SUICIDAL IDEATION IN YOUTH WITH DEPRESSION

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DEDICATION

for Naomi Ruth Hughes, my grandma

SUICIDAL IDEATION IN YOUTH WITH DEPRESSION

by

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Jenny Hughes, 2010

SUICIDAL IDEATION IN DEPRESSED YOUTH: SHORT TERM TRAJECTORIES AND RELATIONSHIP TO OUTCOME

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Suicide is the third leading cause of death in youth ages 10 to 24 (Centers for Disease Control, 2007). Frequent thoughts of suicide are a strong predictor of suicide attempt (Kienhorst, de Wilde, Van den Bout, Diekstra, & Wolters, 1990), and most suicide attempters report a history of suicidal ideation (Lewinsohn, Rohde, & Seeley, 1996). Although suicidal ideation does not always intensify into suicidal behavior, a better understanding of suicidal ideation may lead to a greater understanding of suicidal behavior (Reuter, Holm, McGeorge, & Conger, 2008).

It has been suggested that suicidality can be conceptualized as a spectrum, ranging from passive thoughts of death to death by suicide (Bridge, Goldstein, & Brent, 2006). Mood disorders, including MDD, are the most common in suicide attempters and those who die by suicide (Bridge et al., 2006; Kelly, Cornelius, & Lynch, 2002; Weissman et al., 1999), and hopelessness has consistently been implicated as being related to attempted suicide and death by suicide (Goldston et al., 2001; Lewinsohn, Rohde, & Seeley, 1994; Shaffer et al., 1996). As up to 85% of adolescents with major depressive disorder (MDD) or dysthymia report experiencing suicidal ideation (Kovacs, Goldston, & Gatsonis, 1993), the co-occurrence of depression and suicidal ideation is high. Therefore, it is important that interventions for depressed youth include strategies to manage suicidal ideation and behavior. In addition, it is important for clinicians to have an awareness of how higher levels of suicidal ideation might affect treatment in depressed youth. Thus, a better understanding of the course of suicidal ideation and behavior during early treatment and a better understanding of how depression treatment affect suicidality have important public health implications.

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LIST OF DEFINITIONS

Suicide – "Fatal self-inflicted destructive act with explicit or inferred intent to die" (Bridge, Goldstein, & Brent, 2006; IOM, 2002)

Suicide attempt – "A non-fatal, self-inflicted destructive act with explicit or inferred intent to die" (Bridge, Goldstein, & Brent, 2006; IOM, 2002)

Suicidal ideation – "Thoughts of harming or killing oneself" (Bridge, Goldstein, & Brent, 2006; IOM, 2002)

Suicidality – "All suicide-related behaviors and thoughts including completing or attempting suicide, suicidal ideation or communications" (Bridge, Goldstein, & Brent, 2006)

CHAPTER ONE
Introduction

SUICIDALITY IN YOUTH

Statement of the Problem

Suicide is the third leading cause of death in youth ages 10 to 24 (CDC, 2007). Unfortunately, CDC data also revealed a 14% increase in youth suicide rates in the United States between 2003 and 2004 (Gibbons et al., 2007). A recent comparison of data from the early 1990s to the early 2000s demonstrated that although treatment has increased among suicidal individuals, suicidal ideation, attempts, and death by suicide continue to occur at high rates (Kessler, Berglund, Borges, Nock, & Wang, 2005). Frequent thoughts of suicide are a strong predictor of suicide attempt (Kienhorst, de Wilde, Van den Bout, Diekstra, & Wolters, 1990), and most suicide attempters report a history of suicidal ideation (Lewinsohn, Rohde, & Seeley, 1996). In addition, the severity of suicidal ideation increases the likelihood of suicide attempt during the following year (Lewinsohn et al., 1996).

Although suicidal ideation does not always intensify into suicidal behavior, a better understanding of suicidal ideation may lead to a greater understanding of suicidal behavior (Reuter, Holm, McGeorge, & Conger, 2008). Multiple studies have shown a relationship between having suicidal ideation in

adolescence and later making a suicide attempt (Fergusson, Horwood, Ridder, & Beautrais, 2005; Lewinsohn, Rohde, Seeley, & Baldwin, 2001; Reuter et al., 2008). Reuter and colleagues (2008) also noted that about 25% of those adolescents who reported suicidal ideation where found to subsequently report making a plan for an actual attempt. In addition, a recent study of adolescent suicide attempters found that participants who exhibited a slower reduction in suicidal ideation were also more likely to experience a suicidal event (Brent et al., 2009b), supporting the importance of tracking suicidal ideation during treatment. It has been suggested that suicidality can be conceptualized as a spectrum, ranging from passive thoughts of death to death by suicide (Bridge, Goldstein, & Brent, 2006).

Public Health Significance

Suicide constitutes a major public health problem in the United States (CDC, 2007), and also globally (Bridge et al., 2006). The annual number of individuals who present to the emergency department in the U.S. subsequent to a suicide attempt is estimated to be around 500,000 (Office of the Surgeon General, 1999). The recently published National Strategy for Suicide Prevention (2001) highlights the national importance of addressing this mental health issue.

Depression treatments need to include interventions to address suicidality. The time period immediately following a suicide attempt may be an especially important time in the prevention of a completed suicide. Studies of adolescent suicide attempters have found that 10% of adolescent attempters re-attempt within three months, 12-20% re-attempt within one year, and 20-50% re-attempt in two to three years (Bridge et al., 2006). In a recent study of adolescent suicide attempters, 40% of the suicidal events occurred within the first four weeks of beginning treatment (Brent, et al., 2009). Therefore, the proper early treatment and a better understanding of the course of suicidal ideation and behavior have important public health implications.

CHAPTER TWO
Review of the Literature

THE SCIENCE OF SUICIDOLOGY

Terminology of Suicidology

Over time there has been debate regarding the inconsistent nomenclature of suicidology (O'Carroll et al., 1996; Posner, Oquendo, Gould, Stanley, & Davies, 2007). For example, some studies refer to suicidal ideation, suicidal gestures, suicidal behavior, or suicidal threats. This problem affects both research and clinical work in understanding suicidality (Lewinsohn et al., 1996).

The following definitions have been recommended as standard terms across the field of suicidology. Suicide is defined as a fatal self-inflicted destructive act with explicit or inferred intent to die (Bridge et al., 2006; IOM, 2002). A suicide attempt is a non-fatal, self-inflicted destructive act with explicit or inferred intent to die (Bridge et al., 2006; IOM, 2002). Some researchers have suggested that it might be important to distinguish multiple attempters from single attempters (Miranda et al., 2008) and interrupted attempts from aborted attempts. Marzuk and colleagues (1997) introduced the category "aborted suicide attempts" to describe an event in which an individual has an intent to kill himself/herself, changes his/her mind immediately before the attempt, and does not incur injury; aborted attempts were later found to be associated with future suicide attempts (Marzuk, Tardiff, Leon, Portera, & Weiner, 1997; Barber, Marzuk, Leon, &

Portera, 1998). Suicidal ideation involves thoughts of harming or killing oneself (Bridge et al., 2006; IOM, 2002). Finally, suicidality encompasses all suicide-related behaviors and thoughts including completing or attempting suicide, suicidal ideation or communications (Bridge et al., 2006).

Measuring Suicidality

Recently, the FDA has recommended the use of a more systematic measure of suicidal events. One such assessment is the Columbia Suicide Severity Rating Scale (C-SSRS; Posner et al., 2004; 2007), a semi-structured clinician-rated interview created for use in the Treatment of Adolescent Suicide Attempters (TASA) study (Brent et al., 2009b). Both suicidal behavior and suicidal ideation are rated on a 0 to 5 scale, with suicidal ideation ratings ranging from 0, "no ideation," to 5, "suicidal ideation with intent and a clear plan," and suicidal behavior ratings ranging from 0, "no behavior," to 5, "multiple attempts during the assessment period." In addition, because suicidal ideation fluctuates over time, the modal and most severe since the past assessment are rated. Other frequently used clinician-rated measures include the Scale for Suicidal Ideation (Beck, Kovacs, & Weissman, 1979), The Beck Scale for Suicidal Ideation (Beck & Steer, 1991), and the Parasuicide History Interview (Linehan, Wagner, & Cox, 1983).

Examples of self report measures of suicidality for adults include the Positive and Negative Suicide Ideation Inventory (Osman, Gutierrez, Kopper, Barrios, & Chiros, 1998), the Adult Suicidal Ideation Questionnaire (Reynolds, 1991), the Suicidal Ideation Scale (Rudd, 1989), the Firestone Assessment of Self-Destructive Thoughts (Firestone & Firestone, 1996), and the Suicide Behaviors Questionnaire – 14 (Linehan, 1996). In youth, the most commonly used self-report of suicidal ideation is the Suicidal Ideation Questionnaire – Junior (SIQ-JR; Reynolds, 1988; Reynolds & Mazza, 1999).

In addition, several pediatric depression measures, such as the Children's Depression Rating Scale – Revised (CDRS-R; Poznanski & Mokros, 1996) and the Quick Inventory of Depressive Symptomatology measures (Rush et al., 2003) include items to assess suicidality. In addition, related measures of interest include hopelessness, such as the Beck Hopelessness Scale (Beck & Steer, 1988) and reasons for living, such as the Brief Reasons for Living Inventory (Ivanoff, Jang, Smyth, & Linehan, 1994).

SUICIDAL IDEATION AND SUICIDAL BEHAVIOR IN YOUTH

It appears that suicidality can be considered on a continuum (Asarnow et al., 2008; Brent et al., 1988; Bridge et al., 2006; Gould et al., 1998; Lewinsohn et al., 1996; Reinherz et al., 1995). Many researchers and clinicians have

emphasized the importance of understanding each "level" of suicidality (Lewinsohn et al., 1996), whether conceptualized as a spectrum (Bridge et al., 2006) or as distinct, but overlapping groups (e.g., Linehan, Chiles, Egan, Devine, & Luffaw, 1986). Suicidal ideation is the most common, and we conceptualize that suicidal ideation comes before suicide attempts and death by suicide. Thus, studies of the course and trajectories of suicidal ideation are vital.

Suicidal Ideation

Rates of annual suicidal ideation in adolescents range from 3% to 26% (Andrews & Lewinsohn, 1992; Bridge et al., 2006; Grunbaum et al., 2002; King et al., 2001; Reuter et al., 2008). This estimate includes the spectrum of suicidal ideation, ranging from passive thoughts about death to suicidal ideation with intent and plan. Lewinsohn and colleagues (1996) found that the annual incidence of the highest level of ideation (i.e., suicidal ideation with intent and plan) is 6.0% in adolescent females and 2.3% in adolescent males. This rate may be higher now, however, as in a 2001 survey of U.S. high school students 19% reported seriously considering attempting suicide and 15% reported having made plans (CDC, 2002).

Suicide Attempt and Death by Suicide

The true rates of death by suicide and suicide attempts are difficult to ascertain. Deaths by suicide may be recorded as accidental deaths (Shain et al., 2007). In addition, individuals may not disclose suicide attempts to others, and low lethality attempts may not always require medical attention (Bridge et al., 2006). In 2003, there were 1487 deaths by suicide (11% of all deaths) in adolescents 15 to 19 years old (Shain et al., 2007). It is estimated that the ratio of attempted suicides to completed suicides ranges from 50:1 to 100:1 (Husain, 1990), while lifetime estimates of suicide attempt span from 1.3% to 10.1% (Andrews & Lewinsohn, 1992; Bridge et al., 2006; Fergusson & Lynskey, 1995; Lewinsohn et al., 1996). In a 2001 survey of U.S. high school students, 9% of students reported having made a suicide attempt during the previous year (CDC, 2002).

Epidemiology of Suicidality in Youth

Several factors relate to the rates of suicidal ideation and behavior in children and adolescents. Rates of suicidality increase throughout adolescence into adulthood (Bridge et al., 2006). In addition, death by suicide is more common in young males while suicidal ideation and suicide attempts are more common in young females (Bridge et al., 2006; Fergusson, Woodward, & Horwood, 2000; Grunbaum et al., 2004). It is hypothesized that young males are more likely to die by suicide due to the numerous risk factors that make them more likely to engage

behaviors with higher lethality (Bridge et al., 2006). This gender difference dissipates in young adulthood, however (Lewinsohn, Rohde, Seeley, & Baldwin, 2001). Certain race and ethnic groups also experience higher rates of suicidality. Rates of suicide attempt and death by suicide are high among Native Americans (Bridge et al., 2006). In addition, Latino youth show higher rates of suicidal ideation and suicide attempt (Grunbaum et al., 2004). Common methods of suicide in U.S. youth include firearms, hanging, and poisoning (Bridge et al., 2006).

Course of Suicidality in Youth

There is little understanding of the temporal course of suicidal ideation and behavior in adolescents, both longitudinally and in the shorter term (Prinstein et al., 2008; Reuter, Holm, McGeorge, & Conger, 2008). Reuter and colleagues (2008) investigated patterns of suicidal ideation across adolescence, identifying three sub-groups of adolescents: non-ideators, decreasers (those whose ideation decreased over time), and increasers (those whose ideation persisted or increased). These subgroups were developed utilizing latent growth curve analysis to estimate the suicidal ideation trajectories of 552 adolescents over nine time points across a 13-year period. They found that female decreasers were at a small risk for later attempt, but that male decreasers were at a significant risk for later attempt with greater than one third estimated to attempt suicide based on the model (Reuter et

al., 2008). In addition, both male and female increasers were at a significant risk for future suicidality, with more than half of female increasers later making a suicidal plan and one fourth making an attempt. Male increasers were as likely to make a suicidal plan, but not significantly probable for an attempt (Reuter et al., 2008). This study was conducted in Caucasian adolescents, so it is unknown whether suicidal ideation trajectories subgroups might exist in young children, adults, and different race, ethnicity, and socioeconomic groups (Reuter et al., 2008). Thus, it appears that both decreasers and increasers were at risk for future suicidality, suggesting that fluctuations in suicidal ideation might be a risk factor.

In an examination of suicide trajectories in 143 adolescents with a recent psychiatric hospitalization, Prinstein and colleagues (2008) assessed suicidal ideation and behavior during hospitalization and at 3, 6, 9, 15, and 18 months post-discharge. Suicidal ideation remitted between baseline and 6 months, but reemerged between 9 and 18 months post-discharge, and fluctuations in suicidal ideation predicted suicide attempts. In addition, they found that higher self-reported depressive symptoms, lower parent-reported externalizing symptoms, and higher occurrences of non-suicidal self injury predicted weaker suicidal ideation remission slopes, suggesting that these factors may relate to sustained suicidal ideation (Prinstein et al., 2008). They concluded that it will be important to study shorter trajectories of suicidal ideation in order to develop better models for predicting suicide attempts.

MODELS OF SUICIDALITY

Stress-Diathesis Model

The most common model of understanding suicidality, based on a frequently used model of mental illness, is the stress-diathesis model (Mann, Waternaux, Haas, & Malone, 1999; Rubinstein, 1986; Shaffer & Pfeffer, 2001). Upon an examination of risk factors in 347 consecutive patients admitted to a university psychiatric hospital, Mann and colleagues (1999) tested a stress-diathesis model of suicidal behavior. They found that higher levels of subjective depression, higher levels of suicidal ideation, fewer reasons for living, lifetime history of impulsivity, and lifetime history of aggression separated suicide attempters from non-attempters (Mann et al., 1999). In conclusion, it appears that a psychiatric diagnosis acts as the stress in the model, while other pre-existing factors such as a tendency to experience suicidal thoughts or to be more impulsive make up the diathesis (Mann et al., 1999).

Cognitive Model of Suicidality

The cognitive model of suicide points to maladaptive cognitions, including suicidal thoughts, as the fundamental pathway to suicidal behavior (Rudd, 2004; Rudd, Joiner, & Rahab, 2001; Weishaar & Beck, 1990). In order to conceptualize

the suicide attempt, one must examine the automatic thoughts and core beliefs that were activated just prior to the suicidal behavior (Berk, Henriques, Warman, Brown, & Beck, 2004). These cognitions often include hopelessness, helplessness, unlovability, and perceived inability to tolerate distress. Rudd and colleagues (2001) referred to the "suicidal mode," which includes suicide-related thoughts, negative affect, physical or physiological symptoms, and intent (behavior and motivation). It has been hypothesized that once an individual has engaged in suicidal behavior, the "suicidal mode" becomes more available and thus is more easily activated. Rudd (2004) further elaborated that the "suicidal mode" contains the "suicidal belief system" or the maladaptive meaning that is constructed (including compensatory strategies and the conditional rules or assumptions) and assigned to the self, the environment, and the future. Other skills deficits in individuals struggling with suicidality often include rigid, dichotomous thinking about the self and others, poor problem solving, and a view of suicide as a coping strategy (Weishaar & Beck, 1990).

Interpersonal-Psychological Model of Suicide

A newer model of understanding suicidality is that of the interpersonal-psychological theory of suicide (Joiner, 2005a). This theory is based on three major tenets (Joiner, Van Orden, Witte, & Rudd, 2009). First, they propose that people who die by suicide have developed a pain tolerance through life

experiences, thereby habituating toward violence and pain. This desensitization, coupled with a sense of burdensomeness (Joiner et al., 2002) and a decreased sense of belongingness, contribute to one's suicidality (Joiner et al., 2005a, 2009). Early tests of this model have shown promising in predicting suicidality, above and beyond previously identified risk factors (Joiner et al., 2009).

Modeling Suicidality in Youth

Based on the Oregon Adolescent Depression Project, Lewinsohn, Rohde, and Seeley (1996) constructed a model of suicidal behavior utilizing linear structural equation modeling. The dependent variable included suicidal behavior as conceptualized on a continuum, ranging from passive thoughts of death to multiple suicide attempts. The independent variables included several important constructs, such as psychopathology, physical illness, environment, and interpersonal problems. The relationship between suicidal behavior and the independent variables was mediated by cognitions and coping style. Psychopathology had the most effect on suicidal behavior, with physical health and environment having somewhat less effect. Interpersonal problems did not directly affect suicidal behavior, but when negative cognitions and maladaptive coping style was added as a mediator, interpersonal problems contributed greatly to suicidal behavior. Overall, this model explained less than 30% of the variance in suicidal behavior, so other factors must be considered (Lewinsohn et al., 1996).

A more recent model of suicidality in youth is the developmental-transactional model developed by Bridge, Goldstein, and Brent (2006). This model integrates all known risk and protective factors to date in youth. Beginning with early risk factors, such as parental psychopathology, temperament characteristics (e.g., neuroticism, anxiety), abuse, and impulsive or aggressive traits, this developmental model posits that after puberty these early risk factors become compounded by risk for depression and impulsivity resulting in suicidal ideation risk. Mediating the trajectory from suicidal ideation to suicide attempt are stressors, such as legal problems and interpersonal difficulties, and protective factors, such as family or school connection and cultural beliefs (Bridge et al., 2006). This model is also clinically useful as a mental health provider is able to identify targets for treatment.

Several risk factors have been implicated in suicidality (Bridge et al., 2006; Gould & Kramer, 2001; McKeown et al., 1998). The single biggest risk factor for death by suicide is a previous suicide attempt (Bridge et al., 2006), and approximately one third of adolescents who died by suicide having made a previous suicide attempt (Shaffer et al., 1996). A previous attempt is also a risk factor for a future suicide attempt (Joiner et al., 2005b),

Another salient risk factor for suicidality is having a psychiatric disorder. Over 90% of youth who died by suicide had a mental health disorder such as depression, bipolar, or a history substance abuse (Brent et al., 1988; Bridge et al.,

2006; Shaffer et al., 1996). Mood disorders, including both MDD and bipolar disorder, are the most common in suicide attempters and those who die by suicide (Bridge et al., 2006; Kelly, Cornelius, & Lynch, 2002; Weissman et al., 1999). In addition, substance use disorders and substance abuse are associated with increased risk for suicidality (Brent, Baugher, Bridge, Chen, & Chiappetta, 1999; Bridge et al., 2006; Gould et al., 1998; Kelly et al., 2002). Other common psychiatric disorders that put one at risk include conduct disorder or antisocial behavior, anxiety disorders, post-traumatic stress disorder, psychosis, and eating disorders (Bridge et al., 2006). Comorbid psychiatric conditions are often present in those attempt suicide and those who die by suicide (Beautrais, Joyce, & Mulder, 1998; Brent et al., 1999; Gould et al., 1998; Lewinsohn et al., 1996; Shaffer et al., 1996). Interestingly, psychological autopsy studies have shown that in those youth under age 16 who die by suicide, 40% do not seem to have had a psychiatric diagnosis (Brent et al., 1999; Groholt, Ekeberg, Wichstromm, & Haldorsen, 1998; Shaffer et al., 1996).

In addition, several psychological variables have been identified as risk factors for suicidality. Hopelessness has consistently been related to attempted suicide and death by suicide (Goldston et al., 2001; Lewinsohn, Rohde, & Seeley, 1994; Shaffer et al., 1996). Impulsivity and impulsive aggression are associated with adolescent suicidal behavior and suicidal ideation (Beautrais, Joyce, & Mulder, 1999; Brent et al., 1999; Bridge et al., 2006; Brodsky et al., 2008;

Conner, Meldrum, Wieczorek, Duberstein, & Welte, 2004). Other psychological variables associated with risk for suicidality include low self esteem, high levels of neuroticism, and sexual orientation (Bridge et al., 2006).

Family factors play a role in risk of suicidality. A family history of suicidal behavior has consistently been shown to relate to suicidal behavior, and psychopathology in parents puts children at increased risk for suicidality (Bridge et al., 2006; Pfeffer, Normandin, & Kakuma, 1998). Also, high levels of expressed emotion, or emotional discord, in the family are related to risk of suicide attempt (Asarnow & Carlson, 1988; Gould, Fisher, Parides, Flory, & Shaffer, 1996; Reinherz et al., 1995). In addition, biological and genetic factors appear to play a role in risk for suicidality (Bridge et al., 2006; Brodsky et al., 2008; Mann, 2003).

Stressful life events, such as loss of a loved one or a divorce in the family, predict risk for future suicide attempt (Gould & Kramer, 2001; Bridge et al., 2006; Steinhausen, Bosiger, & Metzke, 2006). In addition, a history of physical and sexual abuse puts one at risk for suicide attempt (Bridge et al., 2006; Brodsky et al., 2008). In a recent study of depressed suicide attempters, a history of sexual abuse predicted a future attempt (Brent et al., 2009b).

Protective factors reduce the risk of suicidality in youth. Some of these factors include family variables, such are parent-child connectedness and active parent supervision, school variables, such as high academic expectations and

strong ties to the school, and cultural variables, such as religious or cultural beliefs against suicide (Borowsky, Ireland, & Resnick, 2001; Bridge et al., 2006; Resnick et al., 1997). It is important to identify additional protective factors as interventions might include strategies to foster these variables.

TREATMENT FOR SUICIDALITY

Few treatments have been developed specifically to address suicidal ideation and behavior in youth. Many treatments for depression, bipolar, and personality disorders such as borderline personality disorder include interventions for addressing suicidality. However, actively suicidal participants have often been excluded from trials due to the difficulties in managing these patients' needs and keeping them enrolled in studies.

Suicide-Specific Interventions

Several approaches to the treatment of suicide have been empirically examined, including CBT, interpersonal psychotherapy (IPT), dialectical behavior therapy (DBT), and family treatment (Berk et al., 2004; Elspeth et al., 2003; Harrington et al., 1998; Linehan, Armstrong, Suarez, Allmon, & Heard, 1991; Linehan et al., 2006; Rotheram-Borus, Piacentini, Cantwell, Belin, & Song,

2000; Salkovskis, Atha, & Storer, 1990). DBT was the first intervention to show efficacy in the treatment of suicidality; however, this intensive treatment often involves 100 sessions per year and requires extensive training and certification of therapists. This treatment may be most appropriate for individuals with borderline personality disorder, although Stanley and colleagues (2007) have recently proposed a brief version of DBT to address suicidal behavior and non-suicidal self injury. IPT has also exhibited efficacy in the treatment of suicide attempters, and may prove to be a promising intervention as well (Elspeth et al., 2003).

The cognitive model of suicidality and hopelessness was introduced several years ago (Beck, Kovacs, & Weissman, 1975), and since that time, Beck and colleagues have continued to develop this model and an appropriate treatment related to the model (Brown et al., 2005). An early study by Salkovskis and colleagues found that CBT was successful in reducing depression, suicidal ideation, hopelessness, and repeated attempts at the 6-month follow-up, but not the 1-year follow-up (Salkovskis et al., 1990). A recent randomized, controlled trial of this CBT approach for the prevention of suicide attempts established efficacy for this intervention (Brown et al., 2005). CBT may be an especially useful treatment as it is brief, focused, problem-oriented, and able to address the maladaptive cognitions, including hopelessness, that are often related to suicidality (Berk et al., 2004). In addition, a major treatment goal in CBT is a

focus on building the patient's support system, including mental health systems, family, and friends (Berk et al., 2004).

There are few clinical trials addressing suicidality specifically in pediatric populations. Wood and colleagues (2001) concluded that a skills-based group intervention for adolescent repetitive self-harm was superior to treatment as usual in reducing the risk of repeating self harm; however, no differences were found between the groups with regard to decreases in depression or suicidal ideation (Wood, Trainor, Rothwell, Moore, & Harrington, 2001). In addition, a study treating adolescents presenting to the ED with high risk compared multi-systemic therapy to hospitalization (Huey et al., 2004). Results showed that MST was superior to hospitalization in reducing the rate of suicide attempt at the one year follow-up (Huey et al., 2004). In addition, a social network support intervention showed more benefit in suicidal adolescent females than males at reducing suicidal ideation and functional impairment related to mood symptoms (King et al., 2006). Dialectical behavior therapy has been shown to reduce suicidal ideation in suicidal adolescents (Rathus & Miller, 2002), but there has yet to be an RCT with this approach.

A recent trial was conducted to develop and test the feasibility of a novel intervention for adolescent suicide attempters. This treatment, known as Cognitive Behavioral Therapy for Suicide Prevention (CBT-SP), was developed based on the Beck treatment model (Brown, Henriques, Ratto, & Beck, 2002),

Linehan's DBT (Linehan, 1993), Brent's work with depressed and suicidal teens (Brent & Poling, 1997), the Treatment for Adolescents with Depression (TADS) CBT manual (Curry et al., 2000), and the Treatment of Resistant Depression in Adolescents (TORDIA) CBT manual (Brent, Bridge, & Bonner, 2000). The resulting CBT TASA manual represents a problem-focused, case conceptualization approach in which the focus of treatment is on suicidal behavior; specifically, preventing the recurrence of future suicide attempts (Stanley et al., 2009). Within this framework, cognitive, behavioral, emotional, and family interventions were utilized, with the selection of specific intervention strategies based on the individual assessment of relevant skills deficits and variables for each individual. CBTASA also incorporates elements that emphasize safety planning, emotion regulation, and relapse prevention (Stanley et al., 2009). An initial investigation of this intervention, in conjunction with medication management in most participants, appears promising (Brent et al., 2009b, Stanley et al., 2009; Vitiello et al., 2009).

Treatments for Depression in Youth

Pharmacological and psychotherapeutic interventions have been found to be efficacious in the treatment of depression in youth. The positive benefit of several SSRIs, including fluoxetine, citalopram, paroxetine, and sertraline, has been documented in children and adolescents (Cheung, Emslie, & Mayes, 2005).

Cognitive behavioral therapy has the most evidence of efficacy to date, compared to other modalities of psychotherapy, in the treatment of pediatric depression (Compton et al., 2004; Curry, 2001; Reinecke, Ryan, & DuBois, 1998; Sherrill & Kovacs, 2004).

As up to 85% of adolescents with major depressive disorder (MDD) or dysthymia report experiencing suicidal ideation (Kovacs, Goldston, & Gatsonis, 1993), the co-occurrence of depression and suicidal ideation is high. Therefore, it is important that interventions for depressed youth include strategies to manage suicidal ideation and behavior. In addition, it is important for clinicians to have an awareness of how higher levels of suicidal ideation might affect treatment in depressed youth.

Relationship between Treatment Outcomes and Suicidality

Until more recently, few studies of pediatric depression reported the impact of treatment on suicidal ideation and behavior. In a study of psychotherapy for depression, Brent et al. (1997) treated suicidal, depressed adolescents with CBT, family therapy, or supportive therapy, finding that CBT was superior with regard to depressive outcomes. There were no differences between the treatments with regard to suicidality outcomes, however (Brent et al., 1997). Lewinsohn and colleagues (1996) noted that depressed adolescents with a past suicide attempt responded equally as well as those without a past suicide attempt in a trial of CBT

treatment designed for depression. In addition, the two groups did not differ on measures of treatment participation, such as therapy attendance, attrition, and homework completion (Lewinsohn et al., 1996).

The recent FDA re-analysis of the anti-depressant trials in the pediatric population emphasized the importance of reporting suicidality outcomes in studies of depression (Rudd, Cordero, & Bryan, 2009). In a pooled analysis of nine placebo-controlled trials of pediatric depression, OCD, and other disorders, the FDA found an increased risk of suicidality in those participants receiving anti-depressants (FDA, 2004; TADS Team, 2004). The average risk of suicidal events in patients receiving antidepressants was 4% while the placebo risk was 2% (FDA, 2004; Hammad, Laughren, Racoosin, 2006). This reanalysis resulted in the FDA issuing a black box warning for all antidepressants in 2004 regarding the risk suicidal risk in the pediatric population, and extending this warning to age 24 in 2007 (FDA, 2007). Since that time there has been much debate about this decision and its possible unintended consequences on antidepressant prescribing practices and the suicide rate (Bridge et al., 2007; Gibbons et al., 2007; Kratochvil et al., 2006; Rudd et al., 2009). Regardless, this issue highlights the need to closely track suicidal ideation and behavior when treating a patient for depression. More research is needed to investigate what role depression treatment might play in decreasing, exacerbating, and/or addressing suicidality in youth.

The Treatment for Adolescents with Depression Study (TADS) considered this question in the main outcome analysis of their study. They concluded that, even though fluoxetine medication management alone was equally effective in treatment depressive symptoms as the combination of fluoxetine and CBT, combination treatment was the superior treatment due to the suicidality outcomes of the trial (TADS Team, 2004). All four groups, which included combination treatment, fluoxetine alone, CBT alone, and placebo, improved significantly with regard to suicidal ideation; however, the combination group showed the greatest reduction. This led to the conclusion that CBT may have a protective effect on suicidal ideation, both in the acute and continuation phases of treatment (TADS Team, 2004; Emslie et al., 2006).

However, Goodyer and colleagues (2007) failed to replicate the finding that CBT is protective against suicidal ideation. They randomized 208 adolescents with moderate to severe depression to either an SSRI with routine care or an SSRI with routine care plus CBT. The SSRI with routine care group had similar outcomes to the group with CBT, so they concluded there is no benefit to the addition of CBT. Overall, both groups showed a decrease in suicidal thoughts and behaviors (Goodyer et al., 2007).

In addition, the TORDIA trial, an RCT of adolescents with SSRI-resistant depression, did not find this relationship between CBT and suicidality (Brent et al., 2008). While the combination treatment of medication plus CBT resulted in

higher response rates than medication alone, there was no difference between these strategies with regard to suicidal adverse events. As a result of this finding, the authors suggested that there is a need for the development of further interventions to address suicidality in youth (Brent et al., 2008).

Suicidality During Treatment for Depression

Little is known about the short-term trajectories of suicidal ideation during treatment for pediatric MDD. Clinically, suicidal ideation has been said to "wax and wane" (Barbe, Bridge, Birmaher, Kolko, & Brent, 2004; Lewinsohn et al., 1996; Zisook et al., 2009). Furthermore, fluctuations in suicidal behaviors occur rapidly (Prinstein et al., 2008). It is unclear if remission of suicidal ideation occurs prior to remission of depression in most patients, or if some continue to experience suicidal ideation even after most depressive symptoms are gone.

In a study of geriatric depression, Szanto et al. (2003) noted that suicidal ideation decreased rapidly early in treatment, with 77.5% reporting ideation at baseline and 4.6% reporting only thoughts of death after 12 weeks of treatment (Szanto, Mulsant, Houck, Dew, & Reynolds, 2003). Sokero and colleagues (2006) examined the short-term course of suicidal ideation in adults with MDD. Based on the Scale for Suicidal Ideation (SSI; Beck et al., 1979), 38% of the 269 participants reported suicidal ideation during the current depressive episode (Sokero et al., 2006). Of those 70 participants with ideation, suicidal ideation had

resolved in 67% of patients and persisted in 21%, while 11% of patients had dropped out by the end of the follow-up period. The median duration for decline of suicidal ideation to none was 2.2 months after baseline. Finally, baseline level of suicidal ideation and depressive symptoms, as well as any personality disorder diagnosis predicted a longer duration of suicidal ideation (Sokero et al., 2006).

In another study of geriatric depression, Szanto and colleagues (2007) classified participants as non-suicidal, resolved (15.6%), persistent (12.6%), or emergent (7.8%) over the course of 12 weeks of treatment. They found that those with more persistent suicidal ideation were more likely to have a history of recurrent depression than those who were non-suicidal or had resolved suicidal ideation. In addition, those in the resolved suicidal ideation group had more favorable treatment response (i.e., lower depression scores and lower levels of anxiety and agitation during treatment) than those in the emergent and persistent groups (Szanto et al., 2007). Time to treatment response has been shown to be longer in geriatric depressed patients with higher levels of suicidal risk (Szanto et al., 2003). In addition, in comparing elderly patients with suicidal ideation in the current episode with those with no ideation, remission rates were similar (77% and 78%, respectively) after treatment with combined pharmacotherapy and psychotherapy (Szanto et al., 2001). However, relapse rates were higher during continuation treatment in those with suicidal ideation in the current episode (26%

in ideators versus 15% in non-ideators; Szanto et al., 2001). Thus, it seems that the presence of suicidal ideation relates to treatment outcomes.

In the pediatric literature, 12.5% of adolescents being treated for depression with psychotherapy over a 12 to 16 week range reported emergent suicidality on the BDI (Bridge, Barbe, Birmaher, Kolko, Brent, 2005). In addition, self-reported suicidal ideation, not clinician-rated, predicted emergent suicidality. Recently, emergent suicidality has become a major concern in the treatment of pediatric depression due to findings that antidepressants may increase suicidal ideation in some populations, including children and adolescents.

It may be helpful to identify factors that contribute to the development and decline in suicidal ideation over the course of treatment for depression. In adults with depression, Sokero et al. (2006) found that a decline in both depression (BDI) and hopelessness (BHS) independently predicted a decline in suicidal ideation. In the STAR*D study of adults with depression, risk factors for emergent suicidal ideation while on citalopram included drug abuse, severe depression, and having melancholic features (Zisook et al., 2009).

The recent Treatment of Adolescent Suicide Attempters (TASA) study examined shorter trajectories of suicidality in adolescents with depression who had made a suicide attempt within the past 90 days (Brent et al., 2009b). One outcome of interest in this feasibility study was a suicidal event, which was defined as a completed suicide, attempted suicide, preparatory acts toward

imminent suicidal behavior, or suicidal ideation worsening, all based on the C-SSRS. Of the 124 participants, 24 met criteria for a suicidal event during the 6-month treatment, with 15 making at least one suicide re-attempt. Those participants with a suicidal event had higher levels of suicidal ideation at intake, a greater number of previous suicide attempts, and a lower maximum lethality of previous attempts, higher scores on a depression self-report, higher levels of self-report baseline hopelessness, a higher number of borderline personality traits, and increased anxiety (Brent et al., 2009b). In addition, a history of reported sexual or physical abuse was related to experiencing a suicide event. Interestingly, suicide events were associated with a slower improvement in suicidal ideation and suicide reattempts with a slower improvement in the adolescent's overall functioning (Brent et al., 2009b). Thus, studying the shorter term trajectories of suicidal ideation may be useful in predicting which youth are at risk for advancing to suicidal behavior or preparatory acts.

It appears that patients are at risk for developing or worsening suicidal ideation in the first few weeks after entering treatment. Part of the FDA black box warning includes the importance of monitoring youth closely during the first few weeks of antidepressant treatment. This need to monitor early on is not limited to pharmacotherapy treatment, as 12.5% of participants in a recent clinical psychotherapy trial experienced emergent suicidality within the first 3 weeks of treatment (Bridge et al., 2005). In addition, the recently completed Treatment of

Adolescent Suicide Attempters (TASA) study reported that of the 24 suicidal events during the trial, 10 occurred in the first month from baseline (Brent et al., 2009b).

In addition, little is known about the role of suicidality in the continuation phases of treatment for depression. In elderly adults, those participants with suicidal ideation in the current depressive episode experienced higher relapse rates compared to those that did not have suicidal ideation. However, remission rates were similar between the two groups (Szanto et al., 2001). Very few studies of continuation treatment to address relapse have been done in pediatric depression (Clarke, Rodhe, Lewinsohn, Hops, & Seeley, 1999; Kennard et al., 2008a; Kroll, Harrington, Jayson, Fraser, & Gowers, 1996). Kennard et al. (2008a) reported on serious adverse events in the study, which included three suicide attempts and one hospitalization for a medical condition; however, the outcomes related to suicidality were not reported.

Treatment Mediators and Moderators

There is little understanding of the factors that contribute to the development and decline in suicidal ideation over the course of treatment in pediatric depression. How might suicidality relate to other variables, such as depression severity, history of suicidal ideation, hopelessness, and cognitive style, in relation treatment outcomes?

The presence of high baseline suicidal ideation in youth being treated for depression has been shown to predict a suicidal event during treatment (Emslie et al., 2006). Other predictors of a suicidal event include a past suicide attempt and high baseline levels of anger and agitation (Apter et al., 2006; Emslie et al., 2006; Perlis et al., 2007). In treatment-resistant depression in adolescents, predictors of a suicidal event included high baseline suicidal ideation and depression, family conflict, and substance use (Brent et al., 2009a). Predictors of a suicidal event in depressed adolescents with a recent suicide attempt included a history of multiple attempts, a lower maximum lethality rating among previous attempts, high baseline hopelessness, high self-reported depressive symptoms, a history of sexual or physical abuse, and a slower improvement in functioning (Brent et al., 2009b).

It is also important for researchers to develop ways to predict emergent suicidality. Bridge et al. (2005) found that only the adolescent's response to item 9 on the BDI predicted emergent suicidality. In addition, those with emergent suicidality demonstrated lower overall scores on the Children's Negative Cognitive Errors Questionnaire and higher overall BDI scores, but these variables did not predict emergent suicidality.

Suicidal ideation may impact an individual's involvement in treatment. For example, Barbe and colleagues found that depressed participants with current suicidal ideation were more likely to drop out of the treatment study than those

depressed participants without suicidality (Barbe et al., 2004). In addition, higher levels of hopelessness, which are often related to higher levels of suicidal ideation, have been found to relate to early discontinuation of treatment (Brent et al., 1997).

Cognitive factors, such as hopelessness, have been found to mediate the relationship between suicidality and treatment outcome in depressed adolescents (Barbe et al., 2004). Hopelessness has been implicated in several studies as a useful proxy to suicidal ideation (Beck et al., 1975; Bedrosian & Beck, 1979; Dyer & Kreitman, 1984; Minkoff, Bergman, Beck, & Beck, 1973; Petrie & Chamberlain, 1983; Wetzel, 1976; Wetzel, Margulies, Davis, & Karam, 1980; Wetzel & Reich, 1989), with high levels of hopelessness related to greater suicidal ideation and even eventual death by suicide (Beck, Steer, Kovacs, & Garrison, 1985). In addition, a child's view of the self, world, and future (cognitive triad) has been associated with depression severity (Stark, Schmidt, & Joiner, 1996). The cognitive triad has been identified as both a mediator and moderator between depressive symptoms and suicidal ideation, with higher levels of depressive symptoms and a more negative cognitive triad relating to higher levels of suicidal ideation (Chang, Lin, & Lin, 2007).

In an attempt to better understand what factors might relate changes in suicidal ideation, Sokero and colleagues (2006) examined the temporal relationships between suicidal ideation, depressive symptoms, levels of

hopelessness, and anxiety symptoms in 269 adults with MDD. They found that Sokero et al. (2006) found that a decline in both depression (BDI) and hopelessness (BHS) independently predicted a decline in suicidal ideation.

OVERALL AIMS

Prinstein and colleagues (2008) suggested that the short-term course of suicidality be studied in order to better understand what psychological factors are associated with increases in suicidal ideation, as these increases may relate to risk for suicide attempt. In addition, suicidality outcomes are important to consider in treatments of depressed children and adolescents as depression and suicidality are often related. The following two studies address these two issues in an attempt to increase our understanding of suicidality in youth.

CHAPTER THREE
Study One

THE COURSE AND REMISSION OF SUICIDAL IDEATION IN DEPRESSED YOUTH

Abstract

Objective: Relatively little is known about the shorter term course of suicidal ideation during treatment of depressed youth, as clinically this phenomenon has been known to "wax and wane." Most studies of depressed adults demonstrate that suicidal ideation and behavior improve over the course of treatment, with rapid gains early in acute treatment. In this study, we investigate the shorter-term trajectories of suicidal ideation and behavior, including categorical course over 12 weeks of treatment and time to remission of suicidality. In addition, we examine the relationship between suicidality course and important clinical variables such as depression and hopelessness.

Methods: In this secondary analysis of pooled data from three studies of major depressive disorder in youth, suicidal ideation and behavior (based on the Children's Depression Rating Scale suicide item) were examined across 12 weeks of acute treatment with fluoxetine. Participants were grouped into categories (non-suicidal, emergent, persistent, and resolved) based on course of suicidality,

and these groups were compared on baseline and clinical characteristics and treatment outcomes. In addition, time to remission of suicidality was examined in those presenting with suicidality at screening or baseline.

Results: Overall, 253 participants were categorized into groups based on course of suicidality: 43.1% non-suicidal, 5.9% emergent suicidality, 12.6% persistent suicidality, and 38.3% resolved suicidality. The emergent group consisted of significantly more Hispanic participants than the other groups, while all other demographic characteristics were similar. With regard to clinical characteristics, the non-suicidal group presented with lower severity of depression at baseline compared to the persistent and resolved groups, and the non-suicidal group had a younger age of onset of depression than the emergent group. With regard to treatment outcomes, the non-suicidal group demonstrated greater improvement in depression and higher remission rates at the end of 12 weeks compared to the persistent group. In those participants with suicidality at screening or baseline, the time to remission of suicidality was approximately 6 weeks.

Conclusions: Over half of the youths reported suicidality at some point during the course of 12 weeks of treatment for depression, and those who presented with suicidality at the beginning of treatment continued to experience these thoughts and/or behaviors on average for a substantial portion of early treatment. Those children and adolescents with no suicidal ideation or behavior during acute treatment experienced better treatment outcomes. Depressed youth with suicidal

ideation and/or behaviors may require a different treatment approach in order to experience quicken the remission of suicidality and enhance treatment outcomes.

The Course and Remission of Suicidal Ideation in Depressed Youth

Introduction

There is little understanding of the temporal course of suicidal ideation and behavior in adolescents, both longitudinally and in the shorter term (Prinstein et al., 2008). Clinically, suicidal ideation has been said to "wax and wane" (Barbe, Bridge, Birmaher, Kolko, & Brent, 2004; Lewinsohn, Rohde, & Seeley, 1996; Zisook et al., 2009), and fluctuations in suicidal behaviors occur rapidly (Prinstein et al., 2008). It is unclear if remission of suicidal ideation occurs prior to remission of depression in most patients, or if some continue to experience suicidal ideation even after most depressive symptoms are gone. Furthermore, how might the presence of suicidal ideation relate to other variables, such as hopelessness and depression severity, as well as treatment outcome?

Few studies have examined the short-term trajectories of suicidal ideation during treatment for MDD. In a study of patients 65 years of age or older, Szanto et al. (2003) noted that suicidal ideation decreased rapidly early in treatment, with 77.5% reporting ideation at baseline and 4.6% reporting only thoughts of death after 12 weeks of treatment (Szanto, Mulsant, Houck, Dew, & Reynolds, 2003). Sokero and colleagues (2006) examined the short-term course of ideation in adults with MDD. Based on the Scale for Suicidal Ideation (SSI; Beck, Kovacs, & Weissman, 1979), 38% of the 269 participants reported suicidal ideation during

the current depressive episode (Sokero et al., 2006). By the end of the follow-up period suicidal ideation had resolved in 67% of patients and persisted in 21%, while 11% of patients had dropped out. They found that the median duration for decline of suicidal ideation to none was 2.2 months after baseline, and baseline level of suicidal ideation and depressive symptoms, as well as any personality disorder diagnosis predicted a longer duration of suicidal ideation (Sokero et al., 2006).

In another study of geriatric depression, Szanto and colleagues (2007) classified participants based on the Hamilton Rating Scale for Depression (HRSD; Hamilton, 1967) as non-suicidal (did not endorse suicidality throughout the 12 weeks of treatment), resolved (endorsed suicidality during the first two assessments but none after 4 weeks of treatment), persistent (endorsed suicidality during the first two assessments, with continued endorsement at any point past 4 weeks of treatment), or emergent (did not endorse suicidality at first two assessments, but later endorsed this item) over the course of 12 weeks of treatment. Participants were grouped as follows: resolved, 15.6%; persistent, 12.6%; emergent, 7.8%. Szanto et al. (2007) found that those with more persistent suicidal ideation were more likely to have a history of recurrent depression than those who were non-suicidal or had resolved suicidal ideation. In addition, those in the resolved suicidal ideation group had more favorable treatment response (i.e., lower depression scores and lower levels of anxiety and agitation during

treatment) than those in the emergent and persistent groups (Szanto et al., 2007). Time to treatment response has been shown to be longer in geriatric depressed patients with higher levels of suicidal risk (Szanto et al., 2003). In addition, in comparing elderly patients with suicidal ideation in the current episode with those with no ideation, remission rates were similar (77% and 78%, respectively) after treatment with combined pharmacotherapy and psychotherapy (Szanto et al., 2001). However, relapse rates were higher during continuation treatment in those with suicidal ideation in the current episode (26% in ideators versus 15% in non-ideators; Szanto et al., 2001). Thus, it seems that the presence of suicidal ideation relates to treatment outcome.

In the pediatric literature, 12.5% of adolescents being treated for depression with psychotherapy over a 12 to 16 week range reported emergent suicidality on the BDI (Bridge, Barbe, Birmaher, Kolko, & Brent, 2005). In addition, self-report of suicidal ideation experienced the week prior to intake, not the clinician-rated measure of suicidal ideation, predicted emergent suicidality. Recently, emergent suicidality has become a major concern in the treatment of pediatric depression due to findings that antidepressants may increase suicidal ideation in some populations, including children and adolescents.

It may be helpful to identify factors that contribute to the development and decline in suicidal ideation over the course of treatment for depression. In adults with depression, Sokero et al. (2006) found that a decline in both depression

(BDI) and hopelessness (BHS) independently predicted a decline in suicidal ideation. In the STAR*D study of adults with depression, risk factors for emergent suicidal ideation while on citalopram included drug abuse, severe depression, and having melancholic features (Zisook et al., 2009).

In an examination of suicide trajectories in 143 adolescents with a recent psychiatric hospitalization, Prinstein and colleagues (2008) assessed suicidal ideation and behavior during hospitalization and at 3, 6, 9, 15, and 18 months post-discharge. Suicidal ideation remitted between baseline and 6 months, but reemerged between 9 and 18 months post-discharge, and fluctuations in suicidal ideation predicted suicide attempts. In addition, they found that higher self-reported depressive symptoms, lower parent-reported externalizing symptoms, and higher occurrences of non-suicidal self injury predicted weaker suicidal ideation remission slopes, suggesting that these factors may relate to sustained suicidal ideation (Prinstein et al., 2008). They concluded that it will be important to study shorter trajectories of suicidal ideation in order to develop better models for predicting suicide attempts.

The recent Treatment of Adolescent Suicide Attempters (TASA) study examined shorter trajectories of suicidality in adolescents with depression who had made a suicide attempt within the past 90 days (Brent et al., 2009). One outcome of interest in this feasibility study was a suicidal event, which was defined as a completed suicide, attempted suicide, preparatory acts toward

imminent suicidal behavior, or suicidal ideation worsening, all based on the C-SSRS. Of the 124 participants, 24 (19.4%) met criteria for a suicidal event during the 6-month treatment, with 15 (12.1%) making at least one suicide re-attempt. Those participants with a suicidal event had higher levels of suicidal ideation at intake, a greater number of previous suicide attempts, and a lower maximum lethality of previous attempts, higher scores on a depression self-report, higher levels of self-report baseline hopelessness, a higher number of borderline personality traits, and increased anxiety (Brent et al., 2009). In addition, a history of reported sexual or physical abuse was related to experiencing a suicide event. Interestingly, suicide events were associated with a slower improvement in suicidal ideation and suicide reattempts with a slower improvement in the adolescent's overall functioning (Brent et al., 2009). Thus, studying the shorter term trajectories of suicidal ideation may be useful in predicting which youth are at risk for advancing to suicidal behavior or preparatory acts.

Aims

The aim of this study is to examine the course and time to remission of suicidal ideation in depressed youth. To date, no studies have included a categorization approach to understanding suicidal ideation in a pediatric population of depressed youth, and no studies have examined shorter term trajectories of suicidal ideation in depressed youth (including those with a history

of suicide attempt and those without this history). Based on the adult literature (Szanto et al., 2007), it is expected that those in the non-suicidal and resolved suicidality groups will have positive treatment outcomes, while those in the emergent and persistent groups will have poorer treatment outcomes. Based on the adult literature (Sokero et al., 2006; Szanto et al., 2003), most participants will report a decline in suicidal ideation early in treatment. In addition, higher levels of depressive severity, earlier lifetime age of onset, history of multiple episodes, high levels of hopelessness, and more comorbidities will be related to a longer time to remission of suicidal ideation.

Method

This study is a secondary analysis of pooled data from three studies of major depressive disorder in youth (Emslie et al., 2008, Relapse and Remission, PI: Emslie, N = 168; Kennard et al., 2008a, b, Relapse Prevention CBT, PI: Kennard, N = 72; Sequential Treatment of Pediatric Depression, PIs: Emslie & Kennard, ongoing study, n = 34). The following abbreviations will be utilized throughout the paper when describing these studies: RR (Relapse and Remission), RP (Relapse Prevention CBT), and ST (Sequential Treatment of Pediatric Depression).

Participants

In this retrospective analysis, suicidal ideation was examined during the acute phase of treatment (12 weeks) in youth ages 7 to 18 diagnosed with major depressive disorder for at least four weeks based on the K-SADS-PL (Kaufman et al., 1997). Participants had to have a Children's Depression Rating Scale – Revised (CDRS-R; Poznanski & Mokros, 1996) of 40 or greater and a Clinical Global Impression – Severity (CGI-S; Guy, 1976) score of 4 or greater. Exclusion criteria include a lifetime history of any psychotic disorder (including MDD with psychotic features), bipolar disorder, anorexia nervosa, bulimia, a history of alcohol or substance abuse within in the prior 6 months, or a concurrent medical condition that would interfere with the study treatments or be contraindicated. In addition, pregnant or lactating females not using recommended contraception, participants with a first-degree relative with bipolar I disorder, participants requiring a higher level of care (e.g., active suicidal ideation with plan and intent suggesting inpatient care was indicated), and participants who previously had intolerable side effects or no response to fluoxetine were excluded from the study. Those participants taking other psychotropic medications were excluded; the exception was those youth on stable attention-deficit/hyperactivity disorder (ADHD) treatment. Finally, participants were required to be in good general physical health with normal intelligence based on clinical judgment.

Measures

Suicidality, including suicidal behavior and ideation, was assessed across studies by the suicide item (#13) on the clinician-rated Children's Depression Rating Scale – Revised (CDRS-R; Poznanski & Mokros, 1996). In addition, the history of suicidality in the current depressive episode was rated by a team of clinicians at the studies' weekly consensus meetings. Ratings ranged from 1, "none," to 5, "suicide attempts." Two of the studies (RP, ST) also included the Columbia-Suicide History Severity Rating Scale – Short Form (C-SSRS-Short; Posner et al., 2004), a clinician-rated measure of suicidal behavior and ideation. The C-SSRS-Short is a clinician-rated measure that includes two questions (one about ideation and one about behavior). This measure was utilized in the Treatment of Adolescent Suicide Attempters (TASA) study (Brent et al., 2009) and was created to guide clinicians in assessing suicidal thinking and behavior. Both suicidal behavior and suicidal ideation are rated on a 0 to 5 scale, with suicidal ideation ratings ranging from 0, "no ideation," to 5, "suicidal ideation with intent and a clear plan," and suicidal behavior ratings ranging from 0, "no behavior," to 5, "multiple attempts during the assessment period." In addition, because suicidal ideation fluctuates over time, the modal and most severe since the past assessment are rated. Of note, the categories in this measure were designed to match closely with the Columbia Classification Algorithm of Suicide Assessment (Posner et al., 2007), which was used in the recent FDA analysis of suicidality in pediatric depression trials.

The Schedule for Affective Disorders and Schizophrenia for School-aged Children - Present and Lifetime version (K-SADS-PL; Kaufman et al., 1997) was used at screening in all studies. The K-SADS-PL, a semi-structured clinician interview designed to determine present episode and lifetime history of psychiatric disorder using the DSM-IV criteria, was used to diagnosis major depressive disorder (MDD), episodic variables of interest (e.g., length of depressive illness, age of onset), history of trauma, and other comorbidities, including substance dependence, anxiety, and PTSD. Depression severity was evaluated using the Children's Depression Rating Scale – Revised (CDRS-R; Poznanski & Mokros, 1996). The CDRS-R, a clinician-rated, 17-item measure, is used to rate the presence and severity of depressive symptoms. Each item is rated on a 1 to 5 or 1 to 7 scale, with a 1 representing absence of a symptom. CDRS-R scores range from 17 to 113, with 40 or greater indicating depression and 28 or below generally indicating remission of depression. The youth's functioning was measured using the Children's Global Assessment Scale (CGAS; Shaffer et al., 1983), a clinician-rated scale of overall functioning ranging from 1 to 100 with higher scores representing greater function. This measure was completed by the independent evaluator at the major assessment points.

Hopelessness was measured across all three studies as well. In RR and ST, the Hopelessness Scale for Children (HSC) and the Hopelessness Scale for Adolescents (HSA; Kazdin, Rodgers, & Colbus, 1986) were used, while the Beck

Hopelessness Scale (BHS; Beck & Steer, 1988) was used in RP. The HSC, for ages 6 to 11, and HSA, for ages 12 to 18, are questionnaires that were adapted from the BHS, and both have shown predictive validity in relation to dropout from psychosocial treatment and in poorer treatment response (Brent et al., 1998). The BHS is a 20-item, true-false self-report scale that has been shown to be useful in predicting suicidal behavior (Beck & Steer, 1988). On the BHS, higher scores indicate greater levels of hopelessness. Goldston and colleagues (2001) showed that higher scores predicted suicide attempts in adolescents with a previous attempt.

Procedures

The short-term course of suicidal ideation and behavior was examined across the three studies, which were all conducted by the same core study personnel at the same research center. All participants' parents or legal guardians gave written informed consent prior to engaging in any study activities. Assent was obtained from the children and adolescents as well. The studies were approved by the University of Texas Southwestern Medical Center Institutional Review Board.

All three studies included an acute phase of treatment, which lasted for 12 weeks and included treatment with fluoxetine. Initial doses began at 10 mg/day, with an increase to 20 mg/day after one week, unless this increase was

contraindicated due to intolerable side effects. Dosing could be increased to 40 mg/day if needed.

In RR and RP, participants were randomized to a treatment change at Week 12: in RR, participants were randomized to continued fluoxetine or placebo in a double blind design, and in RP, participants were randomized to continued fluoxetine or fluoxetine plus relapse prevention cognitive behavioral therapy (RP-CBT). In ST, participants are eligible for randomization at six weeks if they have shown response to the fluoxetine, based on the CDRS-R score. Participants are randomized to continued medication management with fluoxetine or continued medication management with fluoxetine plus RP-CBT.

In all three studies, the acute treatment phase included weekly meetings with a pharmacotherapist for four weeks, then biweekly sessions until Week 12. At each visit, the pharmacotherapist completed the CDRS-R. In RP and ST, clinicians completed the C-SSRS-Short at each visit. Independent evaluations occurred at Week 12 in all three studies.

For the primary outcome results of the Remission and Recovery (RR) study and the Relapse Prevention CBT (RP) study, please see Emslie et al. (2008) and Kennard et al. (2008), respectively. The Sequential Treatment for Pediatric Depression (ST) study is ongoing.

Statistical Analyses

The data was analyzed by two methods. The first analysis included grouping participants into four categories of suicidality course (based on Szanto et al., 2007), using the pharmacotherapist-rated CDRS-R suicidality item (#13), over 12 weeks of antidepressant treatment. Item 13 requires the clinician to rate the participant's suicidality using the following anchors: 1 = "understands but does not apply the word 'suicide' to self," 2 = "sharp denial of suicidal thoughts," 3 = "has thoughts about suicide usually when angry," 5 = "has recurrent thoughts of suicide," 7 = "has made suicide attempt within last month." Based on these ratings, participants were grouped into the following four categories: *non-suicidal, emergent suicidality*, *persistent suicidality*, or *resolved suicidality*. Participants who endorsed having no suicidal ideation (i.e., score of 1 or 2 on the CDRS-R item 13) at every data point throughout the 12 weeks of acute treatment were classified as *non-suicidal*. Those participants endorsing no ideation (score of 1 or 2) at the first two assessments, but later scoring a 3 or greater on the CDRS-R item 13 any time during the acute phase of treatment were classified as *emergent suicidality*. Participants with a 3 or greater on this item during the first two assessments (screening evaluation and baseline) and a continued score of 3 or more at any point after 4 weeks of treatment (Week 4) were classified as having *persistent suicidality*. Finally, those participants with a score of 3 or greater on the CDRS-R item 13 during the first two assessments but did not report ideation after Week 4 were considered to have *resolved suicidality*. For participants missing a

score at screening, the baseline score was used twice (i.e., as screening and baseline score) to classify the participant; this same method of score substitution was used if a participant were missing a score at baseline (i.e., screening score was used twice for classification). Participants with five or more missed scores (50% of total possible scores) on the CDRS-R item 13 over the course of 12 weeks were dropped from this analysis.

The validity of the four categories was assessed in the subset of participants with C-SSRS-Short ratings, using the suicidal ideation "since previous, most severe" item, which required clinicians to rate the participant's level of suicidal since the last visit. The category compositions were as described above, except that the criteria for a positive endorsement of suicidal ideation was based on a score of 1 or greater on this item. The classification category agreement between the C-SSRS-Short and the CDRS-R item 13 was compared using a kappa statistic to assess reliability.

The four groups based on the CDRS-R item 13 were compared on baseline variables, including demographic and clinical characteristics (e.g., history of depression, age of onset, history of suicidality, history of trauma, substance abuse, comorbidity) and treatment outcome variables (e.g., remission) using an one way analysis of variance (ANOVA) for continuous variables and Chi-square tests for categorical variables.

The second analysis included participants who were positive for suicidal ideation at baseline based on the CDRS-R suicide item. A survival analysis was conducted to evaluate the decline of suicidal ideation during acute treatment. Decline of suicidal ideation was defined as the first time when 2 consecutive pharmacotherapist ratings of no suicidal ideation (i.e., score of 1 or 2 on CDRS-R item 13) occurs. A Cox proportional hazard model with the covariates of age of onset and baseline hopelessness was constructed to understand the effects of these variables on time to remission.

Results

Participant Characteristics

Overall, 267 participants were eligible for this combined study. Six participants from RP were excluded from this study, as these participants entered RP through a "randomization phase only" option and did not have acute treatment data (Kennard et al., 2008a). In addition, one participant was dropped from the RP sample in order to avoid violating assumption of independent observations, as this participant was a sibling of one of the RR participants. Table 1 presents the baseline and clinical characteristics of the overall combined sample, as well as by study subset. The combined sample consisted of 146 (54.7%) males and 121 (45.3%) females. Participants' ages ranged from 7 to 18 years with a mean age of

12.7 (SD = 2.9). The majority of participants were Caucasian (*n* = 192, 71.9%). The mean baseline CDRS-R was 58.0 (SD = 8.2).

One-way analyses of variance for continuous variables and chi-square tests for categorical variables were conducted to test for differences between the three study subsets on age, gender, ethnicity, and baseline clinical variables (see Table 1). Samples taken from the three studies did not significantly differ on gender, ethnicity, baseline depression (CDRS-R), history of depressive episodes, or number of psychiatric comorbidities. The ANOVA testing age between the three study subsets was significant, $F(2, 264) = 25.23$, $p < .001$. Follow-up tests of pairwise differences were conducted using the Dunnet's C test, as the variances between groups significantly differed. These tests revealed that the RR sample was significantly younger than both the RP and ST samples. In addition, the three study samples differed on variables related to the current depressive episode, including length of episode and age of onset. With regard to the length of the current episode, means were compared across the three studies using an ANOVA, $F(2, 264) = 9.22$, $p < .001$. Post hoc tests, using Dunnet's C, indicated that the ST sample presented with a significantly longer duration of episode compared to RR and RP. The age of current episode onset also differed among the three groups, $F(2, 264) = 19.73$, $p<.001$. Again, follow-up tests of pairwise differences were conducted using the Dunnet's C test due to the significance difference among group variance. These tests revealed that the RR sample current episode age of

onset (11.4) was significantly different than the RP sample age of onset (13.7). There were no differences between the RP and ST samples nor between the RR and ST samples on age of current episode onset.

Suicidality in Current Depressive Episode

All participants' suicidality in the current depressive episode was rated by a team of clinicians at the studies' weekly consensus meetings. Table 2 presents the sample's history of suicidality based on these ratings. Overall, 13 (4.9%) participants reported having engaged in suicidal behavior (i.e., suicide attempt) in the current episode, with 9 (3.4%) reporting one attempt, 3 (1.1%) reporting two attempts, and 1 (0.4%) reporting four attempts. Within the current depressive episode, 32.2% (n = 86) reported passive suicidal ideation and 41.2% (n = 110) reported active suicidal ideation.

Categorical Course of Suicidality

Based on the four definitions of suicidality course (based on Szanto et al., 2007) utilizing the suicidality data from the 12 weeks of acute treatment, participants were classified as follows: 43.1% (n = 109) *non-suicidal,* 5.9% (n = 15) *emergent suicidality*, 12.6% (n = 32) *persistent suicidality*, and 38.3% (n = 97) *resolved suicidality*. Fourteen of the 267 (5.2%) participants were dropped from these analyses due to missing CDRS-R item 13 scores of five or more.

Demographic and clinical characteristics were similar between those who were included in the analyses (n = 253) and those who were not (n = 14; results not shown, but available upon request). For 7 of the 253 (2.8%) participants, the baseline CDRS-R item 13 was substituted for the screening item for classification purposes. No participants were missing the baseline CDRS-R item 13.

Validity of categories. The validity of these four categories was assessed using the C-SSRS-Short in a subset of participants (n = 90) from the RP (n = 58) and ST (n = 32) samples, as clinicians completed this measure in both studies. Only two participants (2.2%) were dropped from these analyses due to missing scores of five or more. As before, screening scores were substituted with baseline scores in 4 of the 88 (4.5%) participants, and baseline scores substituted for screening scores in 4 of the 88 (4.5%) participants. Membership in a group based on the C-SSRS-Short was compared to membership based on the CDRS-R item in the 88 participants for which complete data was available. Based on the C-SSRS-Short and the Szanto et al. (2007) definitions, the 88 participants were classified as follows: 23.9% (n = 21) *non-suicidal,* 2.3% (n = 2) *emergent suicidality*, 37.5% (n = 33) *persistent suicidality*, and 36.4% (n = 32) *resolved suicidality*. Based on the CDRS-R item, the 88 participants were classified as follows: 34.1% (n = 30) *non-suicidal,* 8.0% (n = 7) *emergent suicidality*, 22.7% (n = 20) *persistent suicidality*, and 35.2% (n = 31) *resolved suicidality*. In examining these differences more closely, of 30 participants in the non-suicidal group based on the

CDRS-R item, 20 would have been classified in the same group based on C-SSRS-Short (66.7% agreement across scales). The remaining 10 participants were classified as follows: 1 participant as emergent suicidality, 2 participants as persistent suicidality, and 7 participants as resolved suicidality. The emergent group showed 0% agreement, with none of the 7 participants with the C-SSRS-Short ratings being classified as emergent. According to the C-SSRS-Short, 5 of these participants would be classified as having persistent suicidality, while 2 would be categorized in the resolved group. Within the persistent group, 18 of 20 would have remained in this group (90% agreement; on the C-SSRS-Short, 1 in the emergent group and 1 in the resolved group). Finally, the resolved group demonstrated 71.0% agreement with 22 of 31 being classified as resolved based on the C-SSRS-Short. The remaining participants were classified as follows on this measure: 1 participant as non-suicidal and 8 participants as persistent. The reliability of the two forms of measurement was moderate based on the kappa statistic (kappa = 0.55, $p < .001$).

Demographic characteristics. Table 3 presents the four groups compared on baseline variables, including demographic and clinical characteristics. We found no differences between the four groups on age and gender. A two-way contingency table analysis was conducted to evaluate whether the four groups varied by ethnicity, and this was significant, Pearson χ^2 (9, N = 253) = 23.20, p = .006, Cramer's V = .18 (small effect size). The only follow-up pairwise

comparison reaching significance was between the non-suicidal and emergent groups, with the emergent group consisting of more Hispanic participants (47.6%; $p<.004$). The Holm's sequential Bonferroni method was used to control for Type I error at the .05 level across all six comparisons.

Baseline clinical characteristics. An analysis of variance was conducted to compare baseline depression between the four groups. The ANOVA testing baseline depression (CDRS-R total score) was significant, $F(3, 249) = 12.01$, $p < .001$ (see Table 3). Follow-up tests of pairwise differences were conducted using the Dunnet's C test, as the variances between groups significantly differed. The non-suicidal group presented with significantly lower baseline depression when compared to the persistent and resolved groups, but not the emergent group. No other groups differed significantly on baseline depression. This analysis was repeated using the baseline CDRS-R score minus item 13, to remove the influence of suicidality on depression. This ANOVA was also significant, $F(3, 249) = 6.91$, $p < .001$, and tests of pairwise differences using the Dunnet's C test mirrored the above findings (i.e., non-suicidal differed from persistent and resolved groups, but not emergent).

We also evaluated clinical variables related to the current depressive episode (Table 3). There were no differences between the four groups on history of depressive episodes (i.e., first episode versus multiple episodes), duration of the current episode, nor number of psychiatric comorbidities. In addition, there

were no differences in baseline hopelessness between the four groups. Although we were interested in any differences between the groups related to trauma history and substance abuse history, we were unable to test for this due to the low frequency of these comorbid diagnoses in the sample. Five (2.0%) participants met criteria for PTSD at baseline, and two (0.79%) met criteria for a substance use disorder (alcohol abuse and cannabis abuse). An ANOVA comparing the groups on age of onset of the current episode revealed a significant difference among the four groups, $F(3, 249) = 2.69$, $p < .05$. Follow-up comparisons utilizing Tukey HSD showed that those participants in the emergent group possessed a significantly older age of onset than those in the non-suicidal group (13.3 and 11.7, respectively).

Categorical Course of Suicidality and Treatment Outcomes

In addition, we evaluated treatment outcome variables across the four groups. Clinician-rated depression at the end of acute treatment revealed differences between the groups, as the ANOVA testing Week 12 depression (CDRS-R total score) was significant, $F(3, 231) = 9.91$, $p < .001$. Follow-up tests of pairwise differences were conducted using the Dunnet's C test, as the variances between groups significantly differed. The non-suicidal group CDRS-R score ($X = 26.9$, $SD = 8.4$) at the end of acute treatment was significantly lower than that of the persistent group ($X = 33.3$, $SD = 10.7$). No other groups differed significantly

on CDRS-R measures at the end of acute treatment. The mean for the emergent group at the end of 12 weeks of treatment was 36.7 (SD = 17.8) and for the resolved group was 25.5 (SD = 7.6). Figure 1 illustrates the course of depression over the 12 weeks of acute treatment based on suicidality course group. When the above analyses were repeated utilizing the CDRS-R total score minus item 13, there continued to be a significant ANOVA, $F(3, 231) = 8.49$, $p < .001$. Follow-up comparisons based on Dunnet's C revealed a significant difference in depression between the persistent (X = 31.3, SD = 10.3) and resolved (X = 24.5, SD = 7.5) groups at the end of acute treatment, with no differences among the other groups (non-suicidal, X = 25.9, SD = 8.3; emergent, X = 34.9, SD = 16.7).

In order to understand these findings in the context of the pediatric depression literature, groups were examined according to remission outcomes based on the CDRS-R. Remission was defined as a Week 12 clinician-rated CDRS-R score of ≤ 28. A two-way contingency table analysis was conducted to evaluate whether the four groups differed on remission, and this was significant, Pearson χ^2 $(3, N = 235) = 17.50$, $p < .01$, Cramer's V = .27 (small to medium effect size). Again, the Holm's sequential Bonferroni method was used in follow-up comparisons to control for Type I error at the .05 level across all six comparisons. Pairwise comparisons revealed that the rate of remission was significantly higher in those with resolved suicidality (n = 69, 72.6%) compared to those with persistent suicidality (n = 10, 37.0%; $p < .01$; Phi = .31, representing

a medium effect size). In addition, the remission rate was significantly higher in the resolved group (n = 69, 72.6%) compared to the emergent group (n = 5, 35.7%; $p < .01$; Phi = .27, representing a medium effect size). Finally, the remission rate in the non-suicidal group (n = 68, 68.7%) was significantly higher than the persistent group (n = 10, 37.0%; $p < .01$; Phi = .27, representing a medium effect size).

Remission of Suicidality

We calculated the time to remission of suicidality (median = 43.24 days, or 6.2 weeks) in those who presented with suicidality at screening or baseline. A Cox proportional hazard model with age of onset and baseline hopelessness was used to examine remission of suicidality over the 12 weeks of acute treatment ($\chi^2 = 15.99$, $p < .01$). In this model, increased time to remission of suicidality was significantly associated with a younger age of onset for the current episode (HR = .88; 95% CI, .83 - .94; $p < .001$). Figure 2 presents the time to remission of suicidality.

Discussion

While approximately 40% of participants denied suicidality throughout the 12 weeks of acute treatment for major depressive disorder, 5.9% reported *emergent suicidality*, 12.6% reported *persistent suicidality*, and 38.3% reported

resolved suicidality. Of note, the rate of emergent suicidality in this study was lower than that reported by Bridge and colleagues (2005) in their study of depressed adolescent outpatients in psychotherapy. Their report utilized a self-report of depression to capture emergent suicidality; thus, it may be that self-report is more sensitive to changes in suicidality over time. Interestingly, the present study was of depressed adolescents treated with fluoxetine, an SSRI. SSRIs and the risk of emergent suicidality has been a topic of great controversy in the past few years, and the present report did not note an unusually high level of emergent suicidality.

This retrospective analysis combined three samples of depressed youth from studies conducted at UT Southwestern Medical Center. The three samples were comparable with regard to gender and ethnic composition, baseline severity of depression, and number of psychiatric comorbidities. However, the samples differed with regard to age composition. This difference was expected, as the RR study included participants aged 7 to 17 and comprised more than half of the overall combined sample. Less is known about suicidality in children, and the current study presents information about suicidal ideation, behavior, and course of suicidality in a relatively younger sample of youth.

This sample of depressed youth presented with a low rate of suicidal attempts within the current depressive episode (4.9%); however, approximately 73% reported experiencing suicidal ideation. As 43% denied suicidal ideation

over the course of 12 weeks of treatment, this difference highlights the fluctuating nature of suicidal ideation over the course of a depressive episode. As such, it is important for parents, teachers, and gatekeepers to be on guard for suicidal ideation and behaviors in all youth, as these phenomena may occur prior to the recognition and treatment of a depressive disorder. In addition, it remains important for clinicians to routinely screen for suicidal ideation and behavior

In this report, we used the CDRS-R suicide item (#13) to ascertain participants ratings of suicidality over treatment. Interestingly, when we compared these ratings to another measure of suicidal ideation and behavior, the C-SSRS-Short, we noted high disagreement between these scales of assessment, particularly in the non-suicidal group (66.7% agreement) and the emergent group (0%) agreement. Due to the risk associated with suicidal ideation and behavior in youth, misclassifying a youth as non-suicidal is highly undesirable. In reviewing the non-suicidal group, one participant would have been classified as emergent, 2 as persistent, and 7 as resolved had the C-SSRS-Short been the primary measure in this study. The C-SSRS-Short is a more comprehensive assessment of suicidal ideation and behavior over time, and more research is needed with this measure to better understand its utility in clinical and research endeavors with depressed youth. This is particularly important as several agencies (e.g., FDA, NIMH, American Foundation for Suicide Prevention) have been recommending the use of

this measure due to its relationship to the Columbia Classification Algorithm of Suicide Assessment (Posner et al., 2007).

Our findings suggest Hispanic youth might be at particular risk for emergent suicidality during treatment for depression. Both the Centers for Disease Control and Prevention (CDC, 2003, 2006) and the Substance Abuse and Mental Health Services (SAMSHA, 2003) have consistently noted more suicidal behavior in Hispanic youth compared to individuals in other racial and ethnic groups. In addition, Latino youth show higher rates of suicidal ideation (Grunbaum et al., 2004). More research is needed regarding this risk in Hispanic youth; additionally, more research is needed in understanding the unique and similar contributory factors to this increased risk among the various sub-grups in the Latino population as this represents a diverse cultural community (Zayas & Pilat, 2008).

With regard to depression, the non-suicidal group presented with less severe depression than the persistent and resolved groups, once the baseline depression measure was adjusted for the influence of suicidality. In addition, the resolved group demonstrated significantly lower end of treatment depression compared to the persistent group, once suicidality was removed from the measure of depression severity. Remission, considered the gold standard in the treatment of depression, was lower in those with persistent suicidality and emergent suicidality compared to the resolved suicidality group. Consequently, it appears

that the presence of suicidality affects a depressed youth's ability to achieve remission during treatment. We predicted that the non-suicidal and resolved suicidality groups would demonstrate more positive treatment outcomes overall, and our findings seem to be consistent with this hypothesis based on the adult depression literature (Szanto et al., 2007).

The survival analysis revealed that depressed adolescents take close to 6 weeks to achieve remission of suicidality. One clinical implication is the need for patience in working with depressed, suicidal youth, as suicidality may take time to improve. In addition, this demonstrates the necessity of attending to youth who continue to report higher levels of suicidality past the halfway point in treatment, as these youth may be at risk for chronic suicidality and likely more negative outcomes.

With regard to limitations, this study utilized one item from a popular clinician-rated depression measure in youth to ascertain suicidality. The results may have been different if we had utilized a self-report measure of suicidality, an item from a self-report measure of depression, or a clinician-rated measure of suicidality specifically, such as the C-SSRS-Short. In addition, our sample was relatively young on average. These results may not reflect the course and outcomes of suicidality in an older group of adolescents. Finally, the acute treatment across studies included fluoxetine. A different treatment in the acute phase, whether a different medication or treatment modality such as

psychotherapy, might have resulted in different findings regarding the course of suicidality over the acute phase of treatment in depressed youth.

These findings highlight the need for pediatric depression treatments to include intervention to address suicidal ideation and behavior in order to better address the depressive illness overall. The present study includes participants' who received acute treatment with fluoxetine (a small subset, from the ST sample, may have received Relapse Prevention CBT after randomizing after 6 weeks of treatment). Some studies have suggested that CBT may have a protective effect on suicidal ideation, both in the acute and continuation phases of treatment (TADS Team, 2004; Emslie et al., 2006), but other studies have not substantiated this hypothesis (Brent et al., 2008; Goodyer et al., 2007). Future studies are needed to identify sequential treatment strategies or adjunctive treatments that address suicidality effectively in the context of treatment for depression in youth.

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Table 1. Demographic and Baseline Clinical Characteristics

		Treatment Group			Comparison of Treatment Groups	
Participant Characteristics	Combined Sample (N = 267)	RR Sample (n = 168)	RP Sample (n = 65)	ST Sample (n = 34)	Test Statistic	p-value
Age in years, M ± SD	12.7 ± 2.9	11.8 ± 2.8	14.5 ± 1.9	13.4 ± 2.9	F = 25.23	p <.001
Gender, % (N)					$\chi^2 = 1.83$	p = 0.40
Male	54.7 (146)	57.7 (97)	50.8 (33)	47.1 (16)		
Female	45.3 (121)	42.3 (71)	49.2 (32)	52.9 (18)		
Ethnicity, % (N)					$\chi^2 = 11.63$	p = 0.071
African American	9.0 (24)	10.7 (18)	4.6 (3)	8.8 (3)		
Caucasian	71.9 (192)	75.0 (126)	72.3 (47)	55.9 (19)		
Hispanic	15.0 (40)	10.7 (18)	20.0 (13)	26.5 (9)		
Other	4.1 (11)	3.6 (6)	3.1 (2)	8.8 (3)		

CDRS-R total at baseline, M ± SD	58.0 ± 8.2	57.6 ± 7.3	57.8 ± 9.6	60.2 ± 8.2	F = 1.43	p = 0.24
Hopelessness* at baseline, M ± SD	--	10.4 ± 4.3	9.8 ± 5.8	9.7 ± 4.8	--	--
History of depressive episodes					$\chi^2 = 2.71$	p = 0.26
First episode, % (N)	70.4 (188)	69.0 (116)	67.7 (44)	82.4 (28)		
Multiple episodes, % (N)	29.6 (79)	31.0 (52)	32.3 (21)	17.6 (6)		
Current MDE** duration, M ± SD, weeks	27.98 ± 24.7	25.3 ± 21.1	26.3 ±22.8	44.47 ± 36.7	F = 9.22	p < .001
Current MDE age of onset, M ± SD	12.1 ± 2.8	11.4 ± 2.8	13.7 ± 1.9	12.7 ± 2.9	F = 19.73	p < .001
Psychiatric					$\chi^2 = 6.68$	p = 0.35

comorbidity				
None, % (N)	27.3 (73)	25.6 (43)	35.4 (23)	20.6 (7)
One, % (N)	42.3 (113)	42.3 (71)	43.1 (28)	41.2 (14)
Two, % (N)	21.7 (58)	22.6 (38)	18.5 (12)	23.5 (8)
Three or more, % (N)	8.6 (23)	9.5 (16)	3.1 (2)	14.7 (5)

*Hopelessness measured with Kazdin Hopelessness Scale for Children and Adolescents in RR and ST, with Beck Hopelessness Scale in RP

**MDE: Major depressive episode

Table 2. Suicidality in Current Episode

Consensus Rating of Suicidality in Current Depressive Episode, % (n):

N = 267

None	21.7 (58)
Morbid Ideations or Death Wishes	32.2 (86)
Suicidal Thoughts	33.0 (88)
Suicidal Plans	8.2 (22)
Suicide Attempts	4.9 (13)

Table 3. Comparisons of Four Groups of Suicidality Course

Group, based on CDRS-R item #13

N = 253

Participant Characteristics	Non-suicidal (n = 109)	Emergent (n = 15)	Persistent (n = 32)	Resolved (n = 97)	Test Statistic	p-value
Age in years, M ± SD	12.2 ± 2.9	13.0 ± 2.2	13.8 ± 3.0	12.6 ± 2.9	F = 2.60	p = 0.53
Gender, % (N)					$\chi^2 = 1.32$	p = 0.73
Male	58.7 (64)	46.7 (7)	50.0 (16)	55.7 (54)		
Female	41.3 (45)	53.3 (8)	50.0 (16)	44.3 (43)		
Ethnicity, % (N)					$\chi^2 = 23.20$	p <.01
African American	11.0 (12)	6.7 (1)	6.3 (2)	6.2 (6)		

Caucasian	73.4 (80)	46.7 (7)	65.6 (21)	77.3 (75)		
Hispanic	11.0 (12)	46.7 (7)	15.6 (5)	15.5 (15)		
Other	4.6 (5)	0.0 (0)	12.5 (4)	1.0 (1)		
CDRS-R Total at Baseline, M ± SD	55.1 ± 6.6	61.9 ± 13.8	63.3 ± 8.6	59.4 ± 7.6	F = 12.0	p < .001
History of depressive episodes					$\chi^2 = 5.04$	p = 0.17
First episode, % (N)	69.7 (76)	93.3 (14)	75.0 (24)	66.0 (64)		
Multiple episodes, % (N)	30.3 (33)	6.7 (1)	25.0 (8)	34.0 (33)		
Current MDE* duration, median (range), weeks	20.0 (4-158)	26.0 (8-108)	22.5 (4-48)	24.0 (4-114)	$\chi^2 = 2.95$	p = 0.40

Current MDE age of onset, M ± SD	11.7 ± 2.9	12.2 ± 2.3	13.3 ± 2.7	12.0 ± 2.8	F = 2.69	p < .05
Psychiatric comorbidity					χ^2 = 6.67	p = 0.35
None, % (N)	21.1 (23)	40.0 (6)	31.3 (10)	29.9 (29)		
One, % (N)	48.6 (53)	33.3 (5)	40.6 (13)	34.0 (33)		
Two or more, % (N)	30.3 (33)	26.7 (4)	28.1 (9)	36.1 (35)		

*MDE = major depressive episode

Figure 1. Depression Ratings by Group across Time

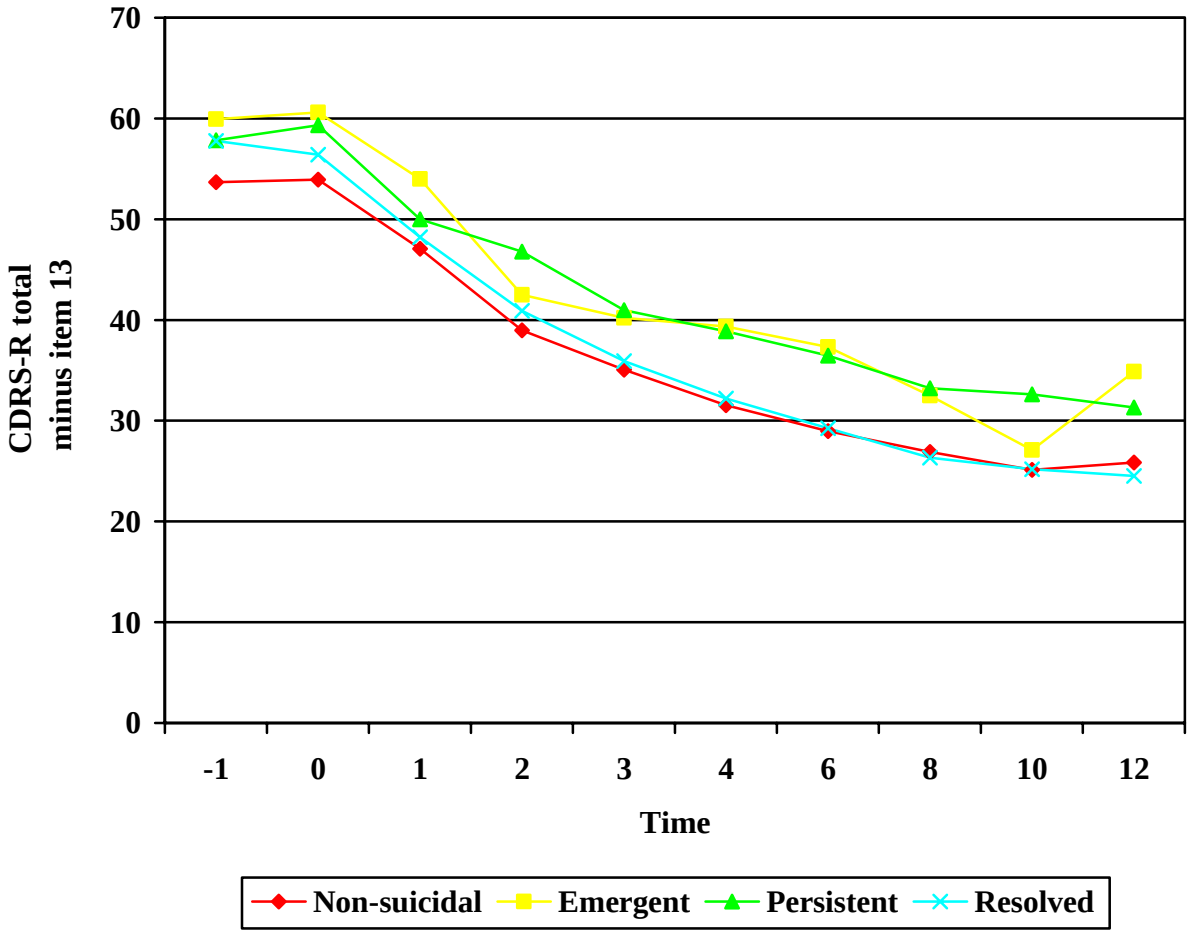
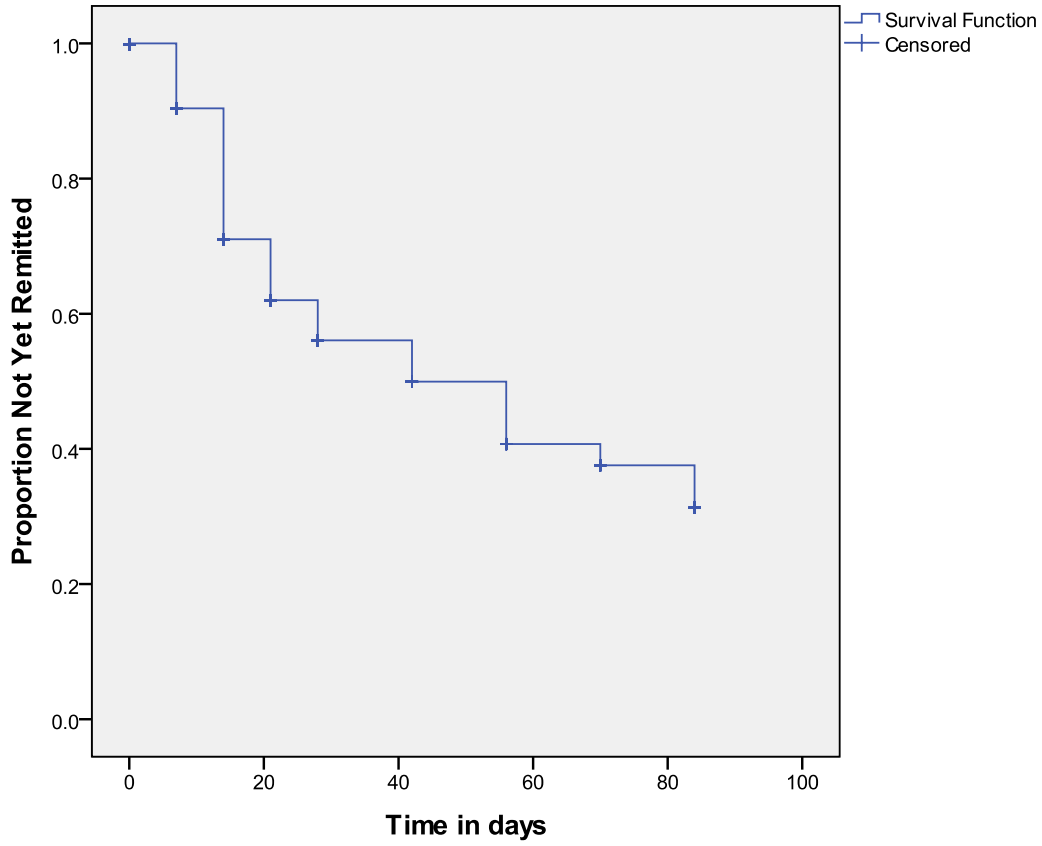


Figure 2. Time to Remission of Suicidality in Persistent and Resolved Groups



CHAPTER FOUR
Study Two

SUICIDALITY AND OUTCOMES IN DEPRESSED YOUTH TREATED WITH A SEQUENTIAL TREATMENT STRATEGY

Abstract

Objective: Suicidal behavior and ideation have been associated with outcomes in pediatric depression trials with decreasing levels of suicidality correlating with symptom improvement (Emslie et al., 2006), and findings are mixed regarding the possibly protective role of CBT in addressing suicidality. We present data on suicidal behavior and ideation in an RCT of a sequential treatment strategy, with acute open treatment (12 weeks) with fluoxetine and randomized continuation phase treatment (24 weeks) with either continued medication management or relapse prevention CBT in addition to medication management.

Method: Seventy-two pediatric outpatients (ages 11 to 18) who met DSM-IV criteria for MDD, based on the K-SADS-P/L (Kaufman et al., 1997) and completed a two-week (three visit) diagnostic evaluation were treated openly during acute phase treatment with fluoxetine (10 to 40 mg) for 12 weeks. Responders (n=46), defined as those participants with a Clinical Global Impression – Improvement (CGI-I; Guy, 1976) score of 1 or 2 and a greater than or equal to 50% reduction in symptoms on the Children's Depression Rating

Scale - Revised (CDRS-R; Poznanski & Mokros, 1996), were randomized to continued Medication Management (MM) or continued Medication Management plus Relapse Prevention CBT (MM+CBT) for six months of continuation treatment. Suicidality was assessed using the Columbia Suicide History Severity Rating Scale – Short Form (C-SSRS-Short; Posner et al., 2004), a clinician-rated measure of suicidal behavior and ideation, and the Suicide Ideation Questionnaire – Grades 7 to 9 (SIQ-JR; Reynolds, 1987), a self-report of suicidal ideation. Depression severity was assessed using the CDRS-R. Cognitive measures included the Beck Hopelessness Scale (BHS, Beck et al., 1974) and the Cognitive Triad Inventory for Children (CTI-C; Kaslow et al., 1992).

Results: At baseline, 32.1% participants reported clinically significant suicidal ideation based on the SIQ-JR. The C-SSRS-Short and SIQ-JR were highly correlated ($p < .01$). Self-reported suicidal ideation decreased by the end of acute treatment ($p < .0001$), and hopelessness and negatively cognitions significantly improved ($p < .0001$). Baseline suicidal ideation, hopelessness, and negative cognitions predicted Week 12 suicidal ideation ($p < .01$). At the end of 24 weeks of continuation treatment, self-reported suicidality was lower and hopelessness and negative cognitions significantly improved in the MM+CBT group compared to the MM group.

Conclusion: Our data suggests that self-report is an accurate method to assess suicidal ideation in youth. Similar to previous studies of pediatric depression,

suicidality decreased throughout the course of treatment. It appears that the CBT in this study targeted hopelessness, negative cognitions, and suicidal ideation effectively.

Suicidality and Outcomes in Depressed Youth Treated with a Sequential Treatment Strategy

Introduction

Suicidal behavior and ideation have been associated with outcomes in pediatric depression trials with decreasing levels of suicidality correlating with symptom improvement and with high levels of suicidality relating to poorer treatment response (Barbe, Bridge, Birmaher, Kolko, & Brent, 2004; Brent et al., 2009b; Emslie et al., 2006). As up to 85% of adolescents with major depressive disorder (MDD) or dysthymia report experiencing suicidal ideation (Kovacs, Goldston, & Gatsonis, 1993), the co-occurrence of depression and suicidal ideation is high. Therefore, it is important that interventions for depressed youth include strategies to manage suicidal ideation and behavior. In addition, it is important for clinicians to have an awareness of how higher levels of suicidal ideation might affect treatment in depressed youth.

Over time, there has not been a clear consensus about the most effective way to measure suicidality in youth. In adults, some studies (e.g., Joiner, Rudd, & Rahab, 1999; Z. Kaplan, Benbenishty, Waysman, & Solomon, 1992) have demonstrated poor levels of agreement between self-report and clinician report of suicidal ideation in adults, while others have shown high levels of agreement

between these methods of measurement (M. Kaplan et al., 1994). Prinstein and colleagues examined gender and age differences in reporting methods in adolescents (Prinstein, Nock, Spirito, & Grapentine, 2001). Boys were more likely to demonstrate concordance between forms of measurement compared to girls. No difference was found between younger and older age groups. They concluded that it is important to measure suicidality by multiple methods in youth. Several factors, including method of assessment (e.g., interview vs. paper-pencil measure; Prinstein et al., 2001), informant (e.g., parent vs. child; Breton, Tousignant, Bergeron, & Berthaume, 2002), and setting (e.g., psychiatric outpatient vs. emergency room; Kapur et al., 2005) have been found to contribute to discrepancies between reports of suicidality. As such, more recent studies of suicidality in youth have included multiple forms of measuring suicidal ideation and behavior (Conner &Reuter, 2009; Prinstein et al., 2001).

The presence of high baseline suicidal ideation in youth being treated for depression has been shown to predict a suicidal event during treatment (Emslie et al., 2006). Other predictors include a past suicide attempt and high baseline levels of anger and agitation (Apter et al., 2006; Emslie et al., 2006; Perlis et al., 2007). In treatment-resistant depression in adolescents, predictors of a suicidal event included high baseline suicidal ideation and depression, family conflict, and substance use (Brent et al., 2009a). Predictors of a suicidal event in depressed adolescents with a recent suicide attempt included a history of multiple attempts,

a lower maximum lethality rating among previous attempts, high baseline hopelessness, high self-reported depressive symptoms, a history of sexual or physical abuse, and a slower improvement in functioning (Brent et al., 2009b).

Suicidal ideation may impact an individual's involvement in treatment. For example, Barbe and colleagues found that depressed participants with current suicidal ideation were more likely to drop out of the treatment study than those depressed participants without suicidality (Barbe et al., 2004). In addition, higher levels of hopelessness, which are often related to higher levels of suicidal ideation, have been found to relate to early discontinuation of treatment (Brent et al., 1997).

Recently, suicidality has received increased attention as an important outcome to track in the treatment of pediatric depression (Rudd, Cordero, & Bryan, 2009). In an analysis of the pediatric depression antidepressant trials, the average risk of suicidal events in patients receiving antidepressants was 4% while the placebo risk was 2% (Hammad, Laughren, & Racoosin, 2006). Thus, the FDA issued a black box warning for all antidepressants in 2004 regarding the risk suicidal risk in the pediatric population, and extended this warning to age 24 in 2007. Debate continues about this decision and its possible unintended consequences on antidepressant prescribing practices and the suicide rate (Bridge et al., 2007; Gibbons et al., 2007; Kratochvil et al., 2006; Rudd et al., 2009).

Regardless, this issue highlights the need to closely track suicidal ideation and behavior when treating a patient for depression.

The relationship between CBT treatment for depression and suicidality outcomes has not been consistent. One study of adolescent depression found that CBT may have a protective effect on suicidal ideation, both in the acute and continuation phases of treatment (TADS Team, 2004; Emslie et al., 2006). Another study of depression treatment with SSRIs without and without CBT failed to find a protective effect (Goodyer et al., 2007). A trial of treatment-resistant depression did not find this relationship between CBT and decreased risk for suicidal adverse events (Brent et al., 2008).

In addition, cognitive factors, such as hopelessness, have been found to mediate the relationship between suicidality and treatment outcome in depressed adolescents (Barbe et al., 2004). Hopelessness has been implicated in multiple studies as a useful proxy to suicidal ideation (Beck et al., 1975; Bedrosian & Beck, 1979; Dyer & Kreitman, 1984; Minkoff, Bergman, Beck, & Beck, 1973; Petrie & Chamberlain, 1983; Wetzel, 1976; Wetzel, Margulies, Davis, & Karam, 1980; Wetzel & Reich, 1989), with high levels of hopelessness related to greater suicidal ideation and even eventual death by suicide (Beck, Steer, Kovacs, & Garrison, 1985). In addition, a child's view of the self, world, and future (cognitive triad) has been associated with depression severity (Stark, Schmidt, & Joiner, 1996). The cognitive triad has been identified as both a mediator and

moderator between depressive symptoms and suicidal ideation, with higher levels of depressive symptoms and a more negative cognitive triad relating to higher levels of suicidal ideation (Chang, Lin, & Lin, 2007).

Aims

The aim of this study is to examine suicidal ideation and cognitive variables, such as hopelessness and the presence of negative cognition, and the relationship to treatment outcomes in an RCT of a sequential treatment strategy. As the findings regarding the protective role of CBT in mitigating suicidal ideation have been mixed, this study will add to existing literature in examining if CBT delivered sequentially after response to SSRI treatment affects levels of suicidal ideation. Hypotheses include: 1.) suicidal ideation and cognitive variables will improve after 12 weeks of treatment, 2.) baseline hopelessness, negative cognitions, and severity of depression will predict decline in suicidal ideation, with higher levels of hopelessness, negative cognition, and depression being related to less decline in suicidal ideation, and 3.) based on the TADS study findings (TADS Team, 2004), the addition of CBT will result in greater reduction of suicidal ideation at the end of continuation treatment (end of 36 weeks).

Methods

This study is a secondary analysis of data of an RCT of a sequential treatment strategy in the treatment of major depression in adolescents (Kennard et al., 2008a, b). All participants' parents or legal guardians gave written informed consent prior to beginning the study, and assent was obtained from the adolescents. This study was approved by the University of Texas Southwestern Medical Center Institutional Review Board.

The main outcome of this study has been reported: the addition of continuation phase CBT following response to acute phase pharmacotherapy significantly lengthened time to relapse, as those who did not receive CBT had an 8 times greater risk of relapse than those who received CBT (Kennard et al., 2008a). The suicidality, hopelessness, and cognitive triad data in this report has not previously been analyzed or reported.

Participants

Seventy-two pediatric outpatients (ages 11 to 18), who had been diagnosed with major depressive disorder on the K-SADS-PL (Kaufman et al., 1997) were treated openly during acute phase treatment with antidepressants for 12 weeks. Of these 72, 6 were treated openly outside of the study on SSRIs and entered the randomization phase only. Sixty-six were treated within the study on fluoxetine for 12 weeks. Participants had to have a Children's Depression Rating Scale – Revised (CDRS-R; Poznanski & Mokros, 1996) of at 40 or greater and a

Clinical Global Impression – Severity (CGI-S; Guy, 1976) score of 4 or greater. Exclusion criteria include a lifetime history of any psychotic disorder (including MDD with psychotic features), bipolar disorder, anorexia nervosa, bulimia, a history of alcohol or substance abuse within in the prior 6 months, or a concurrent medical condition that would interfere with the study treatments or be contraindicated. In addition, pregnant or lactating females not using recommended contraception, participants with a first-degree relative with bipolar I disorder, participants requiring a higher level of care (e.g., active suicidal ideation with plan and intent suggesting inpatient care was indicated), and participants who previously had intolerable side effects or no response to fluoxetine were excluded from the study. Those participants taking other psychotropic medications were excluded; the exception was those youth on stable attention-deficit/hyperactivity disorder (ADHD) treatment. Finally, participants were required to be in good general physical health with normal intelligence based on clinical judgment.

Forty-six youth who had responded to the antidepressant treatment (40 of whom were treated within the acute phase of the study and 6 referred into the continuation phase) were randomized to receive either 6 months of continued medication management (MM) or medication management plus relapse prevention CBT (MM+CBT).

Measures

Clinician Measures. Suicidal behavior and ideation were assessed using the Columbia-Suicide History Severity Rating Scale – Short Form (C-SSRS-Short; Posner et al., 2004), a clinician-rated measure of suicidal behavior and ideation. The C-SSRS-Short is a semi-structured, clinician-rated measure to evaluate the severity of suicidality, including suicidal ideation and behavior, over time. The clinician rated the suicidal behavior and suicidal ideation, both modal and most severe, in the past week and since the previous visit. The C-SSRS-Short also included items to assess the presence of suicidal ideation and the frequency, duration, controllability, deterrents, and reasons for ideation. Both suicidal behavior and suicidal ideation are rated on a 0 to 5 scale, with 0 representing absence of suicidality. In addition, because suicidal ideation fluctuates over time, the modal and most severe since the past assessment are rated. A more comprehensive version of this measure (C-SSRS) was utilized in the Treatment of Adolescent Suicide Attempters (TASA) study (Brent et al., 2009b) and was created to guide clinicians in assessing suicidal thinking and behavior. The C-SSRS-Short is not yet validated, but has been recently been utilized in several studies of depression in youth (e.g., Brent et al., 2009a, b; Emslie et al., 2009). The Schedule for Affective Disorders and Schizophrenia for School-aged Children - Present and Lifetime version (K-SADS-PL; Kaufman et al., 1997) was used at screening to diagnose major depressive disorder and other DSM-IV Axis I

comorbidities. The K-SADS-PL is a semi-structured clinician interview designed to determine present episode and lifetime history of psychiatric disorder using the DSM-IV criteria. Throughout the study, depression severity was assessed using the Children's Depression Rating Scale – Revised (CDRS-R; Poznanski & Mokros, 1996). The CDRS-R is a clinician-rated, 17-item measure to rate the presence and severity of depressive symptoms. Each item is rated on a 1 to 5 or 1 to 7 scale, with a 1 indicating absence of a symptom. The CDRS-R results in a score ranging from 17 to 113, with 40 or greater indicating depression and 28 or below generally indicating remission of depression.

Self-report measures. The Suicide Ideation Questionnaire – Grades 7 to 9 (SIQ-JR; Reynolds, 1988; Reynolds & Mazza, 1999), a self-report of suicidal ideation, was also utilized to measure suicidal ideation in youth. The SIQ-JR is a 15-item, 7-point scale with evidence of predictive validity with regard to future suicide attempt (Keane, Dick, Bechtold, & Manson, 1996; King et al., 1995). Youth were asked to complete this self-report, which includes questions related to thoughts about suicide. Higher total scores reflect more serious suicidal ideation. Cognitive measures included the Beck Hopelessness Scale (BHS; Beck & Steer, 1988) and the Cognitive Triad Inventory for Children (CTI-C; Kaslow, Stark, Printz, Livingston, & Ling Tsai, 1992). The BHS is a 20-item, true-false self-report scale that has been shown to be useful in predicting suicidal behavior (Beck & Steer, 1988). On the BHS, higher scores indicate greater levels of hopelessness.

Brent and colleagues (1997) found that higher scores on the BHS were related to treatment drop-out in adolescents, while Goldston and colleagues (2001) noted that higher scores predicted suicide attempts in adolescents with a previous attempt. The CTI-C is a 36-item measure that includes three subscales: View of the Self, View of the World, and View of the Future (Kaslow et al., 1992). This measure, developed to assess Beck's cognitive triad, has been shown to differentiate depressed children from controls. On the CTI-C, higher scores indicate more positive views of the self, world, and future.

Procedures

Pharmacotherapists assessed depressive symptoms and suicidality weekly for four weeks, biweekly for eight weeks, and monthly until the 36 weeks of acute and continuation treatment concluded. Depression severity was assessed with the CDRS-R and suicidal ideation and behavior were assessed with the C-SSRS-Short. All participants received pharmacotherapy throughout the 36 weeks, as both randomization arms included treatment with fluoxetine.

Independent Evaluator assessments occurred at weeks 12 (randomization baseline), 24, and 36 for all participants. The IE assessed depressive symptoms using the CDRS-R and suicidal ideation and behavior using the C-SSRS. Participants also completed self reports, including the SIQ-JR, BHS, and CTI-C. The primary outcome of this trial was time to relapse (Kennard et al., 2008a).

Treatments

Participants in the acute phase of the study received pharmacological treatment with fluoxetine. Dosing began at 10 mg/day for one week, then increased to 20 mg/day. If needed, participants' fluoxetine dose could be increased as high as 40 mg/day. Participants met with the study coordinator at each visit. In the first 12 weeks, all participants received weekly pharmacotherapy for four weeks, followed by biweekly sessions for eight weeks. Post-randomization to MM or MM+CBT, all participants met with the pharmacotherapist monthly for six months. Pharmacotherapy was conducted by child psychiatrists and child fellows at Children's Medical Center.

Participants in the MM+CBT group received 8 to 11 sessions of Relapse Prevention Cognitive Behavioral Therapy (RP-CBT) over six months. The RP-CBT was designed as a sequential treatment strategy for reducing residual symptoms and preventing relapse and recurrence of MDD in youth. Interventions included psychoeducation about CBT, depression, and relapse, core skills of behavioral coping, cognitive restructuring, problem solving, and reducing negative emotion in the family, and wellness skills training (Kennard et al., 2008b).

Statistical Analyses

Listwise deletion was utilized to address missing data to give unbiased estimates as the missing data was determined to be missing completely at random (Acock, 2005). For the participants who entered the study at the randomization baseline (n = 6), acute baseline scores for the clinician-rated depression and suicide measures were estimated based on the participants' descriptions of their severity of depression and suicidality prior to beginning acute treatment. Correlations were examined between scores of suicidal ideation, depression, and cognitive measures at screening (prior to beginning acute treatment). In addition, correlations between the self-report measure of suicidal ideation (SIQ-Jr) and the clinician-rated measure (C-SSRS-Short) in certain subgroups (i.e., males only, females only, younger, older) were utilized to ascertain if suicidal ideation is differentially reported by a specific method.

Paired t-tests were used to examine suicidal ideation and cognitive measures at screening and the end of acute treatment. Linear regression analyses were conducted to evaluate predictors of depression and suicidality outcomes at Week 12.

Change in suicidal ideation and behavior based on the C-SSRS-Short was examined based on criteria from two previous studies that utilized categories based on the Columbia Classification Algorithm of Suicide Assessment (Posner et al., 2007). Based on the categories created by Emslie and colleagues (2009) for the Modified Columbia Suicide Severity Rating Scale (MC-SSRS), worsening of

behavior from baseline was defined as a change from zero at baseline to a score of greater than zero, while worsening of ideation from baseline was defined as a change from either zero (representing no ideation) or 1 (representing passive ideation) to a score greater than 1. As such, for the C-SSRS-Short, only those participants with a baseline assessment and at least one post-baseline assessment were included in this analysis. For suicidal behavior analysis, two participants were excluded as a result of having no baseline data; for the suicidal ideation analysis, three participants were excluded for this reason. Brent and colleagues (2009a) defined a suicidal adverse event using the Brief Suicide Severity Rating Scale, requiring a two-point change on either the ideation or behavior scales.

We conducted ANCOVAs to examine differences in suicidal ideation and cognitive variables between treatment groups at the end of 12 weeks of continuation (Week 24) and at the end of 24 weeks of continuation treatment (at Week 36). All analyses were intent-to-treat. The level of significance for all tests was set at $p \leq 0.05$.

Results

Participant Characteristics

Of the one hundred twenty-one patients screened for inclusion in the study, 66 participants entered into acute treatment. In addition, six youth entered the study through the randomization-only option. These youth had been taking an

SSRI prescribed by a community provider and were demonstrating response to treatment. Overall, 72 participants entered the study. The acute phase sample consisted of 37 (51.4%) males and 35 (48.6%) females, ranging in age from 11 to 18 years with a mean age of 14.4 (SD = 1.9). The majority of participants were Caucasian (*n* = 53, 73.9%) or Hispanic (*n* = 14, 19.4%). The median SIQ-JR at the acute baseline was 18.0 (range: 0-80) and at randomization baseline was 8.0 (range: 0-67; the measure ranges from 0 to 90).

Forty-six youth were eligible for the continuation phase of treatment and were randomized to MM (n = 24) or MM+CBT (n = 22). There were no differences on demographic or clinical characteristics between those participants who were eligible to randomize and those who were not, nor were there any differences between those participants who entered through the randomization-only option and those that received acute treatment through the study (Kennard et al., 2008a). Demographic characteristics and baseline depression, suicidality, hopelessness, and negative cognitions are presented in Table 1. The continuation phase sample consisted of 24 male (52.2%) and 22 female participants (47.8%), ranging in age from 11 to 18 years (X = 14.3 years, SD 1.9 years). The majority of participants (n = 34, 73.9%) were white. T-tests for continuous variables and chi-square tests for categorical variables revealed no differences between the MM and MM+CBT groups in age, gender, ethnicity, SES, acute baseline clinical variables, and randomization baseline clinical variables (see Table 1).

Suicidality and Related Measures at Screening and Baseline

History of Suicidality. At screening, clinicians utilized the C-SSRS-Short to evaluate participants' history of most severe suicidal behavior and ideation and suicidal behavior and ideation in the past month. In addition, all participants' suicidality in the current depressive episode was rated by a team of clinicians at the study's weekly consensus meeting. Table 2 presents the sample's history of suicidality based on these ratings. Overall, 9 (14.8%) participants had made either an actual suicide attempt or interrupted attempt in their lifetime, with 2 (3.3%) having a history of an aborted suicide attempt. In the current depressive episode, 7 (9.7%) participants reported having attempted suicide. All participants denied any form of suicide attempt in the past month. With regard to the most severe lifetime suicidal ideation, 14.0% (n = 8) reported no suicidal ideation, 29.8% (n = 17) reported passive suicidal ideation, and 56.2% (n = 32) reported active suicidal ideation. Within the current depressive episode, 16.7% (n = 12) reported no suicidal ideation, 23.6% (n = 17) reported passive suicidal ideation, and 50.0% (n = 36) reported active suicidal ideation. Finally, within the month prior to being screened, 28.8% (n = 17) reported no suicidal ideation, 35.6% (n = 21) reported passive suicidal ideation, and 35.6% (n = 21) reported active suicidal ideation.

Baseline suicidality. At the acute phase baseline, eighteen (32.1%) participants reported clinically significant suicidal ideation based on the SIQ-JR ≥

31 (definition based on Reynolds, 1988). Within the week prior to beginning acute treatment, 3 (4.4%) participants reported having attempted suicide, 17 (25.4%) reported passive suicidal ideation, and 14 (21.0%) reported active suicidal ideation. We explored gender and age differences in suicidality at baseline. There were no significant differences between males and females on clinically significant suicidal ideation based on the SIQ-JR ($\chi^2 = 2.35$, $p = .125$), nor were there differences between younger and older participants ($\chi^2 = 3.05$, $p = .081$). Suicidal behavior (no behavior versus all other categories), as measured by the C-SSRS-Short, did not significantly differ between males and females (p = .47, Fisher's exact test) nor between older and younger participants (p = .53, Fisher's exact test) at baseline. Finally, suicidal ideation (no ideation versus passive ideation versus active ideation), as measured by the C-SSRS-Short, did not significantly differ by gender ($\chi^2 = 2.4$, $p = .30$) or age group ($\chi^2 = 4.0$, $p = .14$) baseline.

Comparing self- and clinician-reports. At baseline, the C-SSRS-Short, Modal and Most Severe Ideation ratings were significantly correlated with the SIQ-JR ($r = 0.70$, $p < .01$; $r = 0.70$, $p < .01$, respectively). In addition, clinician-rated (C-SSRS-Short) and self-reported (SIQ-JR) suicidal ideation at baseline were correlated in all sub-groups, including males only, females only, younger participants, and older participants. Clinician-rated (CDRS-R) and self-reported (BDI-II) depressive symptoms were also significantly correlated ($r = 0.47$, $p <$

.01). In addition, hopelessness (BHS) was positively correlated with both self-reported (SIQ-JR) and clinician-reported (C-SSRS-Short) suicidal ideation, while the negative triad (CTI-C Total) was negatively correlated with suicidal ideation (see Table 4).

Acute Phase Outcomes

Self-reported suicidal ideation had decreased at the end of acute treatment ($t = 4.30$, $p < .0001$). In addition, hopelessness ($t = 4.50$, $p < .0001$) and the view of the self, word, and future (overall cognitive triad, $t = -6.12$, $p < .0001$) improved from baseline to Week 12. There was no relationship between baseline self-reported suicidality, hopelessness, or depressive cognitions and Week 12 depression outcomes based on the CDRS-R. A regression analysis, using baseline self-reported suicidal ideation, baseline hopelessness, and overall view of the self, world, and future, predicted Week 12 self-reported suicidal ideation [$F(3, 33) = 7.35$, $p < .01$]. This model accounted for 40% of the variance in Week 12 SIQ-JR scores. Baseline depression was added to the model, based on the CDRS-R minus the suicidality item (#13) to avoid inflating the association between suicidality and depression. This addition did not significantly contribute to the model.

Continuation Phase Outcomes

There were no significant differences between the MM and MM+CBT treatment groups on suicidal ideation (SIQ-JR; $t = 0.52$, $p = .61$), hopelessness (BHS; $t = 1.0$, $p = .31$), and negative cognitions (CTI-C Total; $t = -0.26$, $p = .79$) at the randomization baseline (Week 12). To evaluate suicidality at the end of 12 weeks of continuation treatment (Week 24), a general linear model (ANCOVA) which included covariates of randomization baseline (Week 12) suicidal ideation (SIQ-JR), hopelessness (BHS), negative cognitions (CTI-C total), and depression (CDRS-R), was constructed. There was a significant treatment group effect on suicidal ideation at Week 24, even after controlling for the effects of Week 12 suicidal ideation, hopelessness, negative cognitions, and depression, $F(5, 23) = 3.76$, $p < .05$ (effect size = .45, medium).

To understand differences in Week 36 suicidality between the two treatment groups, we constructed a general linear model (ANCOVA) which again included covariates of randomization baseline (Week 12) suicidal ideation (SIQ-JR), hopelessness (BHS), negative cognitions (CTI-C total), and depression (CDRS-R). Week 36 suicidality also differed between the MM and MM+CBT treatment groups, after controlling for the Week 12 covariates, $F(5, 23) = 5.0$, $p < .01$ (effect size = .52, medium).

At the end of continuation treatment, hopelessness was significantly lower in the MM+CBT group compared to the MM group ($t = 2.30$, $p < .05$). In

addition, the cognitive triad (view of self, world, future) significantly improved in the MM+CBT group compared to the MM group ($t = -2.36$, $p < .05$).

Suicidality Over Time

To compare this sample's suicidality to previous samples using measures based on the Columbia Classification Algorithm of Suicide Assessment (Posner et al., 2007), we examined the data using two procedures. Based on Emslie et al. (2009) definitions, few participants (n = 2, 2.9%) had a worsening of suicidal behavior from baseline (defined as change from zero at baseline to a score of greater than zero). With regard to suicidal ideation, 11.6% (n = 8) participants exhibited worsening from baseline (defined as a change from either zero or 1 to a score greater than 1). Based on the definition of suicidal adverse events in the study by Brent and colleagues (2009a), 15.9% (n = 11) of participants experienced a suicidal adverse event based on the C-SSRS-Short (2-point change on either ideation or behavior subscales).

Discussion

The aim of this study was to elucidate the relationships between suicidal ideation and cognitive variables, such as hopelessness and the presence of negative cognition, and treatment outcomes in an RCT of a sequential treatment strategy. Our data suggests that self-report is an accurate method to assess suicidal

ideation in youth, as self-report was highly correlated with clinician ratings of suicidal ideation. It appears that self-reports of suicidal ideation are useful in both males and females across adolescence. As expected, depressive cognitions, such as hopelessness and cognitions about the self, world, and future, were highly correlated with both clinician-rated and self-reported suicidal ideation.

In our sample of 72 depressed youth, 14.8% of participants had made either an actual suicide attempt or interrupted attempt in their lifetime, and 3.3% reported a history of an aborted suicide attempt. At baseline, 32.1% of participants reported clinically significant suicidal ideation based on the SIQ-JR. This rate is similar to that reported for the TADS sample of depressed youth (29.2% based on the SIQ-JR; Emslie et al., 2006), and substantially lower than that in TORDIA, a study of treatment-resistant depressed youth (58.5% based on the SIQ-JR; Brent et al., 2008). In the TADS sample, the baseline SIQ-JR median was 16.0 (TADS Team, 2004), which is similar to this sample's median of 18.0. Overall, it appears that the present study is representative of suicidality in depressed adolescents.

Similar to previous studies of pediatric depression and consistent with our first hypothesis, suicidal ideation decreased by the end of acute treatment. In addition, hopelessness decreased and negative cognitions improved during the acute phase of treatment with SSRI medication. While baseline suicidality and negative cognitive variables did not relate to depression outcomes, these variables

did predict suicidality at the end of acute treatment. Our second hypothesis was partially substantiated, as we predicated that cognitive measures and baseline suicidality would relate to suicidality outcomes at the end of 12 week. However, we also predicted that baseline depression would relate to suicidality outcome, and this was not the case.

Another hypothesis related to the effects of CBT on suicidal ideation, as the findings regarding the protective role of CBT against suicidal ideation have been mixed. We predicted that the addition of continuation phase CBT would result in greater reductions in suicidal ideation at the end of 36 weeks of treatment. This finding was substantiated. In addition, the MM+CBT group demonstrated significantly decreased hopelessness and improved negative cognitions compared to the MM group, suggesting that RP-CBT addresses the cognitive variables it was designed to address in youth with depression.

Emslie and colleagues (2009) reported that 1.9% of participants experienced an increase in suicidal behavior from baseline, while 9.3% experienced an increase in suicidal ideation from baseline. The findings from the present study were similar, with 2.9% of participants demonstrating a worsening in behavior and 11.6% in ideation based on the C-SSRS-Short. Brent and colleagues (2009a) noted a 20.9% incidence of suicidal adverse events in a sample of treatment-resistant depressed youth. Our sample of depressed youth demonstrated only a 15.9% incidence of suicidal adverse events based on the C-

SSRS-Short ratings. It will be important for future studies to include methods for analyzing data based on the Columbia Classification Algorithm of Suicide Assessment as measures based on this system have been recommended by many leading agencies (e.g., FDA, American Foundation for Suicide Prevention). In addition, it will be important for the Columbia Suicide Severity Rating Scale (C-SSRS) in its various forms (e.g., MC-SSRS, Brief SSRS, C-SSRS-Short) to be normed and validated.

The findings of this study must be considered in light of several limitations. This paper is a secondary analysis of a feasibility study of a sequential treatment strategy utilizing a novel CBT intervention designed to address relapse prevention. As such, the sample is relatively small and was not powered to address suicidality outcomes. In addition, the sample was predominately Caucasian, and findings might not be generalizable to the greater population of depressed youth. A larger RCT of this intervention is currently underway and may provide more clear understanding of the effects of CBT for relapse prevention of depression on suicidality. In addition, a relatively new clinician-report of suicidal ideation and behavior (C-SSRS-Short) was utilized, making comparisons to previous studies of suicidality in youth difficult. However, a strength of this measure is its relationship to the Columbia Classification Algorithm of Suicide Assessment (Posner et al., 2007) and its detailed ratings of suicidal behavior and ideation, both modal and most severe, over time.

With the recent increased attention on the risk of suicidal ideation and behavior in depressed youth, it has become vital to identify more effective ways to measure suicidality in children and adolescents. In addition, it has become more evident that treatments to address depressed youth must consider how to address the suicidal risk in this population. This study presented the first analysis of suicidality in an RCT of a sequential treatment strategy of acute phase pharmacotherapy followed by continuation phase CBT in depressed youth. While the addition of CBT did improve hopelessness and negative views of the self, world, and future, there was also evidence that CBT presented in the continuation phase mitigated suicidal ideation. Clinical implications include the importance of monitoring and addressing suicidal ideation and behavior over the course of both acute and continuation treatments and considering if CBT might need to be added to treatment earlier in those youth presenting with higher levels of suicidality, as CBT appears to have an effect on cognitive variables which predict later suicidality outcomes.

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Table 1. Demographic and Baseline Clinical Characteristics

			Treatment Group		Comparison of Treatment Groups	
Participant Characteristics	Acute Phase Total Sample (n=72)	Continuation Phase Randomized Sample (n=46)	MM (n=24)	MM + CBT (n=22)	Test Statistic	p-value
Age in years, M ± SD	14.4 ± 1.9	14.3 ± 1.9	14.4 ± 2.2	14.3 ± 1.7	t = 0.17	p = 0.86
Gender, % (N)					$\chi^2 = 0.09$	p = 0.75
Male	51.4 (37)	52.2 (24)	50.0 (12)	54.5 (12)		
Female	48.6 (35)	47.8 (22)	50.0 (12)	45.5 (10)		

Ethnicity, % (N)					$\chi^2 = 3.1$	p = 0.37
African American	4.2 (3)	4.3 (2)	8.3 (2)	0 (0)		
Caucasian	73.6 (53)	73.9 (34)	66.7 (16)	81.8 (18)		
Hispanic	19.4 (14)	19.6 (9)	20.8 (5)	18.2 (4)		
Other	2.8 (2)	2.2 (1)	4.2 (1)	0 (0)		
SES Scale, % (N)					$\chi^2 = 1.19$	p = 0.27
Score 8-39 (Categories 3, 4, 5)	30.6 (22)	30.4 (14)	37.5 (9)	22.7 (5)		
Score 40-66 (Categories 1, 2)	69.4 (50)	69.6 (32)	62.5 (15)	77.3 (17)		
CDRS-R Total at Acute baseline, M ± SD	58.5 ± 9.8	58.0 ± 9.1	60.0 ± 8.3	56.0 ± 9.7	t = 1.5	p = 0.14

CDRS-R Total at Randomization baseline (Week 12), M ± SD	N/A	26.6 ± 5.2	26.7 ± 5.1	26.5 ± 5.0	t = 0.11	p = 0.91
BDI-II Total at Acute baseline, M ± SD	21.6 ± 13.6	21.8 ± 14.9	20.7 ± 12.1	22.7 ± 17.1	t = -0.41	p = 0.68
BDI-II Total at Randomization baseline (Week 12), M ± SD	N/A	7.5 ± 10.9	7.1 ± 8.2	7.8 ± 13.3	t = -0.21	p = 0.84
SIQ-JR at Acute baseline, M ± SD	24.5 ± 22.8	26.1 ± 22.2	23.2 ± 20.4	28.6 ± 23.9	t = -0.72	p = 0.47
SIQ-JR at	N/A	12.05 ± 15.3	13.3 ± 17.9	10.8 ± 12.5	t = 0.52	p = 0.61

Randomization baseline (Week 12), M ± SD						
BHS Total at Acute baseline, M ± SD	9.7 ± 5.8	9.6 ± 5.9	9.0 ± 6.1	10.2 ± 5.8	t = -0.60	p = 0.56
BHS Total at Randomization baseline (Week 12), M ± SD	N/A	5.8 ± 4.5	6.5 ± 5.0	5.1 ± 4.0	t = 1.0	p = 0.31
CTI-C at Screening, M ± SD						
Self	12.3 ± 6.2	12.3 ± 6.5	13.2 ± 6.6	11.6 ± 6.6		
World	12.3 ± 4.1	12.8 ± 4.3	13.5 ± 3.7	12.2 ± 4.6		
Future	14.0 ± 6.2	14.4 ± 6.5	15.6 ± 5.5	13.5 ± 7.1		

Total (Sum)	39.3 ± 14.8	39.9 ± 15.6	42.6 ± 13.6	38.0 ± 17.0	t = 0.85	p = 0.40
CTI-C at Randomization baseline (Week 12), M ± SD	N/A					
Self		18.8 ± 5.4	19.1 ± 4.6	18.5 ± 6.3		
World		17.2 ± 3.9	17.6 ± 3.4	16.8 ± 4.4		
Future		19.1 ± 4.5	18.7 ± 4.8	19.5 ± 4.2		
Total (Sum)		55.1 ± 12.0	54.5 ± 11.2	55.6 ± 13.0	t = -0.26	p = 0.79

Table 2. History of Suicidality at Screening

Consensus Rating of Suicidality in Current Depressive Episode, % (n):

N = 72

None	16.7 (12)
Morbid Ideations or Death Wishes	23.6 (17)
Suicidal Thoughts	37.5 (27)
Suicidal Plans	12.5 (9)
Suicide Attempts	9.7 (7)

Clinician-Rated C-SSRS-Short		
Suicidal Behavior	Worst Ever	Last Month
	% (n): N = 61	% (n): N = 62
Non-suicidal	75.4 (46)	93.5 (58)
Preparatory Acts	6.6 (4)	6.5 (4)
Aborted Attempt	3.3 (2)	0 (0)
Interrupted Attempt	6.6 (4)	0 (0)
Actual Attempt	8.2 (5)	0 (0)

Suicidal Ideation: Modal	Worst Ever	Last Month
	% (n): N = 58	% (n), N = 60

Non-suicidal	31.0 (18)	46.7 (28)
Wish to Be Dead	29.3 (17)	26.7 (16)
Non-Specific Active Suicidal Thoughts	12.1 (7)	10.0 (6)
Active Ideation with Thought of Method	15.5 (9)	13.3 (8)
Active Ideation with Intent, without Clear Plan	5.2 (3)	1.7 (1)
Active Ideation with Plan and Intent	6.9 (4)	1.7 (1)

Suicidal Ideation: Most Severe	Worst Ever	Last Month
	% (n): N = 57	% (n): N = 59
Non-suicidal	14.0 (8)	28.8 (17)
Wish to Be Dead	29.8 (17)	35.6 (21)
Non-Specific Active Suicidal Thoughts	7.0 (4)	8.5 (5)
Active Ideation with Thought of Method	31.6 (18)	16.9 (10)
Active Ideation with Intent, without Clear Plan	1.8 (1)	3.4 (2)
Active Ideation with Plan and Intent	15.8 (9)	6.8 (4)

Table 3. Suicidality By Gender and Age Group at Baseline: Percentage (N)

			Gender		Age Group	
Measure	n	Total	Male (N = 37)	Female (N = 35)	Younger, 11-14 (N = 36)	Older, 15-18 (N = 36)
SIQ-JR ≥ 31	56	32.1 (18)	22.2 (6/27)	41.4 (12/29)	20.0 (5/25)	41.9 (13/31)
C-SSRS-Short, Behavior, Last Week	68					
Non-suicidal		92.6 (63)	89.2 (33/35)	85.7 (30/33)	83.3 (30/32)	91.7 (33/36)
Preparatory Acts		2.9 (2)	0 (0/35)	5.7 (2/33)	0 (0/32)	5.6 (2/36)
Aborted Attempt		0 (0)	0 (0/35)	0 (0/33)	0 (0/32)	0 (0/36)
Interrupted Attempt		1.5 (1)	2.7 (1/35)	0 (0/33)	2.8 (1/32)	0 (0/36)
Actual Attempt		2.9 (2)	2.7 (1/35)	2.9 (1/33)	2.8 (1/32)	2.8 (1/36)

C-SSRS-Short, Suicidal Ideation, Last Week Most Severe	67					
Non-suicidal		53.7 (36)	56.8 (21/34)	42.9 (15/33)	55.6 (20/31)	44.4 (16/36)
Wish to Be Dead		25.4 (17)	16.2 (6/34)	31.4 (11/33)	13.9 (5/31)	33.3 (12/36)
Non-Specific Active Suicidal Thoughts		7.5 (5)	5.4 (2/34)	8.6 (6/33)	5.6 (2/31)	8.3 (3/36)
Active Ideation with Thought of Method		7.5 (5)	8.1 (3/34)	5.7 (2/33)	2.8 (1/31)	11.1 (4/36)
Active with Intent, without Clear Plan		3.0 (2)	0 (0/34)	5.7 (2/33)	2.8 (1/31)	2.8 (1/36)
Active Ideation with Plan and Intent		3.0 (2)	5.4 (2/34)	0 (0/33)	5.6 (2/31)	0 (0/36)

Table 4. Correlations between Screening/Baseline Measures of Depression, Suicidality, Hopelessness, and Cognitive Triad

	CDRS-R	BDI	C-SSRS, Behavior	C-SSRS, Ideation, Modal	C-SSRS, Ideation Most Severe	SIQ-JR	BHS	CTI-C Total
CDRS-R	1.00	.466**	.216	.465**	.444**	.628**	.399**	-.465**
BDI	.466**	1	.157	.283*	.199	.612**	.441**	-.827**
C-SSRS, Behavior	.216	.157	1	.617**	.725**	.502**	.216	-.303
C-SSRS, Ideation, Modal	.465**	.283*	.617**	1	.865**	.704**	.473**	-.493**

C-SSRS, Ideation, Most Severe	.444**	.199	.725**	.865**	1	.702**	.338**	-.419**
SIQ-JR	.628**	.612**	.502**	.704**	.702**	1	.591**	-.734**
BHS	.399**	.441**	.216	.473**	.338**	.591**	1	-.744**
CTI-C Total	-.465**	-.827**	-.303*	-.493**	-.419**	-.734**	-.744**	1

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

CHAPTER FIVE
Conclusions and Recommendations

In the first study, over half of the sample of depressed youth reported some form of suicidality over the course of 12 weeks of acute treatment. Although in most youth suicidal ideation and behavior decreased, this remission for most youth took up to 6 weeks. Suicidal ideation can lead to suicidal behavior, so it is of paramount importance to focus on reduction of suicidal ideation in depressed youth. As 40% of the suicidal events occurred within the first four weeks of beginning treatment in a recent study of adolescent suicide attempters, this early treatment phase appears to be particularly important with regard to attending to suicidality in patients(Brent, et al., 2009). Unfortunately, little is known about how best to treat youth with higher severity of suicidal ideation and behavior because these individuals have historically been excluded from treatment studies of depressed youth. This does appear to be changing; however, more studies of suicidality in youth are needed. Suicidal ideation and behavior occur in the context of many psychiatric disorders, and it will be important for future studies of all psychiatric difficulties in youth to both include suicidal youth and to measure suicidality before, during, and after treatment. We continue to have very little understanding about the course of suicidal ideation over time, and how certain individuals progress to suicidal behavior while others do not. In addition,

it will be important for models of suicidality to begin to include ideas regarding the lifespan development and trajectories of both suicidal ideation and behavior.

In the second study, we identified that suicidal ideation does appear to get better in most participants after acute treatment, and continuing through continuation treatment. In addition, it appears that the addition of CBT in the continuation phase leads to further improvements in suicidal ideation, hopelessness, and negative cognitions. Combination treatment is considered the "gold standard" treatment for depression, but it has not been established that this is the best approach for suicidal, depressed youth. The TASA study would suggest this, but this was a relatively small feasibility study of a novel intervention. With regard to treatment of depression, researchers are currently working to develop a better understanding of which treatments to use at what times (e.g., sequential treatment strategies). This study suggests that a sequential strategy might be effective in further reducing suicidal ideation and related cognitive variables in youth; however, this strategy might not be the most effective in youth presenting with high levels of suicidal ideation and behavior.

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