For example, there is robust research associated violence exposure with suicidal ideation in adolescents, yet this link was unsupported (e.g. van Dulmen,
Mata, Schinka, Klipfel, Claxton, Bossarte, & Swahn, 2012; Bossarte, Simon, & Swahn, 2008). The fact that previously well-supported variables included in this study did not predict suicidal ideation over time is suggestive of a potentially important cultural component that should be of focus in future studies.

**Limitations**

Despite the merit of this study and its contribution to the field of adolescent suicidality, it is not without its limitations. Primarily, the overarching purpose of this study was to examine the IPT in adolescents; this was only partially accomplished. I was able to test the constructs of thwarted belongingness and acquired capability to self-injure, but the construct of perceived burdensomeness was notably absent from this study. This absence is related to another limitation regarding the use of an existing dataset. This methodology allowed only for inclusion of available items, and items that met operational definition criteria for perceived burdensomeness were unavailable. Likewise, the other constructs in the model were restricted by the available items in the dataset. For instance, the acquired capability to self-injure construct would have ideally been improved through the use of variables measuring exposure to violence/abuse in other relationships, such as romantic ones. The items used to make up the constructs are by no means exhaustive. Others researchers have used numerous and differing variables, and it is suspected that this trend will continue.

Further, convergence problems restricted the use of control variables in the full structural model. In the more basic models, their inclusion failed to improve model fit, despite the fact that bivariate analyses showed that both gender and age were
significantly related to the suicidal ideation outcome variable. The inability to specify these variables in the more comprehensive model limits the ability to make clear-cut conclusions from these results.

Finally, the final model only included suicidal ideation and not suicidal behavior as an outcome measure. This outcome variable was also dichotomous and thus introduces weaknesses regarding limited information. These two issues (i.e. using only a dichotomous ideation variable as an outcome measure) have been pervasively problematic in this field of research. I attempted to overcome this issue in the current study but was unsuccessful because of (1) non-independence issues with the suicidal behavior items and (2) an unacceptable outcome to the confirmatory factor analysis which attempted to conceptualize suicidal ideation as a latent variable.

**Practical Significance**

Because suicide is an important public health concern, studies concerning possible predictors of suicide are critical for prevention efforts. In the case of this study, a major contribution was the comprehensive test of two of the IPT’s constructs. The IPT has been a guiding force in both research and prevention efforts in adults in the past several years. In fact, several measurement tools have been derived from the IPT (e.g. Acquired Capability for Suicide Scale; Interpersonal Needs Questionnaire). These prevention and measurement efforts have been well-founded theoretically.

The current results inform risk assessment of suicide and treatment planning in adolescents in a few ways. First, this study supports the notion that distal risk factors should be examined as part of treatment protocol. Traditionally, mental health
professionals have focused on more proximal factors (i.e. warning signs such as feelings of hopelessness) during risk assessment (American Association of Suicidology, 2013). However, both variables found to predict suicidal ideation in the current study (substance use and internalizing behavior problems) were measured years before the participants reported suicidal ideation, corroborating the need to consider long-term factors in adolescent psychotherapy.

Of particular importance is the role of substance use in predicting risk for suicide. As noted, early substance use has been associated with increased negative outcomes over time in adolescents (e.g. Bossarte & Swahn, 2011). In this study, substance use longitudinally predicted suicidal ideation, but it has also been shown to play a role in suicidal behavior. For instance, one recent study suggested that drinking alcohol “while down” (i.e. feeling depressed) significantly increased adolescents’ risk for suicide attempt (Schilling, Aseltine, Glanovsky, James, & Jacobs, 2009). Substance use may further play a role in unplanned suicide attempts, with a large percentage of attempts made in the context of intoxication (CDC, 2006). This evidence suggests that substance use is an important area of focus for early prevention efforts. For adolescents with co-occurring substance use and internalizing behavior problems, interventions could focus on teaching positive coping skills as an alternative to using substances to handle mood symptoms.

Taken together, previous research, statistics, and the results of this study suggest that suicide risk assessment should reasonably include evaluation of substance use and internalizing behavior problems. For a clinician treating adolescents, this evaluation could include the use of both clinical interview and questionnaires. An excellent and
well-used self-report measure for this task is the Youth Self-Report (used in the current study; Achenbach, 1991).

**Future Studies**

Joiner’s contribution of the IPT to field of suicide research is notable since it is the first comprehensive theory of suicidal behavior. A growing amount of research to date speaks to the validity of the components of the IPT when it is applied to adults. However, this study suggests that a more complex model may be necessary when applied to adolescents and that the main constructs in the model may be multidimensional. Future studies that aim to refine the IPT or suggest alternative models should consider several factors. First, measures of suicidality that result in low base rates are likely not well-suited for structural equation modeling approaches. Measures used in future studies should examine the complexity of suicidality through careful data collection efforts. Specifically, these measures should allow endorsement of items related to suicide attempts and severity of suicide attempts regardless of answers to questions relating to other behaviors (essentially, avoiding skip rules). Allowing participants to report on a variety of items related to suicidality would facilitate the examination of the nature of suicidality and allow for a more normal distribution.

In addition, before testing complex models (as this study did), future studies should focus on precise definition of the constructs as latent variables. These variables may vary based on sample (e.g. different demographic groups) and available measures. It is likely that any model of suicidality would be complex, so subcomponents of future
hypothesized models should be tested in isolation in smaller, simpler studies. The full model could then be examined in a large study.
APPENDIX A

Wave 1 Items

<table>
<thead>
<tr>
<th>IPT Construct</th>
<th>Facets of Construct</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thwarted Belonging-ness</td>
<td>Friendship support</td>
<td>“I make friends easily”</td>
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<tr>
<td></td>
<td></td>
<td>“I have at least one friend I can tell anything to”</td>
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<tr>
<td></td>
<td></td>
<td>“I feel very close to some of my friends”</td>
</tr>
<tr>
<td>Loneliness</td>
<td>“When alone, I feel isolated”</td>
<td>“I prefer playing with others rather than playing alone”</td>
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<tr>
<td></td>
<td></td>
<td>“Even when I am with my friends, I feel alone”</td>
</tr>
<tr>
<td>Acquired Capability to Self-Injure</td>
<td>Impulsivity</td>
<td>“child often acts on the spur of the moment”</td>
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<tr>
<td></td>
<td></td>
<td>“child generally seeks new and exciting experiences and sensations”</td>
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<tr>
<td></td>
<td></td>
<td>“child has trouble controlling impulses”</td>
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<tr>
<td>Substance Use</td>
<td>“have you ever smoked cigarettes?”</td>
<td>“have you ever taken or used smokeless tobacco?”</td>
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<tr>
<td></td>
<td></td>
<td>“Have you ever had a drink of beer, wine, wine cooler, or hard liquor—not just a sip or taste?”</td>
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<tr>
<td></td>
<td></td>
<td>“have you ever used coke or cocaine in any form?”</td>
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<td></td>
<td></td>
<td>“have you ever used crack?”</td>
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<tr>
<td></td>
<td></td>
<td>“have you ever inhaled or sniffed anything like glue, paint or markers to get high?”</td>
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<td></td>
<td></td>
<td>“have you ever used marijuana or hashish?”</td>
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<td></td>
<td></td>
<td>“have you ever used psychedelic drugs or hallucinogens?”</td>
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<td></td>
<td></td>
<td>“have you ever used barbiturates without a doctor’s prescription?”</td>
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<tr>
<td>Violence</td>
<td>“has child/ have you ever seen or been present when somebody was shoved, kicked, or punched?”</td>
<td>“has child/ have you ever seen or been present when someone was attacked with a knife?”</td>
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<tr>
<td></td>
<td></td>
<td>“how many times did you throw something at a child?”</td>
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<tr>
<td></td>
<td></td>
<td>“how many times did you push, grab or shove a child?”</td>
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<tr>
<td></td>
<td></td>
<td>“How many times did you kick, bite, or hit child with a fist?”</td>
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<tr>
<td></td>
<td></td>
<td>“How many times did you hit or try to hit a child with something?”</td>
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<tr>
<td></td>
<td></td>
<td>“How many times did you bet child up?”</td>
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<tr>
<td></td>
<td></td>
<td>“how many times did you burn or scaled child?”</td>
</tr>
</tbody>
</table>
## APPENDIX B

### Suicide Interview

<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
<th>Go to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Has there ever been a time when you often thought about death or about people who had died or about being dead yourself?</td>
<td>Yes</td>
<td>Go to Q 2</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Go to Q 4</td>
</tr>
<tr>
<td>Have you thought about death or dying in the last year?</td>
<td>Yes</td>
<td>Go to Q 3</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Go to Q 4</td>
</tr>
<tr>
<td>In the last year, have you thought about death or dying a lot <strong>more</strong> than you usually do?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td>Has there ever been a time when you thought seriously about killing yourself?</td>
<td>No</td>
<td>Go to Q 5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Go to Q 8</td>
</tr>
<tr>
<td>Have you thought seriously about killing yourself in the last year?</td>
<td>Yes</td>
<td>Go to Q 6</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Go to Q 8</td>
</tr>
<tr>
<td>Have you thought about this <strong>many</strong> times in the last year?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>In the last year, did you have a plan for exactly <strong>how</strong> you would kill yourself?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>Have you ever tried to kill yourself or made a suicide attempt?</td>
<td>Yes</td>
<td>Go to Q 9</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Go to ODD p. 118</td>
</tr>
<tr>
<td>How many times have you tried to kill yourself?</td>
<td>_________ times</td>
<td></td>
</tr>
<tr>
<td>Did you ever go to see a doctor, go to an emergency room, or go into the hospital because of trying to kill yourself?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>In the last year, have you tried to kill yourself?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>In the last year, did you see a doctor, go to an emergency room, or go into the hospital because of this?</td>
<td>Yes</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>2</td>
</tr>
<tr>
<td>If Q 10 and Q 11 = Yes: 1r Ask Q 11A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Otherwise,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Go to Q 12</td>
</tr>
</tbody>
</table>

5,95=DU 6,96=REF 7,97=NAP 8,98=DK 9,99=NA
APPENDIX C

Youth Self Report

---

Please print

**YOUTH SELF-REPORT FOR AGES 11-18**

**YOUR NAME**

First Name: ____________________________

Middle Initial: ________________________

Last Name: ____________________________

**YOUR GENDER**

[ ] Boy [ ] Girl

**YOUR AGE**

[ ] 11 [ ] 12 [ ] 13 [ ] 14 [ ] 15 [ ] 16 [ ] 17 [ ] 18

**YOUR ETHNIC GROUP OR RACE**

[ ] White [ ] Black [ ] Hispanic [ ] Other

**TODAY’S DATE**

[ ] No. [ ] Date [ ] Yr.

**YOUR BIRTHDATE**

[ ] No. [ ] Date [ ] Yr.

**GRADE IN SCHOOL**

[ ] ________Th [ ] ________H [ ] ________S [ ] ________Jr [ ] _______Sr

**NOT ATTENDING SCHOOL**

[ ] ________Th [ ] ________H [ ] ________S [ ] ________Jr [ ] _______Sr

**PARENTS’ Usual Type of Work**

[ ] ____________Th [ ] ____________H [ ] ____________S [ ] ____________Jr [ ] ____________Sr

**TYPE OF WORK**

[ ] ____________Th [ ] ____________H [ ] ____________S [ ] ____________Jr [ ] ____________Sr

---

Please fill out this form to reflect your views, even if other people might not agree. Feel free to print additional comments beside each item and in the spaces provided on pages 2 and 4. Be sure to answer all items.

---

**I. Please list the sports you most like to take part in.**

For example: swimming, baseball, skating, skateboarding, biking, riding, fishing, etc.

[ ] ____________Th [ ] ____________H [ ] ____________S [ ] ____________Jr [ ] ____________Sr

**[ ] None**

a. ____________________________

b. ____________________________

c. ____________________________

---

**II. Please list your favorite hobbies, activities, and games, other than sports.**

For example: cards, books, piano, cars, computers, crafts, etc. (Do not include listening to radio or watching TV.)

[ ] ____________Th [ ] ____________H [ ] ____________S [ ] ____________Jr [ ] ____________Sr

**[ ] None**

a. ____________________________

b. ____________________________

c. ____________________________

---

**III. Please list any organizations, clubs, teams, or groups you belong to.**

[ ] ____________Th [ ] ____________H [ ] ____________S [ ] ____________Jr [ ] ____________Sr

**[ ] None**

a. ____________________________

b. ____________________________

c. ____________________________

---

**IV. Please list any jobs or chores you have.**

For example: paper route, babysitting, making bed, working in stores, etc. (Include both paid and unpaid jobs and chores.)

[ ] ____________Th [ ] ____________H [ ] ____________S [ ] ____________Jr [ ] ____________Sr

**[ ] None**

a. ____________________________

b. ____________________________

c. ____________________________
Please print. Be sure to answer all items.

V. 1. About how many close friends do you have? (Do not include brothers & sisters)
   □ None  □ 1  □ 2 or 3  □ 4 or more

2. About how many times a week do you do things with any friends outside of regular school hours?
   (Do not include brothers & sisters)
   □ Less than 1  □ 1 or 2  □ 3 or more

VI. Compared to others of your age, how well do you:
   Worse  Average  Better
   □  □  □
   □  □  □  □ I have no brothers or sisters

   a. Get along with your brothers & sisters?
   b. Get along with other kids?
   c. Get along with your parents?
   d. Do things by yourself?

VII. 1. Performance in academic subjects.  □ I do not attend school because

Check a box for each subject that you take

<table>
<thead>
<tr>
<th>Subject</th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>a. English or Language Arts</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. History or Social Studies</td>
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<td></td>
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<tr>
<td>c. Arithmetic or Math</td>
<td></td>
<td></td>
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<tr>
<td>d. Science</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other academic subjects—please describe</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(examples: computer courses, foreign language, business, etc.)</td>
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</tbody>
</table>

Do you have any illness, disability, or handicap? □ Yes—if yes—please describe:

Please describe any concerns or problems you have about school:

Please describe any other concerns you have:

Please describe the best things about yourself:

Be sure you answered all items.
Below is a list of items that describe kids. For each item that describes you now or within the past 6 months, please circle the 2 if the item is very true or often true of you. Circle the 1 if the item is somewhat or sometimes true of you. If the item is not true of you, circle the 0.

<table>
<thead>
<tr>
<th>Item</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. I act too young for my age</td>
<td></td>
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</tr>
<tr>
<td>2. I drink alcohol without my parents' approval</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(describe):</td>
<td></td>
<td></td>
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<tr>
<td>3. I argue a lot</td>
<td></td>
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<tr>
<td>4. I fail to finish things that I start</td>
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<tr>
<td>5. There is very little that I enjoy</td>
<td></td>
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<td>6. I like animals</td>
<td></td>
<td></td>
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<tr>
<td>7. I brag</td>
<td></td>
<td></td>
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<tr>
<td>8. I have trouble concentrating or paying attention</td>
<td></td>
<td></td>
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<tr>
<td>9. I can't get my mind off certain thoughts; (describe):</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>10. I have trouble sitting still</td>
<td></td>
<td></td>
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<tr>
<td>11. I'm too dependent on adults</td>
<td></td>
<td></td>
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<tr>
<td>12. I feel lonely</td>
<td></td>
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<tr>
<td>13. I feel confused or in a fog</td>
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<tr>
<td>14. I cry a lot</td>
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<tr>
<td>15. I am pretty honest</td>
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<tr>
<td>16. I am mean to others</td>
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<tr>
<td>17. I daydream a lot</td>
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<tr>
<td>18. I deliberately try to hurt or kill myself</td>
<td></td>
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<tr>
<td>19. I try to get a lot of attention</td>
<td></td>
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<tr>
<td>20. I destroy my own things</td>
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<tr>
<td>21. I destroy things belonging to others</td>
<td></td>
<td></td>
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<tr>
<td>22. I disobey my parents</td>
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<tr>
<td>23. I disobey at school</td>
<td></td>
<td></td>
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<tr>
<td>24. I don't eat as well as I should</td>
<td></td>
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<tr>
<td>25. I don't get along with other kids</td>
<td></td>
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<tr>
<td>26. I don't feel guilty after doing something I shouldn't</td>
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<tr>
<td>27. I am jealous of others</td>
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<tr>
<td>28. I break rules at home, school, or elsewhere</td>
<td></td>
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<tr>
<td>29. I am afraid of certain animals, situations, or places, other than school (describe):</td>
<td></td>
<td></td>
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<tr>
<td>30. I am afraid of going to school</td>
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<tr>
<td>31. I am afraid I might think or do something bad</td>
<td></td>
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<tr>
<td>32. I feel that I have to be perfect</td>
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<tr>
<td>33. I feel that no one loves me</td>
<td></td>
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<tr>
<td>34. I feel that others are out to get me</td>
<td></td>
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<tr>
<td>35. I feel worthless or inferior</td>
<td></td>
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<tr>
<td>36. I accidentally get hurt a lot</td>
<td></td>
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<tr>
<td>37. I get in many fights</td>
<td></td>
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<tr>
<td>38. I get teased a lot</td>
<td></td>
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<tr>
<td>39. I hang around with kids who get in trouble</td>
<td></td>
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<tr>
<td>40. I hear sounds or voices that other people think aren't there (describe):</td>
<td></td>
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<tr>
<td>41. I act without stopping to think</td>
<td></td>
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<tr>
<td>42. I would rather be alone than with others</td>
<td></td>
<td></td>
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<tr>
<td>43. I lie or cheat</td>
<td></td>
<td></td>
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<tr>
<td>44. I bite my fingernails</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>45. I am nervous or tense</td>
<td></td>
<td></td>
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<tr>
<td>46. I twitch or make nervous movements (describe):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47. I have nightmares</td>
<td></td>
<td></td>
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<tr>
<td>48. I am not liked by other kids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49. I can do certain things better than most kids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50. I am too fearful or anxious</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>51. I feel dizzy or lightheaded</td>
<td></td>
<td></td>
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<tr>
<td>52. I feel too guilty</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>53. I eat too much</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54. I feel overfed without good reason</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55. I am overweight</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Physical problems without known medical cause:

a. Aches or pains (need stomach or headaches)
b. Headaches
c. Nausea, feel sick
d. Problems with eyes (need corrected by glasses)

Other (describe): 

Be sure you answered all items. Then see other side.
<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Response 1</th>
<th>Response 2</th>
<th>Response 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>57</td>
<td>I physically attack people</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>58</td>
<td>I pick my skin or other parts of my body</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>59</td>
<td>I can be pretty friendly</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>60</td>
<td>I try new things</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>61</td>
<td>My school work is poor</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>62</td>
<td>I am poorly coordinated or clumsy</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>63</td>
<td>I would rather be with older kids than kids my own age</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>64</td>
<td>I would rather be with younger kids than kids my own age</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>65</td>
<td>I refuse to talk</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>66</td>
<td>I repeat certain acts over and over (describe):</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>67</td>
<td>I run away from home</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>68</td>
<td>I cry a lot</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>69</td>
<td>I am secretive or keep things to myself</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>70</td>
<td>I see things that other people think aren't there (describe):</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>71</td>
<td>I am self-conscious or easily embarrassed</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>72</td>
<td>I feel: fires</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>73</td>
<td>I can work well with my hands</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>74</td>
<td>I show off or down</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>75</td>
<td>I am too shy or timid</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>76</td>
<td>I sleep less than most kids</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>77</td>
<td>I sleep more than most kids during day and/or night (describe):</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>78</td>
<td>I am inattentive or easily distracted</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>79</td>
<td>I have a speech problem (describe):</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>80</td>
<td>I stand up for my rights</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>81</td>
<td>I steal at home</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>82</td>
<td>I steal from places other than home</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>83</td>
<td>I store up too many things I don't need (describe):</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Please write down anything else that describes your feelings, behavior, or interests:
REFERENCES


parent, peer, and school social relations. *Suicide and Life-Threatening Behavior*, 36, 386 – 395.


Suicidal desire and the capability for suicide: Tests of the Interpersonal-
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