Suicidal thoughts and behaviors in psychiatrically referred young children

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ABSTRACT

Despite increased awareness of the prevalence and seriousness of mental health problems in early childhood, there have been few empirical studies of suicidal thoughts and behaviors in this age group. This study examined suicidal thoughts and behaviors in 360 preschool-aged children (ages 3 to 7 years) presenting to a psychiatric day treatment program. A semi-structured diagnostic interview (conducted with primary caregivers) was used to assess for child suicidal thoughts and behaviors and psychiatric disorders. Participating mothers also reported on their own psychological distress and family psychiatric history. Forty-eight children (13%) were reported to have suicidal thoughts and behaviors, with suicidal plans or attempts endorsed for 2–3% of the sample. Suicidal thinking and behavior was associated with older child age and with higher rates of concurrent depression, oppositional defiant disorder, and posttraumatic stress disorder in univariate analyses, with age and depression remaining as significant predictors in a multivariate logistic regression model. Findings suggest that suicidal thoughts and behaviors are a significant clinical concern for young children presenting with early psychopathology, particularly depression, with implications for early childhood psychiatric assessment and treatment.

1. Introduction

Over the past several decades, there has been increased recognition of early childhood mental health problems as a serious public health concern and an important area of scientific inquiry. Indeed, it is now well established that psychiatric disorders may emerge early in development, with epidemiological studies suggesting rates of psychiatric disorders in preschoolers to be between 14% and 26% (Egger and Angold, 2006; Lavigne et al., 2009). Moreover, for many young children, early psychopathology may be associated with significant functional impairment and persistence into later childhood and adolescence (Bufferd et al., 2012; Chronis-Tuscano et al., 2010; Dougherty et al., 2015; Luby et al., 2014).

Despite increased awareness of the prevalence and nature of mental health problems in early childhood, there has been limited empirical attention to very serious and high-risk behaviors that may be associated with severe, early forms of psychopathology. In particular, there have been few empirical studies of suicidal thoughts and behaviors in this age group, despite consensus that depression and other mood disorders may emerge very early in development (Luby et al., 2009; Stalets and Luby, 2006; Youngstrom et al., 2008). To date, most research on youth suicide has focused on adolescents and children older than 10–12 years (Sarkar et al., 2010), with few studies including children as young as five years and only a handful of studies focusing on preschoolers. Addressing this gap in the literature is particularly important, given that suicide is the 11th leading cause of death in children in the age range of 5–11 years (Bridge et al., 2015).

In one of the first studies of suicidal behavior in preadolescent children, Pfeffer and colleagues (1979) examined suicidal behaviors in 6- to 12-year-old children admitted to an inpatient psychiatric setting and found that, as compared to non-suicidal children, suicidal children demonstrated increased depression, worthlessness, hopelessness, preoccupation with death, and the wish to die, as well as increased parental psychopathology, including parental depression and suicidal behavior. Subsequent research with school-aged children has suggested that suicidal thoughts and behaviors are associated with a wide range of psychiatric disorders, including mood, anxiety, and disruptive behavior disorders (Dervic et al., 2008; Foley et al., 2006; Gould et al., 1998; Westefeld et al., 2010; Wyman et al., 2009), although at rates somewhat lower than those reported for suicidal adolescents (Soole et al., 2014) and more often without a past history of reported suicidal thoughts and behaviors (Sarkar et al., 2010). Gender distributions for

suicidal behavior also appear to differ, with males more likely to present with suicidal thoughts during childhood and females during adolescence (Sarkar et al., 2010). Identified family risk factors for youth suicide include family history of depression and suicide, parent psychiatric disorder, poor parental monitoring, parent-child relationship and communication problems, child maltreatment, and negative life events (Brent et al., 2015; Gould et al., 1996; King et al., 2001; Pfeffer et al., 1979; Soole et al., 2014; Wagner, 1997; Westefeld et al., 2010), although these factors have been most often studied in samples that included adolescents as well as preadolescent children, potentially obscuring associations specific to the developmentally younger age group.

Our understanding of suicidal thoughts and behaviors in very young children is more limited, as preschool children have only infrequently been included in empirical studies of child suicide. Yet from a developmental perspective, early childhood may be a critical period in which to study emergent suicidal thinking and behavior. This period is characterized by significant growth and changes in emotion regulation, as well as developing cognitive capacities that include an emerging understanding of death (Barrett and Behne, 2005; Rosengren et al., 2014). For young children experiencing significant psychiatric symptoms, suicidal thinking and behavior may develop as a maladaptive emotional response to their acute distress.

Indeed, several empirical studies have documented suicidal ideation and acts in children as young as 2½–3 years. One early study of suicidal behavior in 16 preschoolers (ages 2½–5 years) referred to an outpatient child psychiatry clinic found that, compared to a matched sample of 16 non-suicidal children with behavior disorders, children with suicidal ideation (SI) demonstrated increased depressive symptoms, self-directed aggression, hyperactivity, and impulsivity (Rosenthal and Rosenthal, 1984). A second study compared these 16 suicidal and 16 behaviorally disordered outpatient children to nine psychiatrically hospitalized preschool-aged children with suicidal thoughts and behaviors (Rosenthal et al., 1986). Compared to the outpatient groups, the hospitalized preschoolers demonstrated more morbid thoughts, depressed mood, and weepiness, as well as more family psychopathology.

More recently, Whalen et al. (2015) examined suicidal cognitions and behaviors in a sample of 306 young children (ages 3–7 years) participating in a longitudinal study of preschool depression. A total of 34 children (11% of the sample) demonstrated SI (defined as persistent thoughts of death, dying, or suicide, as well as suicidal plans or suicide attempts), as reported by parents on a semi-structured diagnostic interview. Early childhood SI was associated with child sex (male) and maternal psychopathology. Children with suicidal ideation and behaviors were more likely to meet criteria for major depressive disorder (MDD), anxiety, attention-deficit/hyperactivity disorder (ADHD), and oppositional defiant disorder (ODD)/conduct disorder (CD), than children without SI. Only the associations with ADHD and ODD/CD remained significant after controlling for demographic variables, maternal psychopathology, and other co-occurring psychiatric diagnoses. Early childhood SI was also predictive of later SI, assessed at school age, even after controlling for co-occurring psychiatric disorders (Whalen et al., 2015).

The purpose of the present study is to contribute to the emerging literature on the nature and prevalence of suicidal thoughts and behaviors in young children. Specifically, we examined suicidal thoughts, plans, and attempts in clinical sample of 3- to 7-year-old children presenting to a psychiatric partial hospitalization program for young children with severe emotional and behavioral problems. Given the clinical acuity of the study sample, we expected that rates of suicidal thoughts would be at least as high as those reported in other clinical and at-risk samples (e.g., 11% as reported in Whalen et al., 2015), with a smaller proportion of children evidencing suicidal plans and actions.

Consistent with Whalen et al. (2015), we also examined associations between early childhood suicidal thoughts and behaviors and

concurrent child psychiatric disorders, as well as childhood trauma and maternal distress, depression, and suicidality. However, our study differed from Whalen et al. (2015) in that most children in the present study were referred to the treatment program due to severe externalizing psychopathology (e.g., acute aggression, temper loss, persistent oppositionality, serious rule violations), often with co-occurring internalizing symptoms and with many participating children presenting with multiple psychiatric disorders. As such, the present study was also intended to extend our understanding of early suicidal thoughts and behaviors to a clinical sample of young children presenting with highly disruptive, externalizing behavior problems. Given the lack of previous research on clinical and family correlates of suicidal thoughts and behavior in externalizing young children, we considered this research question to be exploratory in nature.

2. Method

2.1. Participants

Participants were 360 children, ages 3-years-0-months to 7-year-11-months (M=62.78 months, SD=14.72 months) admitted to a hospital-based day psychiatric treatment program for young children with severe emotional and behavioral problems. Children were referred to the day treatment program by community providers (including mental health providers and agencies, pediatricians, medical hospital emergency departments, and school/daycare programs) and presented with a wide variety of clinical concerns, including acute aggression, self-injurious behavior, severe and persistent tantrums, anxiety and mood problems, and highly uncooperative and oppositional behavior. Study inclusion criteria were as follows: the child had not been previously admitted to this day treatment program, the child was not diagnosed with an autism spectrum disorder or intellectual disability, and the child's parent/caregiver was proficient in English.

The majority, 261 (72.5%), of the children were male; 18 (5%) were Black/African-American, 214 (59.4%) were Non-Hispanic/White, 42 (11.7%) were Hispanic/Latino, and 86 (23.9%) were classified as "other".

2.2. Procedures

Upon program admission, families were invited to participate in the study and provided informed consent; only a very small percentage (3%) declined enrollment. A parent or primary caregiver completed a diagnostic interview shortly after program admission, usually within 1–2 weeks (M=10.0 days, SD=9.23, range=0–48 days). Most often, the parent who participated in this interview was the biological mother (n=240, 66.7%) or both biological parents (n=47, 13.1%), although non-maternal caregivers (e.g., biological father only, adoptive parents, other legal guardians) served as primary interview informants for 73 (20.2%) of the participating children. Participating mothers also completed self-report measures of parenting stress (n=291) and depressive symptoms (n=296), as well as a psychiatric history screening interview (n=215). Participating children for whom maternal questionnaire and psychiatric history screening interview data were available did not differ from children for whom this data were not available with respect to any primary study variables, including child suicidal thoughts or behaviors, psychiatric diagnoses, or trauma history.

Data were collected over a period of approximately six years, from 2010 to 2015. The hospital's Institutional Review Board approved all study procedures and measures.

2.3. Measures

2.3.1. Child psychiatric diagnoses and trauma history
The Diagnostic Infant and Preschool Assessment (DIPA; Scheeringa

and Haslett, 2010) is a semi-structured interview that was used to assess for child psychiatric diagnoses. The DIPA assesses for 13 DSM-IV disorders, using self-contained modules, and takes approximately two hours to complete. Interviews were administered to caregivers by Master's level or Ph.D. clinicians with extensive experience in diagnostic interviewing. Interviewers were trained by the developer of the DIPA, with continued supervision provided by an experienced clinician and senior study author (J.R.B). The DIPA has been shown to have acceptable test-retest reliability and criterion validity for commonly occurring DSM-IV diagnoses (Scheeringa and Haslett, 2010).

For the purposes of the current study, we focused on determining whether children met criteria for the following DSM-IV disorders: MDD (derived without suicide items, see below, so as to not inflate associations to suicide variables), posttraumatic stress disorder (PTSD), ADHD, ODD, and anxiety disorders (including separation anxiety disorder, generalized anxiety disorder, and social phobia), with all DSM-IV symptoms queried for each diagnosis. As per the DIPA protocol, interviewers also queried for specific examples of each symptom endorsed, in order to verify caregivers' responses. When more than one caregiver participated in the interview, caregivers were encouraged to reach consensus for each interview question, with specific examples used to confirm their agreed upon answer. Diagnoses were made using DSM-IV algorithms that included criteria for functional impairment for all disorders assessed. In addition, for ADHD, the algorithm included the criterion that symptoms be present in at least two settings.

The child's lifetime exposure to traumatic life events was assessed as part of the PTSD module of the DIPA. Parents/caregivers reported on the child's lifetime exposure to 11 different traumatic life events, including experiences such as serious accidents, physical or sexual abuse, and invasive medical procedures.

2.3.2. Child suicidal thoughts and behaviors

The DIPA was also used to assess for children's suicidal thoughts and behaviors, as these items are queried as part of the MDD module. We defined suicidal thoughts and behaviors as parental endorsement of any of the following three questions: *Does s/he ever think about ending it all?, Has s/he made a plan to kill him/herself?, Has s/he ever actually tried to kill him/herself?* Although the DIPA also queries for death-related thoughts and death and suicide play themes (i.e., *Does s/he seem to think or talk about death or dying?, Does s/he ever draw pictures about death and dying, or play games in which a character dies?, Has s/he ever drawn pictures about suicide, or play games in which a character kills himself?*), we did not incorporate these items into our suicidal thoughts and behavior variable (although these items were maintained as part of the diagnostic criteria for MDD).

2.3.3. Maternal distress

Maternal distress was assessed using the Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) and the Parenting Stress Index/Short Form (PSI/SF; Abidin, 1995). The CES-D includes 20 items (rated on a four-point scale from "rarely or none of the time" to "most or all of the time") assessing depressive symptoms (e.g., sad mood, irritability, sleep disruption) experienced over the past week. Items are summed to compute a total score, with scores over 16 considered to be clinically elevated. The PSI/SF includes 36 items (rated on a five-point scale from "strongly agree" to "strongly disagree") and assesses parents' experience of potentially stressful aspects of parenting. For the purposes of this study, we used the Total Stress scale (computed as the sum of all PSI/SF items) as an index of caretakers' overall stress within their parenting role, with raw scores above 90 considered to be clinically elevated (Abidin, 1995). Both the CES-D (Edwards et al., 2010) and the PSI/SF (Smith, 2011) have demonstrated sound psychometric properties, with good internal consistency in the current sample, α=.88 and .89, respectively.

2.3.4. Maternal psychiatric history and suicidality

Maternal history of psychiatric symptoms and suicidal thoughts and behaviors were assessed using a structured interview, the Family History Screening (FHS; Weissman et al., 2000). For the purposes of this study, we focused on mothers' report of 10 depressive symptoms (e.g., sad mood, sleep problems, guilt, and withdrawal), queried separately for present (within the past two weeks) and past (prior to the past two weeks) and summed to provide a total lifetime depressive symptom score, α=.87. We also examined mothers' report of total psychiatric symptoms (i.e., the sum of all symptoms assessed, including depression, mania, anxiety, substance use, schizophrenia, conduct disorder, and ADHD, past and present), α=.95. Finally, we examined several FHS items that focused specifically on maternal suicidal thoughts and behaviors, including reported past or present suicidal ideation (*Have you had thoughts of death or suicide?*) and previous suicide attempts (*Have you ever had a suicide attempt?*), combined to create a variable reflecting any past or present suicidal ideation or previous attempt(s). The FHS has demonstrated acceptable reliability and validity when compared to diagnoses based on direct interview (Weissman et al., 2000).

2.3.5. Child and family demographic characteristics

A parent or primary caregiver completed a demographics questionnaire that included items to assess for family income and maternal educational attainment. As some parents declined to provide this information, these data were available for 204 and 286 participating families, respectively.

2.4. Data analysis

A series of univariate analyses were conducted with suicidal thoughts and behavior as the criterion variable, using predictors selected *a priori* based on associations with suicidal risk in previous studies with older age groups. For continuous variables, independent samples t-tests were performed, and categorical variables were submitted to χ^2 tests. Predictors found to be significantly associated with suicidal ideation and behavior at the univariate level were then included into a multivariate logistic regression model.

3. Results

3.1. Descriptive analyses

Of the 360 children participating in this study, 46 children (12.4%) were reported to have thoughts of suicide; suicidal plans and attempts were endorsed for 10 (2.7%) and 9 (2.4%) children, respectively. Examples of the suicide attempts described included wrapping a belt around the neck, attempting to jump from a window, stepping into traffic, and putting finger in light socket (Table 1). Together, there were a total of 48 children (13.3%) who were reported to demonstrate suicidal thoughts, plans, or attempts (as two children were reported to have made suicide attempts in the absence of expressed thoughts or plans of suicide).

3.2. Associations between suicidal thoughts and behaviors and child psychiatric disorders, trauma, and maternal psychopathology

Univariate analyses, comparing children with suicidal thoughts or behavior (n=48) to children without suicidal thoughts or behavior (n=312), are presented in Table 2. As shown, suicidal thinking and behavior was associated with older child age and with higher rates of concurrent MDD, ODD, and PTSD. Suicidal and non-suicidal children did not differ with respect to sex, family income, or maternal educational attainment, nor with respect to history of traumatic life events. There were also no differences with respect to maternal distress, psychiatric history, or suicidality variables.

Table 1
Reported suicidal plans and attempts.

Suicidal Plans
Stated that they would cut/stab themselves (with a knife, n=2; sword, n=1; unspecified, n=2)
Stated that they would jump from a height (from stairs, n=1; countertop, n=1, window, n=2)
Stated that they would hang/choke themselves (hanging, n=2; in window, n=1)
Stated that they would stand/run in traffic (n=2)
Suicide Attempts
Attempted to choke self (with a string/chain, n=3; belt, n=1; unspecified, n=1)
Attempted to jump from height (window, n=1)
Cut self (n=1)
Attempted to jump from/in front of moving vehicle (n=2)
Put finger in light socket (n=1)
Attempted to drink hand sanitizer (n=1)

Note. Reported suicidal plans and attempts sum to greater than n=10 and n=9 because some children expressed more than one plan or engaged in more than one attempt.

When age, MDD, PTSD, and ODD were considered simultaneously within a multivariate logistic regression model with suicidal thoughts and behavior as the criterion variable, only age and MDD remained significant predictors (see Table 3). Specifically, the adjusted odds of suicidal thoughts and behavior were over seven times as high among patients with MDD than those without MDD and is approximately 78% higher with each year of age.

3.3. Exploratory analyses

Although the primary focus of this study was on children's suicidal thoughts and behaviors, we were also interested in examining children's non-suicidal thoughts of death and dying, as well as play themes related to death and suicide, as these items are queried as part of the DIPA MDD module. Persistent thoughts of death or dying were reported as a concern for 82 (22.8%) children and play themes related

Table 3
Multivariate logistic regression analysis for the prediction of suicidal thoughts and behaviors.

Predictors	OR (95% CI)	P
Age (years)	1.78 (1.31–2.41)	< .001
Major depressive disorder[a]	7.20 (3.46–14.98)	< .001
Oppositional defiant disorder	2.49 (.77–8.04)	.13
Posttraumatic stress disorder	.79 (.34–1.84)	.59

Note. OR=odds ratio; CI=confidence interval.
[a] Suicidal thoughts/behavior items were excluded when determining major depressive disorder diagnosis so as to avoid confounds between the two variables in analyses.

to death or dying occurred in 42 (11.4%) children, although it was notable that for some children, these thoughts focused on death and harm to others, including violent and homicidal ideation (e.g., repeated threats to kill family members). Suicidal play themes were rare, demonstrated by only 6 children (1.6%) in the sample.

4. Discussion

This study adds to an emerging literature on suicidal thoughts and behaviors in very young children. In our acute clinical sample of 3- to 7-year-olds, approximately 13% evidenced suicidal ideation, plans, and/or attempts. This was particularly striking in that we adopted a conservative definition of suicidal ideation and did not define thoughts of death or dying (if not clearly involving intentional self-harm) as suicidal in nature. Our decision to limit our definition of suicidal thinking in this way was, in part, due to concerns about the potential to confound normative curiosity about death with true suicidal thinking (Scheeringa, 2016). However, it is also important to acknowledge that our conservative approach might have resulted in an underestimate of the true rate of suicidal ideation in these highly distressed and dysregulated young children.

Table 2
Demographic and clinical characteristics of patients with and without suicidal thoughts and behaviors.

	Suicidal Thoughts/Behaviors Present		Suicidal Thoughts/Behaviors Absent			
	M (SD)	n (%)	M (SD)	n (%)	t	χ^2
Demographic Characteristics						
Child age (in years)	5.92 (1.01)		5.13 (1.22)		4.25[***]	
Child gender (male)		35 (72.9%)		226 (72.4%)		.01
Family annual income	$41,898 (40,848)		$52,483 (48,701)		1.12	
Maternal education (completed high school/GED)		33 (82.5%)		215 (87.4%)		.72
Child Psychiatric Disorders (DIPA)						
Major depressive disorder[a]		34 (70.8%)		70 (22.4%)		47.43[***]
Oppositional defiant disorder		44 (91.7%)		233 (76.6%)		5.58[*]
Attention-deficit/hyperactivity disorder		22 (45.8%)		171 (55.7%)		1.63
Anxiety disorder		21 (43.8%)		123 (41.0%)		.13
Posttraumatic stress disorder		12 (25.0%)		42 (13.5%)		4.34[*]
Child Trauma History (DIPA)						
Number of traumatic life events	1.38 (1.38)		1.08 (1.23)		1.53	
Maternal Distress						
Depressive symptoms (CES-D)	22.74 (11.64)		19.59 (12.68)		1.50	
Parenting stress (PSI)	101.12 (23.45)		99.95 (21.21)		.32	
Maternal Psychiatric History and Suicidality (FHS)						
Total depressive symptoms (lifetime)	11.24 (5.39)		10.71 (5.13)		.55	
Total psychiatric symptoms (lifetime)	38.62 (17.70)		36.17 (20.89)		.64	
Suicidal ideation or attempt (lifetime)		13 (38.2%)		67 (37.0%)		.02

Note. DIPA = Diagnostic Infant and Preschool Assessment; CES-D=Center for Epidemiological Studies Depression Scale; PSI=Parenting Stress Index; FHS=Family History Screen. N for predictor variables were as follows: Family annual income, n=204; Maternal education, n=286; DIPA, n=348–360; CES-D, n=291; PSI, n=296; FHS, n=216.
[*] p < .05.
[***] p < .001.
[a] Suicidal thoughts/behavior items were excluded from when determining major depressive disorder diagnosis so as to avoid confounds between the two variables in analyses.

While more rare, suicidal plans and attempts were endorsed for about 2% or 3% of the children. Most of the suicide means reported involved readily available and uncomplicated methods (e.g., strangling, running into traffic, jumping from heights), a finding that is consistent with the literature on suicidal behavior in school-aged children (Grøholt et al., 1998; Sarkar et al., 2010; Tishler et al., 2007).

We also examined associations between suicidal thoughts and behaviors and concurrent child psychiatric disorders, as well as child traumatic life events and maternal distress, depression, and suicidality. With respect to child psychiatric disorders, children with suicidal thoughts and behaviors demonstrated increased rates of depression, PTSD, and ODD in univariate analyses. However, in multivariate analyses, only the association to depression, as well as older child age, remained significant. This association held even after excluding suicide items in our measure of depression. Such findings suggest that young children presenting with depressive disorders are at significantly increased risk for suicidal thoughts and behaviors compared to pre-school children without MDD and that this risk for suicidal thoughts and behaviors increases as they get older. Other child clinical problems did not make a unique contribution to the prediction of suicidal thoughts and behavior, nor did maternal distress, depression, or suicidality. This latter finding may have been related to limited variability in maternal symptoms; the majority of participating mothers endorsed high levels of distress and psychiatric symptoms, with mean scores on these measures at or above clinical cut off thresholds. Alternatively, as we only examined mothers' functioning in relation to child suicidal ideation and behaviors, it is possible that the presence of non-maternal caregivers or other family supports might have offset some of the risks associated with maternal distress and psychopathology. The clinical context in which this study was conducted (i.e., a highly supportive and family-focused treatment program) might have also offered some protective influence.

Taken together, findings from the present study are partially consistent with those reported by Whalen et al. (2015), documenting the presence of suicidal thoughts and behaviors in very young children with serious psychopathology. Our findings were also consistent insofar as children presenting with suicidal thoughts and behaviors demonstrated increased rates of psychiatric disorders, including depression, ODD, and PTSD. Whalen and colleagues also reported bivariate associations between suicidal thoughts and behaviors and depression, ODD/CD, ADHD, and anxiety disorders, however in contrast to our results, only ODD/CD and ADHD were positively associated with suicidal thoughts and behaviors after controlling for demographic, maternal psychopathology, and co-occurring psychiatric diagnoses. These inconsistent findings may, in part, reflect differences in the study samples. Specifically, most children in the current study evidenced very high levels of externalizing behavior problems, limiting our ability to adequately test for associations between disruptive behavior problems and suicidal thoughts and behaviors, particularly in multivariate analyses. In addition, our study differed from Whalen et al. (2015) in that we did not define thoughts of death as suicidal in nature, whereas Whalen and colleagues included persistent thoughts of death or dying in their conceptualization and operational definition of early childhood SI.

However, while we did not incorporate children's non-suicidal thoughts of death (or play themes related to death or suicide) into our primary study variable or analyses, we did conduct exploratory analyses to describe such thoughts and behaviors in our unique study sample. We found that persistent thoughts of death and dying were endorsed by almost one quarter of this acutely distressed sample; play themes related to death or dying were endorsed by about one tenth of the sample. For some children, these thoughts and play themes focused on questions and preoccupation with death (e.g., repeatedly asking about how people die, drawing pictures that depict lethal injuries), although many children also expressed persistent homicidal ideation and impulses (e.g., stating that s/he will kill family members). This is

perhaps unsurprising, given that the study sample was characterized by high levels of externalizing behavior problems, with aggression and threatening behavior as common presenting concerns. Future longitudinal research will be important in further exploring the developmental implications of early concern and preoccupation with death and dying, including homicidal ideation, especially given evidence to suggest that children who have recurrent thoughts of death may be vulnerable to developing more active and planful thoughts of self-harm in the context of increased emotional or psychiatric distress (Wyman et al., 2009).

Although the present study offers insight into the nature and correlates of suicidal thoughts and behaviors in preschool-aged children, several study limitations are of note. Given our focus on very young children, we relied on parent-report for the assessment of key study variables, including child suicidal thoughts and behaviors. However research with older children suggests that parents may underestimate youth suicidal thoughts and behavior (Walker et al., 1990). In addition, our assessment of children's suicidal thoughts and behavior was limited to several items administered as part of a semi-structured diagnostic interview and did not assess for a full range early expressions of suicidal thought (e.g., "I wish I was never born", "I want to be in heaven"). Relatedly, it is not possible to know whether children's suicidal statements or behaviors, as reported by a caregiver, truly represent suicidal thinking or intent. That is, we did not assess for children's understanding of death or suicide, nor did we examine children's understanding of related cognitive concepts (e.g., irreversibility) or experiences thought to influence children's early understanding of death (e.g., death of family member or pet, family religious beliefs (Cuddy-Casey and Orvaschel, 1997)). It will be important for future research in this area to incorporate a broader range of assessment tools to more fully capture the clinical and developmental complexity of early suicidal thoughts and behavior.

Finally, our study sample was comprised of predominantly male children presenting with severe externalizing psychopathology and high levels of family distress. Although the goal of the present study was to examine suicidal thoughts and behaviors in children in a clinically severe sample (i.e., at highest risk for serious and persistent mental health and behavioral problems), our sample arguably limits generalization to children and families with less severe clinical problems. We were also limited in our ability to test for gender and ethnic differences, which is notable given research to suggest that gender distributions for suicidal behavior may shift over the course of childhood and adolescence (Sarkar et al., 2010), as well as evidence for increasing rates of youth suicide among some ethnic minority groups (Bridge et al., 2015; Kann et al., 2014). Furthermore, the cross-sectional nature of the study precluded determinations of how suicidal thoughts and behaviors may be temporally related to the variables of interests (e.g., risk factors versus concomitants). Future work is therefore needed to evaluate the extent to which putative risk factors do indeed temporally precede the occurrence of suicidal thoughts and behaviors in this age group.

Results of the present study have implications for clinical practice. Most importantly, findings point to the need to carefully assess for suicidal thoughts and behaviors in young children presenting for psychiatric treatment, even when suicidality is not identified as the presenting problem or reason for referral. Indeed, the majority of young children in the present study were referred for treatment due to high levels of aggression and behavioral dysregulation, not suicidal ideation or attempts. However, the rates of suicidal thoughts and behaviors endorsed in this sample, particularly in the context of a depressive disorder, suggest that this is population of young children at very high risk for these serious clinical concerns. Finally, the current findings also suggest that a developmentally sensitive clinical interview, administered to parents during the course of clinical care, is a feasible and useful tool in the assessment of early suicidal thinking and behavior.

References

Abidin, R.R., 1995. Parenting Stress Index 3rd ed.. Psychological Assessment Resources, Odessa, FL.

Barrett, H.C., Behne, T., 2005. Childrens' understanding of death as the cessation of agency: a test using sleep versus death. Cognition 96 (2), 93–108. http://dx.doi.org/10.1111/mono.12079.

Brent, D.A., Melhem, N.M., Oquendo, M., Burke, A., Birmaher, B., Stanley, B., et al., 2015. Familial pathways to early-onset suicide attempt: a 5.6-year prospective study. JAMA Psychiatry 72 (2), 160–168. http://dx.doi.org/10.1001/jamapsychiatry.2014.2141.

Bridge, J.A., Asti, L., Horowitz, L.M., Greenhouse, J.B., Fontanella, C.A., Sheftall, A.H., Kelleher, K.J., Campo, J.V., 2015. Suicide trends among elementary school-aged children in the United States from 1993 to 2012. JAMA Pediatr. 169, 673–677.

Bufferd, S.J., Dougherty, L.R., Carlson, G.A., Rose, S., Klein, D.N., 2012. Psychiatric disorders in preschoolers: continuity from ages 3 to 6. Am. J. Psychiatry 169 (11), 1157–1164. http://dx.doi.org/10.1176/appi.ajp.2012.12020268.

Chronis-Tuscano, A., Molina, B.G., Pelham, W.E., Applegate, B., Dahlke, A., Overmyer, M., Lahey, B.B., 2010. Very early predictors of adolescent depression and suicide attempts in children with attention-deficit/hyperactivity disorder. Arch. Gen. Psychiatry 67, 1044–1051. http://dx.doi.org/10.1001/archgenpsychiatry.2010.127.

Cuddy-Casey, M., Orvaschel, H., 1997. Childrens' understanding of death in relation to child suicidality and homicidality. Clin. Psychol. Rev. 17, 33–45.

Dervic, K., Brent, D.A., Oquendo, M.A., 2008. Completed suicide in childhood. Psychiatr. Clin. N. Am. 31 (2), 271–291. http://dx.doi.org/10.1016/j.psc.2008.01.006.

Dougherty, L.R., Leppert, K.A., Merwin, S.M., Smith, V.C., Bufferd, S.J., Kushner, M.R., 2015. Advances and directions in preschool mental health research. Child Dev. Perspect. 9, 14–19. http://dx.doi.org/10.1111/cdep.12099.

Edwards, M.C., Cheavens, J.S., Heiy, J.E., Cukrowicz, K.C., 2010. A reexamination of the factor structure of the center for epidemiologic studies depression scale: is a one-factor model plausible? Psychol. Assess. 22, 711–715. http://dx.doi.org/10.1037/a0019917.

Egger, H.L., Angold, A., 2006. Common emotional and behavioral disorders in preschool children: presentation, nosology, and epidemiology. J. Child Psychol. Psychiatry 47, 313–337.

Foley, D.L., Goldston, D.B., Costello, E.J., Angold, A., 2006. Proximal psychiatric risk factors for suicidality in youth: the great smoky mountains study. Arch. Gen. Psychiatry 63, 1017–1024. http://dx.doi.org/10.1001/archpsyc.63.9.1017.

Gould, M.S., Fisher, P., Parides, M., Flory, M., Shaffer, D., 1996. Psychosocial risk factors of child and adolescent completed suicide. Arch. Gen. Psychiatry 53, 1155–1162. http://dx.doi.org/10.1001/archpsyc.1996.01830120095016.

Gould, M.S., King, R., Greenwald, S., Fisher, P., Schwab-Stone, M., Kramer, R., Shaffer, D., 1998. Psychopathology associated with suicidal ideation and attempts among children and adolescents. J. Am. Acad. Child Adolesc. Psychiatry 37, 915–923. http://dx.doi.org/10.1097/00004583-199809000-00011.

Grøholt, B., Ekeberg, Ø., Wichstrøm, L., Haldorsen, T., 1998. Suicide among children and younger and older adolescents in Norway: a comparative study. J. Am. Acad. Child Adolesc. Psychiatry 37, 473–481. http://dx.doi.org/10.1097/00004583-199805000-00008.

Kann, L., Kinchen, S., Shanklin, S.L., Flint, K.H., Hawkins, J., Harris, W.A., Lowry, R., O'Malley Olsen, E., McManus, T., Chyen, D., Whittle L., Taylor, E., Demissie Z., Brener, N., Thornton, J., Moore, J., Zaza S., 2014. Youth Risk Behavior Surveillance—United States 2013. Morbidity Mortality Weekly Report, vol. 63, ss04, pp. 1–168.

King, R.A., Schwab-Stone, M., Flisher, A.J., Greenwald, S., Kramer, R.A., Goodman, S.H., Lahey, B.B., Shaffer, D., Gould, M.S., 2001. Psychosocial and risk behavior correlates of youth suicide attempts and suicidal ideation. J. Am. Acad. Child Adolesc. Psychiatry 40, 837–846. http://dx.doi.org/10.1097/00004583-200107000-00019.

Lavigne, J.V., LeBailly, S.A., Hopkins, J., Gouze, K.R., Binns, H.J., 2009. The prevalence of ADHD, ODD, depression, anxiety a community sample 4-year-olds.. J. Clin. Child Adolesc. 38, 315–328. http://dx.doi.org/10.1080/15374410902851382.

Luby, J.L., Belden, A.C., Pautsch, J., Si, X., Spitznagel, E., 2009. The clinical significance of preschool depression: impairment in functioning and clinical markers of the disorder. J. Affect Disord. 112, 111–119.

Luby, J.L., Gaffrey, M.S., Tillman, R., April, L.M., Belden, A.C., 2014. Trajectories of preschool disorders to full DSM depression at school age and early adolescence: continuity of preschool depression. Am. J. Psychiatry 171, 768–776. http://dx.doi.org/10.1176/appi.ajp.2014.13091198.

Pfeffer, C., Conte, H.R., Plutchik, R., Jerrett, I., 1979. Suicidal behavior in latency-age children: an empirical study. J. Am. Acad. Child Adolesc. Psychiatry. http://dx.doi.org/10.1016/S0002-7138(09)62215-9.

Radloff, L.S., 1977. The CES-D Scale: a self-report depression scale for research in the general population. Appl. Psychol. Meas. 1, 385–401.

Rosengren, K.S., Gutiérrez, I.T., Schein, S.S., 2014. Childrens' understanding of death: toward a contextualized and integrated account: iv. Cognitive dimensions of death in context. Monogr. Soc. Res. Child Dev. 79 (1), 62–82.

Rosenthal, P., Rosenthal, S., Doherty, M.B., Santora, D., 1986. Suicidal thoughts and behaviors in depressed hospitalized preschoolers. Am. J. Psychother. 40, 201–212.

Rosenthal, P.A., Rosenthal, S., 1984. Suicidal behavior by preschool children. Am. J. Psychiatry 141, 520–525.

Sarkar, M., Byrne, P., Power, L., Fitzpatrick, C., Anglim, M., Boylan, C., Morgan, S., 2010. Are suicidal phenomena in children different to suicidal phenomena in adolescents? A six-year review. Child Adolesc. Ment. Health 15, 197–203. http://dx.doi.org/10.1111/j.1475-3588.2010.00567.x.

Scheeringa, M.S., 2016. Validity of measurement of suicidal ideas in very young children. J. Am. Acad. Child Adolesc. Psychiatry 55 (3), 243. http://dx.doi.org/10.1016/j.jaac.2015.12.004.

Scheeringa, M.S., Haslett, N., 2010. The reliability and criterion validity of the diagnostic infant and preschool assessment: a new diagnostic instrument for young children. Child Psychiatry Hum. Dev. 41, 299–312. http://dx.doi.org/10.1007/s10578-009-0169-2.

Smith, M., 2011. Measures for assessing parenting in research and practice. Child Adolesc. Ment. Health 16, 158–166. http://dx.doi.org/10.1111/j.1475-3588.2010.00585.x.

Soole, R., Kõlves, K., De Leo, D., 2014. Factors related to childhood suicides: analysis of the Queensland child death register. Crisis 35 (5), 292–300. http://dx.doi.org/10.1027/0227-5910/a000267.

Stalets, M.M., Luby, J.L., 2006. Preschool depression. Child Adolesc. Psychiatry Clin. North Am. 15, 899–917.

Tishler, C.L., Reiss, N.S., Rhodes, A.R., 2007. Suicidal behavior in children younger than twelve: a diagnostic challenge for emergency department personnel. Acad. Emerg. Med. 14, 810–818. http://dx.doi.org/10.1111/j.1553-2712.2007.tb02357.x.

Wagner, B.M., 1997. Family risk factors for child and adolescent suicidal behavior. Psychol. Bull. 121, 246–298. http://dx.doi.org/10.1037/0033-2909.121.2.246.

Walker, M., Moreau, D., Weissman, M.M., 1990. Parents' awareness of children's suicide attempts. Am. J. Psychiatry 147, 1364–1366.

Weissman, M.M., Wickramaratne, P., Adams, P., Wolk, S., Verdeli, H., Olfson, M., 2000. Brief screening for family psychiatric history: the Family History Screen. Arch. Gen. Psychiatry 57, 675–682. http://dx.doi.org/10.1001/archpsyc.57.7.675.

Westefeld, J.S., Bell, A., Bermingham, C., Button, C., Shaw, K., Skow, C., Stinson, R.D., Woods, T., 2010. Suicide among preadolescents: a call to action. J. Loss Trauma 15, 381–407. http://dx.doi.org/10.1080/15325024.2010.507655.

Whalen, D.J., Dixon-Gordon, K., Belden, A.C., Barch, D., Luby, J.L., 2015. Correlates and consequences of suicidal cognitions and behaviors in children ages 3 to 7 years. J. Am. Acad. Child Adolesc. Psychiatry 54, 926–937. http://dx.doi.org/10.1016/j.jaac.2015.08.009.

Wyman, P.A., Gaudieri, P.A., Schmeelk-Cone, K., Cross, W., Brown, C.H., Sworts, L., West, J., Burke, K.C., Nathan, J., 2009. Emotional triggers and psychopathology associated with suicidal ideation in urban children with elevated aggressive-disruptive behavior. J. Abnorm. Child Psychol. 37, 917–928. http://dx.doi.org/10.1007/s10802-009-9330-4.

Youngstrom, E.A., Birmaher, B., Findling, R.L., 2008. Pediatric bipolar disorder: validity, phenomenology, and recommendations for diagnosis. Bipolar Disord. 10, 194–214. http://dx.doi.org/10.1111/j.1399-5618.2007.00563.x.