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Cognitive and Family Correlates of Current Suicidal Ideation in Children with Bipolar Disorder

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Abstract

Background—Suicidality among youth with bipolar disorder is an extreme, but largely unaddressed, public health problem. The current study examined the psychosocial characteristics differentiating youth with varying severities of suicidal ideation that may dictate targets for suicide prevention interventions.

Methods—Participants included 72 youth aged 7–13 ($M = 9.19$, $SD = 1.61$) with DSM-IV-TR bipolar I, II, or NOS and a parent/caregiver. Current suicidal ideation and correlates were assessed at intake, including: demographics and clinical factors (diagnosis, symptom severity, psychiatric comorbidity); child factors (cognitive risk and quality of life); and family factors (parenting stress, family cohesion, and family rigidity).

Results—Current ideation was prevalent in this young sample: 41% endorsed any ideation, and 31% endorsed active forms. Depression symptoms, quality of life, hopelessness, self-esteem, and family rigidity differentiated youth with increasing ideation severity. Separate logistic regressions examined all significant child- and family-level factors, controlling for demographic and clinical variables. Greater family rigidity and lower self-esteem remained significant predictors of current painful ideation. Diagnosis, index episode, comorbidity, and mania severity did not differentiate non-ideators from those with current ideation.

Limitations—Limitations include the small sample to examine low base-rate severe ideation, cross-sectional analyses and generalizability of findings beyond the outpatient clinical sample.

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Disclosures

There are no other conflicts of interest to report.

CONTRIBUTORS:

Sally M. Weinstein, Ph.D., designed the study and took the lead on conceptualizing and writing the manuscript. Anna Van Meter, Ph.D., undertook the main statistical analyses for the study. Andrea C. Katz, M.A., and Amy T. Peters, M.A., coordinated the study, conducted all preliminary analyses and contributed to writing the manuscript. Amy E. West, Ph.D., designed and directed the parent study to this complementary study, and contributed to the conceptualization, development, and writing of the manuscript.

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Conclusions—Findings underscore the importance of assessing and addressing suicidality in preadolescent youth with bipolar disorder, before youth progress to more severe suicidal behaviors. Results also highlight child self-esteem and family rigidity as key treatment targets to reduce suicide risk in pediatric bipolar disorder.

Keywords

Pediatric bipolar disorder; suicidal ideation; family environment; cognitive vulnerability

Introduction

Suicide in youth represents a significant public health concern, ranking as the third leading cause of death among children and adolescents in the United States (Center for Disease Control, 2005). An increased focus on suicide prevention efforts in recent years has not translated into reduced suicide rates among youth (Browne et al., 2005; Kessler et al., 2005), underscoring the need for research focused on suicide etiology. Children with pediatric bipolar disorder (PBD) are at extremely high risk for suicidal behavior, and constitute a key study population to inform prevention efforts. To guide the development of targeted suicide prevention interventions for this at-risk population, this study examined the associations between psychosocial factors and current suicidal ideation in children with PBD.

PBD is a refractory and debilitating illness that affects one to two percent of the population (Van Meter et al., 2011). Youth with PBD are characterized by episodic mood disturbance (i.e. elevated mood and/or significant irritability) and pronounced psychosocial impairment, including poor self-esteem and coping, family stress, and dysfunctional family patterns (Goldstein, 2009; West and Pavuluri, 2009). Despite continuing debate surrounding the complex PBD diagnosis, research has documented that PBD represents a discrete cluster of symptoms that can be validated by reliable assessment with stability over time (Akiskal, 1998; Geller et al., 2001), with temperamental characteristics and clinical manifestations that may differ from those with later adolescent- or adult-onset (Akiskal, 1995). The unique symptoms of PBD are associated with devastating consequences: PBD confers the highest risk for, and mortality from, suicide of all childhood disorders. Completed suicide rates for individuals with bipolar disorder are 15-times greater than the general population (Jamison, 2000), and early illness onset is associated with an increased risk of suicide attempts (Jolin et al., 2007). Moreover, up to 50% of youth with bipolar disorder attempt suicide by age 18 (Lewinsohn, 2003). Thus, the early identification and intervention of suicidal behavior in this population is essential to alter the morbid illness trajectory. Yet, despite incredible need and recognized public health significance, research on suicidality in PBD is still in its infancy.

Consistent with prevention science guidelines, prevention efforts should aim to identify and modify the psychosocial processes that precede or maintain suicidality in at-risk groups (Goldsmith, 2002). Variability in the presence and salience of risk factors across clinical populations and age groups may complicate attempts at targeted prevention. This is particularly true for children with PBD; core symptoms and psychosocial impairment are highly heterogeneous and vary across pediatric- versus later adolescent- or adult-onset

bipolar disorder (Akiskal, 1995; Youngstrom, 2009), making it difficult to understand risk processes related to suicide.

Family and cognitive factors emerge in the broader suicide literature as compelling targets for further study given their relevance to the unique patterns of symptoms and impairment in PBD. Numerous studies highlight the link between family environment and youth suicide attempts, with greater family conflict and lower family support differentiating youth attempters from nonattempters (Brent et al., 1994; Gould et al., 1996). Such links may help explain the increased risk of suicide among youth with PBD, given the documented difficulties in parent stress, family communication and conflict that accompany this disorder (Goldstein et al., 2009b; Rucklidge, 2006). Indeed, two recent studies demonstrated that suicidal ideation in youth with PBD was associated with higher rates of stressful family events, mother-child conflict, and lower family adaptability (Algorta et al., 2011; Goldstein et al., 2009a). Thus, a greater understanding of the family characteristics of youth with PBD at greatest risk for suicidal behavior is warranted.

In addition, findings from the extant literature consistently support a link between cognitive vulnerability and suicide risk, including ineffective problem-solving and coping (Lewinsohn, 1996), low self-esteem, and hopelessness (Bridge et al., 2006). However, how such vulnerability may confer risk for suicide in pre-adolescents with PBD specifically has not been established. Risk may be particularly acute given the documented dysfunction in the brain structures involved in coping skills (e.g., reduced activation in the dorsolateral prefrontal cortex in concert with limbic overactivity) associated with PBD (Pavuluri et al., 2008; Pavuluri et al., 2010; Yurgelun-Todd et al., 2000), as well as the low self-esteem and hopelessness these youth report (Rucklidge, 2006).

Although increasing work has focused on youth suicide, gaps exist in our knowledge of risk factors in PBD, particularly the factors that are modifiable and hence can drive intervention efforts. To address this gap, the current study explored how the cognitive (self-esteem; coping; hopelessness) and family (parenting stress; family cohesion and rigidity) factors associated with the core characteristics of PBD may relate to suicidality, in addition to the demographic and clinical factors examined in past work (symptom severity, subtype of PBD, polarity of index episode, comorbidity). We focused on risk for varying severities of current ideation among pre-adolescents with PBD. Longitudinal data suggests significant relations between ideation and future attempts (Bridge et al., 2006), with nearly one-third of ideators later attempting suicide (Nock et al., 2008b), emphasizing the importance of ideation as an indicator of suicide risk and proximal target to study.

We build on existing studies by examining correlates of suicidal ideation in younger children with PBD, and by looking at finer gradations of ideation than previously examined. To our knowledge, only two studies have examined psychosocial risk for suicide in school-age children with PBD, but samples were primarily comprised of adolescents (mean age of 12, range 5–18 (Algorta et al., 2011; Goldstein et al., 2009a). Identifying the factors specific to these younger ideators is necessary to address suicidality early in the continuum of morbidity – before youth progress to more severe behavior. Indeed, risk for suicide attempts is elevated in the year following ideation onset among younger ideators (Nock et al., 2008a),

and youth with severe ideation specifically are estimated to have a 60% chance of attempting suicide within a year of ideation onset (Kessler et al., 1999). Additionally, past studies focused solely on the presence of any ideation assessed via a single interview item (Algorta et al., 2011; Goldstein et al., 2009a) or collapsed lifetime and current ideators (Algorta et al., 2011). Thus, to characterize those at highest risk for suicidal behaviors, we investigated youth with varying intensities of suicidal ideation including passive, active, and severe thoughts with plan and intent as assessed via a comprehensive semi-structured interview for suicidality.

We hypothesized that current ideation would be associated with (1) child cognitive factors (low self-esteem, coping/problem-solving skills, and hopelessness) and lower perceived life quality; (2) family factors, including greater parenting stress and rigidity, and lower cohesion; and (3) clinical factors, including comorbidity and symptom severity. We expected that youth reporting more severe forms of ideation would be characterized by greater psychosocial impairment relative to those with passive or nonspecific ideation.

Methods

Participants

Participants were children ($N=72$) diagnosed with a bipolar spectrum disorder recruited from a specialty mood disorders clinic in a large Midwestern urban academic medical center from 2010–2014. Children meeting DSM-IV-TR criteria for bipolar spectrum disorders (I, II, and not otherwise specified (NOS)) aged 7–13 were eligible to participate. Inclusion criteria included: stabilized on medication (defined as scores of ≥ 20 on the Young Mania Rating Scale (YMRS) (Young et al., 1978)) and < 80 on the Children's Depression Rating Scale-Revised (CDRS) (Poznanski et al., 1984)), parental consent, and youth assent. Exclusion criteria included: youth IQ < 70 (Kaufman Brief Intelligence Scale-Second Edition; KBIT-2) (Kaufman, 2004)); active psychosis, active substance abuse or dependence, neurological, or other medical problems that significantly complicate psychiatric symptoms (Washington University Schedule for Affective Disorders and Schizophrenia; WASH-U-KSADS) (Geller, 1996)); and primary caregiver severe depression or mania.

Procedures

Procedures were approved by the Institutional Review Board at the University of Illinois-Chicago. Eligibility was assessed by trained raters (licensed clinical psychologists and doctoral students). After obtaining informed consent, parents were interviewed using the Washington University Schedule for Affective Disorders and Schizophrenia (WASH-U-KSADS) (Geller, 1996)), with portions of the Kiddie-SADS-Present and Lifetime Version (K-SADS-PL) (Geller, 1996; Raison et al., 2006)) used to define mood episodes, with corroborating information from child-report. Diagnostic interviews were reviewed during study meetings for final determination. After confirmation of a bipolar spectrum disorder diagnosis and the administration of inclusion/exclusion measures, youth and parents completed a battery of measures with a trained study assessor measuring current suicidality, symptoms, and psychosocial functioning.

Measures

Diagnosis—The WASH-U-KSADS (Geller et al., 1996) is a semi-structured interview used to make a DSM-IV diagnosis (Association, 1994), including bipolar subtype (I, II, NOS) and most recent/current mood episode (mixed, manic, depressed). The WASH-U-KSADS was specifically designed to assess for bipolar disorder in youth with developmentally-specific symptoms of mania, depression, and mood episodicity. Research personnel were trained to administer the interview and demonstrated adequate reliability ($\kappa > .74$).

Suicidal Ideation—Current suicidal ideation was assessed via the Columbia Suicide Severity Rating Scale (C-SSRS (Posner et al., 2011)), a semi-structured interview for ages six to elderly. The C-SSRS assesses presence/absence of current suicidal ideation, including passive ideation (“I wish I were dead”); non-specific active suicidal thoughts (“I want to kill myself”); active ideation with any methods, without intent to act (“I want to kill myself, and I’ve thought about overdosing, but I wouldn’t do it”); active ideation with some intent, without specific plan (“I’ve thought about overdosing, and I may do it”); and active ideation with specific plan and intent. The C-SSRS has shown sensitivity and specificity for suicidal ideation and behavior across multiple studies; Posner et al., 2011) reliability in this sample was strong ($\alpha = .88$). We defined current ideation as past month, as we believe this is proximal enough to the current state to signify current suicidality.

Demographic and Clinical Factors—*Mania symptoms* were assessed via the 21-item Child Mania Rating Scale (CMRS; (Pavuluri et al., 2006)), a parent-rated measure for mania as defined by DSM-IV-TR. Responses range from 0 (never) to 3 (very often); scores at/above 20 are clinically significant. The CMRS has demonstrated strong reliability, concurrent validity, and sensitivity to change across treatment (Pavuluri et al., 2006; West et al., 2011) reliability was high in this sample ($\alpha = 0.90$).

Depression symptoms were measured with the CDRS (Poznanski et al., 1984), a clinician-rated instrument for measuring depression severity in children. Inter-rater reliability (intraclass correlation; ICC = .78) and internal reliability were strong ($\alpha = .84$). To examine distinct relations between depression and suicidality, we omitted one item assessing suicide ideation severity, given overlap with the C-SSRS.

Child age, sex, and race/ethnicity were assessed via the Conners-March Developmental Questionnaire (Conners, 1996).

Child Factors—All child measures were self-report, with assistance from study assessor. *Self-esteem* was measured with the Piers-Harris Self-Concept Scale (PHSCS-2 (Piers, 2002)). The PHSCS-2 is a 60-item scale with good reliability and validity that assesses attitudes about physical appearance, intellectual and school status, behavior, satisfaction with self, and popularity; reliability in this sample was $\alpha = 0.90$. *Hopelessness* was assessed via the 17-item Hopelessness Scale for Children (HSC; (Kazdin et al., 1986)). High scores reflect increased feelings of hopelessness and negative expectations about the future. The HSC was added to the assessment battery after recruitment began; consequently, the first ten youth did not provide this data. Analyses including HSC include 62 youth. Internal consistency in our

sample was adequate ($\alpha = 0.63$). *Problem-solving/Coping* was measured using the Youth Coping Index (YCI; (McCubbin, 1991)), a 31-item measure of personal development, problem solving, and stress management. The YCI has demonstrated strong internal consistency, stability, and predictive validity for positive adaptation (McCubbin, 1991); sample $\alpha = .82$. Last, *quality of life* was assessed using The Questionnaire for Measuring Health-Related Quality of Life in Children (KINDL; (Ravens-Sieberger, 1998)). The 24-item KINDL assesses six subcategories of life quality: physical, emotional, self-esteem, family, friends, and school. This measure has demonstrated excellent validity in past work (Bullinger et al., 2008); sample $\alpha = .75$.

Parent/Family Factors—*Parenting stress* was measured using the 18-item parent-report Parenting Stress Scale (PSS; (Berry, 1995)), which assesses feelings regarding the parent-child relationship (e.g., overwhelmed, satisfied, worried) on a 5-point Likert scale. The PSS has shown good test-retest reliability and strong correlations with other parenting stress indexes; sample $\alpha = .88$. *Family functioning* was assessed via parent-report on the Family Adaptability and Cohesion Evaluation Scale II-Cohesion and Rigid scales (Olsen, 1985), which is designed to measure attitudes about- and interpersonal relationships within- the family on 5-point Likert scales (sample $\alpha = .78$). We focused on two dimensions via the following 7-item subscales: *cohesion* measures family involvement, closeness, and support; and *rigid* assesses family rules and adaptability to change. Higher scores indicate greater cohesion/rigidity.

Analytic Approach

Participants were grouped based on the severity of current suicidal ideation, including: (1) no current suicidal ideation, (2) passive suicidal ideation (“I wish I was dead”), (3) non-specific active ideation (“I want to kill myself”), (4) active ideation with method, with or without intent, and (5) severe ideation, with specific plan and intent. Hypothesized differences in demographic/clinical, child-, and parent-level factors across groups were compared using ANOVA, with planned pairwise comparisons using Tukey’s HSD test, or Chi Square analyses. Correlation analyses measured associations between all predictor variables. Significant predictors from the univariate models were then entered in a series of multivariate logistic regressions predicting presence/absence of (1) any suicidal ideation (i.e., youth all forms of ideation, from passive to severe); (2) planful ideation (i.e., only the subset of youth endorsing active to severe forms of ideation as specified above, thus signifying a higher risk level). Separate regressions were evaluated for the child-level and family-level factors. This allowed us to estimate the odds ratio for each significant child- or family-level factor for each suicide risk category, while controlling for demographic variables (age, gender, bipolar I diagnosis) and any clinical variables that showed group differences in the ANOVA. Covariates were entered in the first block, followed by child/ family-level predictors.

Results

Suicidal Ideation Prevalence and Groups

Current ideation was prevalent: 41% ($n=29$) endorsed any ideation, and 31% ($n=22$) endorsed active forms. Categories of suicide severity were fairly evenly represented: (1) no current ideation (58%; $n=42$), (2) passive ideation (11%; $n=8$), (3) non-specific active ideation (15%; $n=11$), (4) active ideation with method, with or without intent (6%; $n=4$), and (5) ideation with plan and intent (10%; $n=7$).

Demographic and Clinical Factors

Mean age of the sample was 9.22 years ($SD=1.59$, range 7–13); 42% were female; 57% were Caucasian, 31% African American, 7% Hispanic, 4% American Indian or Alaskan Native, and 1% Other. Table 1 lists the descriptive statistics for each predictor domain. There were no differences in age ($F(4)=0.46$, $p=.76$), gender ($X^2(4)=4.47$, $p=0.35$), or race ($X^2(20)=24.31$, $p=0.23$) across groups.

Sixty-three percent ($n=45$) of the sample was diagnosed with bipolar disorder NOS, 32% ($n=23$) with bipolar I, and 5% with bipolar II ($n=4$). Psychiatric comorbidity was prevalent: 84% ($n=66$) met criteria for a comorbid disorder including ADHD ($n=56$, 80%), ODD ($n=27$, 39%), anxiety ($n=24$, 34%), or conduct disorder ($n=6$, 9%). Distribution of current or most recent episode at intake was: 33% ($n=23$) mixed, 24% ($n=17$) mania, 23% ($n=16$) unspecified episode type, 16% ($n=11$) depression, and 4% ($n=3$) met criteria for hypomania. As listed in Table 1, there were no differences in bipolar subtype ($X^2(8)=11.22$, $p=0.19$), index episode ($X^2(16)=18.21$, $p=0.31$), or comorbidity ($X^2(4)=6.94$, $p=.14$) across groups. Among the clinical predictors, mania scores did not vary across groups (Table 1). However, current depression varied significantly across groups ($F(4)=2.63$, $p=.04$); non-ideators scored lower than severe ideators.

Child-level Factors

Several child factors varied significantly across the suicide severity groups (Table 1). Youth with severe ideation reported lower quality of life than youth with no ideation, youth with passive ideation, and youth with nonspecific active ideation ($F(4)=7.38$, $p<.001$). Similarly, severe ideators had higher hopelessness scores than non-ideators, youth with passive ideation, and youth with method ($F(4)=4.21$, $p=.005$). Youth with nonspecific active ideation and youth with active ideation had lower self-esteem than non-ideators ($F(4)=6.52$, $p<.001$). However, coping/problem-solving did not vary across groups ($F(4)=0.24$, $p=.91$). Child-level factors were moderately correlated with one another, suggesting that these were related but distinct constructs (Table 2).

Family-level Factors

Parenting stress scores varied by group ($F(4)=3.59$, $p=.01$): parents of youth with active ideation with method/some intent reported greater stress than parents of youth with nonspecific active ideation. Family rigidity also varied by group ($F(4)=3.18$, $p=.02$): families of youth with nonspecific active ideation scored higher than families of non-

ideators. There were no other significant differences (Table 1). Family factors were not correlated (Table 2).

Multivariate Models of Any and Planful Ideation

To explore the unique contributions of psychosocial factors, two sets of multivariate logistic regression were evaluated each for child and family domains, and outcomes are listed in Table 3. First, presence of any ideation was regressed on significant child-level factors (i.e., quality of life, hopelessness, and self-esteem scores), controlling for age, gender, bipolar I diagnosis, and depression. None of the predictors were significant. When examining the subgroup of youth with planful ideation (i.e., active to severe thoughts), self-esteem remained significant, indicating that higher self-esteem is associated with lower risk of active ideation.

For family models (Table 3), higher depression was associated with a slight increase in risk for any ideation. Additionally, family rigidity scores remained significant, indicating that children from more rigid households were more likely to endorse any ideation than youth with no ideation. In the model predicting planful ideation, family rigidity was the only significant predictor.

Discussion

Findings indicated that suicidal ideation was the rule, rather than the exception, in this young sample: 41% endorsed current ideation, with even the most severe forms of ideation (i.e., specific plan and intent) represented. These rates are consistent with past PBD research (e.g., 46% with current or past ideation in a sample of 5–18 years (Algorta et al., 2011); 36% of youth aged 7–17 reported current ideation (Goldstein et al., 2009a)). Our sample mean age was younger than either previous study, suggesting that even very young patients experience similarly high levels of suicidality that warrant attention. Striking prevalence findings speak to the importance of suicide screening among youth presenting with diagnosis or even subsyndromal symptoms of bipolar spectrum disorders to enhance prevention efforts (Akiskal, 1995). Additionally, several child and family correlates of suicidality emerged when examining youth with active and more severe forms of suicidal ideation. Given the links between suicidal ideation and future suicide attempts, particularly among youth, such findings may offer key points of intervention along the suicide risk trajectory.

In line with expectations, greater cognitive vulnerability (i.e., higher hopelessness and lower self-esteem) and emotional vulnerability (higher depression, lower life quality) distinguished youth with increasing ideation severity. However, only self-esteem remained a significant predictor of planful ideation in the multivariate models. Low self-esteem is consistently linked to suicide risk in the extant literature, although the association weakens when controlling for depression and hopelessness (Bridge et al., 2006). We found the reverse to be true, suggesting that self-esteem may be a unique predictor and particularly relevant for suicide risk among this population. Results are not surprising, as a PBD diagnosis is likely to impact a child's self-esteem, in addition to the toll the accompanying difficulties of temperamental instability (Askiskal, 1995), peer rejection, and academic underperformance

(Geller et al., 2002; Wilens et al., 2003) undoubtedly take on self-worth. In addition, self-esteem only predicted planful forms of ideation, and may have been overlooked in past examinations of less severe ideation in PBD.

Interestingly, although associations between coping skills and suicide have garnered support in the adolescent literature (Asarnow et al., 1987; Lewinsohn, 1996), youth coping/problem-solving did not differentiate ideators from non-ideators in our study. These skills may be too underdeveloped or inconsistent in this young sample to exert a significant influence on suicide risk, as neuroimaging studies have shown pervasive dysfunction in the cognitive-affective systems involved in coping in PBD (Yurgelun-Todd et al., 2000). It will be important for future work to explore the role of coping deficits in adolescents with bipolar disorder.

Within the family domain, parenting stress and family rigidity differentiated the suicide risk groups in the univariate analyses; rigidity remained a significant predictor of any ideation, as well as the subset of youth with planful forms of ideation, in the multivariate models. Our results converge with research demonstrating links between family stress, adaptability and youth suicide risk (Garrison et al., 1991; Goldstein, 2009), and also the lack of associations between family cohesion and suicidality in PBD specifically (Goldstein, 2009). A rigid family style, including difficulty adapting to change as well as overreliance on rules and consequences, may have deleterious consequences for a child with PBD; rather than modifying family practices to accommodate the child's needs, these families may engage in behaviors that exacerbate a child's symptoms and hence risk for suicide. Moreover, modeling an inability to explore alternate solutions at the family level may potentiate suicidality and despair at the child level. Our lack of findings for coping at the child-level may be further explained by these results, as family coping skills may be more salient for well-being among school-age children.

Also noteworthy are the demographic and clinical factors that did not relate to suicidality, including age, gender, episode, bipolar subtype, and comorbidity. Lack of findings may be driven, in part, by the younger sample. Past work suggests that mixed episodes confer greatest suicidal risk among adolescents and adults with bipolar disorder (Algorta et al., 2011; Goldstein, 2009), but the link was not supported in this study. Similarly, although gender differences in suicide risk have been found in the adolescent and adult suicide literatures (Bridge et al., 2006), differences may not emerge until adolescence, as suggested by our findings as well as past PBD research (Goldstein et al., 2009a). Findings for comorbidity and bipolar subtype are congruent with the lack of relations between subtype and suicide risk among youth with PBD specifically and mixed findings regarding the role of comorbidity (Goldstein, 2009).

In sum, results have important clinical implications, highlighting self-esteem and family rigidity as key treatment targets to reduce suicide risk in PBD. Interestingly, these factors were unrelated in our sample, suggesting their unique influences on suicide risk. Psychosocial interventions aimed at enhancing a child's sense of self-worth through recognizing their unique qualities, promoting mastery activities, and developing an identity that is distinct from their diagnosis, are essential for suicide prevention in this population

(e.g., Child- and Family-Focused Cognitive Behavioral Therapy, which targets self-esteem in a core component; West et al., In Press). Moreover, interventions must also address family flexibility in the context of the unique challenges associated with PBD. In particular, interventions that emphasize family problem-solving and alternate parenting approaches are indicated for suicide prevention (e.g., Miklowitz et al., 2006; West et al., In Press), as traditional behavioral management strategies (e.g., enforcing strict rules and consequences in response to mood dysregulation) may not be effective (West and Weinstein, 2012). It will be important to examine the efficacy of existing interventions that target these domains for suicide outcomes to inform the development of suicide interventions in PBD.

Findings must be viewed within the context of study limitations. The sample size may have conferred limited power to detect small effects; findings warrant replication with larger samples, particularly the examination of severe but less prevalent forms of ideation. Further, missing data on the hopelessness measure, due to late initiation of data collection, limits what can be gleaned from findings regarding hopelessness. However, the role of hopelessness in suicidality has been demonstrated in the literature, and with full data the associations observed in our sample may, in fact, be stronger. Additionally, the outpatient clinical sample may limit generalizability to the broader PBD population or those seeking more intensive treatment. Last, cross-sectional analyses did not permit testing of causal relations or direction of effects. Recent research suggests the existence of transactional relations between suicidality and family environment in PBD (Algorta et al., 2011), and prospective longitudinal studies are needed to understand the development of suicidality in PBD.

Conclusions

The current study extends the literature by identifying several psychosocial characteristics of child active ideators with PBD, a necessary first step toward the development of effective suicide prevention interventions. Strengths include use of a detailed, clinician-administered interview for suicidality, examination of active and more severe forms of suicidal ideation that confer greatest risk for future attempts, focus on the school-age population with PBD, and exploration of factors across child and family domains. Findings underscore the importance of assessing and addressing suicidality in children with PBD, and suggest that youth with lower self-esteem and greater family rigidity may be at high risk for future attempts. Interventions that address child cognitive and family risk factors via cognitive-behavioral and family-focused methods may reduce risk of suicidality in PBD.

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Highlights

- Current suicidal ideation was highly prevalent in this young sample of children with PBD.
- Family rigidity and low self-esteem predicted increased risk for planful ideation when controlling for demographic and significant child/family correlates of suicidality.
- Interventions that aim to enhance family adaptability and child self-worth may reduce suicide risk in PBD.

Table 1

Descriptive statistics for demographic and predictor variables.

	No Suicidal Ideation	Passive Suicidal Ideation	Nonspecific Suicidal Ideation	Suicidal Ideation with Method	Suicidal Ideation with Plan & Intent
N	42	8	11	4	7
Demographic and Clinical Variables					
	n (%)				
Gender (Female)	21 (53)	3 (38)	3 (27)	2 (50)	1 (14)
Race (Caucasian)	23 (58)	6 (75)	7 (64)	1 (25)	4 (57)
Bipolar I Diagnosis	14 (35)	4 (50)	5 (45)	0	0
ADHD	32 (76)	7 (88)	8 (73)	4 (100)	5 (71)
ODD	16 (38)	3 (38)	6 (60)	2 (50)	0
Anxiety	14 (33)	4 (50)	3 (30)	2 (50)	1 (20)
Conduct Disorder	3 (8)	2 (25)	0	1 (25)	0
Index Episode (Depressed)	5 (12)	3 (38)	3 (27)	0	0
	Mean (SD)				
Age	9.12 (1.64)	8.88 (1.46)	9.45 (1.69)	9.25 (1.71)	9.86 (1.46)
Depression	36.50 (10.25)*	43.38 (16.08)	40.07 (7.37)	39.58 (3.06)	48.86 (7.90)
Mania	21.49 (10.93)	29.13 (12.77)	24.07 (6.70)	23.26 (2.21)	23.86 (10.84)
	Mean (SD)				
Child-Level Factors					
Quality of Life	69.17 (11.27)***	64.53 (11.07)*	66.19 (9.40)**	55.99 (9.82)	46.24 (11.36)
Hopelessness	3.95 (2.49)**	2.86 (1.68)**	5.38 (3.07)	3.04 (0.94)*	9.22 (3.68)
Self-Esteem	47.33 (8.74)***	40.50 (7.96)	38.97 (8.98) ^a	38.50 (6.61)	31.29 (11.28)
Problem Solving	97.73 (17.20)	95.63 (16.07)	92.90 (21.07)	92.75 (10.21)	94.00 (17.01)
	Mean (SD)				
Family-Level Factors					
Parenting Stress	42.20 (9.80)	48.63 (8.42)	51.98 (13.45)*	53.50 (18.73)	37.29 (8.22)
Family Cohesion	28.60 (4.81)	26.63 (3.50)	28.50 (3.81)	30.25 (4.27)	28.43 (5.83)

	No Suicidal Ideation	Passive Suicidal Ideation	Nonspecific Suicidal Ideation	Suicidal Ideation with Method	Suicidal Ideation with Plan & Intent
<i>N</i>	42	8	11	4	7
Family Rigidity	19.43 (3.88)	22.75 (2.60)	23.45 (4.30) ^a	21.50 (2.52)	20.86 (3.44)

Notes.

* $p<.05$,

** $p<.01$,

*** $p<.001$ different from severe ideation.

^a $p<.05$ different from no suicidal ideation

Table 2

Correlations between clinical, child, and family variables.

	Depression	Mania	Quality of Life	Hopelessness	Self-Esteem	Parenting Stress	Family Cohesion	Family Rigidity
Mania	0.06							
Quality of Life	-0.53***	0.00						
Hopelessness	0.28*	-0.07	-0.31*					
Self-Esteem	-0.59***	-0.11	0.66***	-0.52***				
Parenting Stress	-0.04	0.04	-0.05	-0.23	-0.07			
Family Cohesion	0.18	0.04	0.02	-0.05	0.01	-0.08		
Family Rigidity	-0.01	0.07	0.10	-0.01	-0.03	0.19	0.06	
Family Chaos	0.02	-0.07	-0.06	-0.11	0.04	0.04	-0.44***	-0.24*

Notes.

*
 $p < .05$,**
 $p < .01$,***
 $p < .001$

Table 3

Results from logistic regression models reported as Odds Ratios.

	Predictors	Any SI	Planful SI
Child Factor Model	Age	1.06	1.39
	Covariates	Gender	0.56
		Depression	0.33
		BP I Diagnosis	0.95
	Predictors	Quality of Life	1.00
		Hopelessness	0.36
		Self-Esteem	0.96
Family Factor Model	Age	0.97	1.14
	Gender	0.92	0.89*
	Covariates	Depression	1.21
		BP I Diagnosis	1.31
		Parenting Stress	0.36
	Predictors	Family Rigidity	0.30

Notes. SI=Suicidal Ideation. Because none of the covariates were significant in block one, only the results from the full model are presented here.

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