



Parental expressed emotion and suicidal ideation in adolescents with bipolar disorder

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ABSTRACT

Family environmental variables are risk factors for recurrent courses of mood disorder in adolescents. The present study examined the association between parental expressed emotion (EE)—critical, hostile and/or emotionally overinvolved attitudes toward a concurrently ill offspring—and suicidal ideation in adolescents with bipolar disorder. The sample consisted of 95 adolescents with a bipolar I or II diagnosis who had experienced a mood episode in the prior 3 months. Participants (mean age=15.54 years, S.D.=1.4) were interviewed and completed questionnaires regarding current and past suicidal ideation prior to their participation in a treatment trial. Parents completed five-minute speech samples from which levels of EE were assessed. High EE attitudes in parents were associated with current suicidal ideation in adolescents. This relationship was independent of the effects of age, gender, current depressive or manic symptoms, comorbid diagnoses, bipolar I/II subtypes, family adaptability, and family cohesion. These results underscore the importance of addressing the emotional reactivity of caregivers in treating adolescents with bipolar disorder who have suicidal ideation.

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1. Introduction

Suicide ranks as the third leading cause of death among adolescents (Center for Disease Control and Prevention, 2010). Among children and adolescents with bipolar disorder, approximately 20–30% report suicide attempts (Goldstein et al., 2005; Goldstein, 2012), and over 50% report one or more periods of suicidal ideation (Lewinsohn et al., 2003). Thus, bipolar disorder has one of the highest rates of suicide completion (Baldessarini and Tondo, 2003).

Family contextual variables are strongly related to the course of depressive symptoms in bipolar disorder. High levels of expressed emotion (EE) among parents – defined as high levels of criticism, hostility, or emotional involvement toward the offspring – are prospectively associated with illness recurrences and more severe depressive symptoms in bipolar adults (Kim and Miklowitz, 2004; Miklowitz et al., 1988; Yan et al., 2004). Adolescents with bipolar

disorder who had high EE parents had higher depression and mania symptom ratings over 2 years than those with low EE parents (Miklowitz et al., 2006). Although there is evidence to suggest high EE family environments increase mood symptoms in bipolar adolescents, the association between parental EE and suicidal ideation has not been examined in bipolar disorder.

Dimensions of the family system such as cohesion, conflict and adaptability are also related to the course of mood symptoms in bipolar disorder (Robertson et al., 2001; Sullivan et al., 2012). Adaptability involves the roles, leadership, discipline and flexibility of the family, while cohesion involves the closeness of the family through assessment of the amount of time spent together, boundaries, and emotional bonding (Tiesel and Olson, 1992). Parents of adolescents with bipolar disorder report lower levels of cohesion and adaptability, than parents of healthy adolescents, and high EE parents of bipolar youth report lower levels of adaptability and cohesion than low EE parents (Sullivan and Miklowitz, 2010). Low cohesion and adaptability have also been longitudinally associated with higher depression scores in bipolar adolescents (Sullivan et al., 2012). Low family cohesion, low family support and high family conflict differentiate adolescents with

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suicidal ideation from non-suicidal patients and non-clinical controls (Wagner et al., 2003). Further, bipolar adolescents with suicidal ideation endorse lower family adaptability and more conflict with their mothers than those who do not endorse suicidal ideation (Goldstein et al., 2009). Combined, these results suggest an association between symptom presentation and the family environment.

This study examined the relationships between EE, family cohesion, and family adaptability and suicidal ideation in adolescents with bipolar disorder. We hypothesized that low family cohesion, low adaptability, and high EE would be independently associated with suicidal ideation beyond the effects of other demographic or clinical variables, including age, sex, socioeconomic status (SES), current manic or depressive symptoms and the presence of comorbid axis I disorders.

2. Methods

2.1. Participants

Ninety-five youth meeting DSM-IV-TR (APA, 2000) criteria for bipolar I or II disorder were evaluated to determine eligibility for a randomized trial of family-focused treatment. Of the 145 adolescents who participated in the trial, parents of 95 adolescents completed a taped five-minute speech sample (FMSS) that could be evaluated for EE. Of these 95, 79 of the adolescents had both parent and self-reported measures of adaptability and cohesion. The 16 youths with incomplete data did not differ in bipolar diagnosis subtype (I versus II), current manic or depressive symptoms, age, sex or ethnicity from those 79 who provided complete data (all p s > 0.10). Thus, analyses involving cohesion and adaptability are based on fewer ($N=79$) participants than all other analyses ($N=95$). Adolescents and parents signed informed assent and consent forms prior to participating in the study. The institutional review boards of the three participating universities (University of Colorado, Boulder, University of Pittsburgh School of Medicine, and University of Cincinnati/Cincinnati Children's Hospital) approved all procedures.

To be eligible for the randomized trial, participants had to have a lifetime diagnosis of bipolar I or II disorder and be 12 years 0 months to 17 years, 11 months in age. They were required to have had a mood episode (i.e., a (hypo)manic or depressive episode) in the previous 3 months and moderate symptoms for at least 1 week in the prior month prior to study intake. Participants were excluded if they (1) met criteria for substance abuse/dependence disorder in the past 3 months, (2) had a pervasive developmental disorder, (3) met criteria for a primary psychotic disorder or a life threatening eating disorder, (4) had a severe medical condition that required urgent treatment, or (5) were victims of current physical or sexual abuse. Youth who were ineligible were given referrals to other treatment sources.

2.2. Procedures

2.2.1. Diagnostic assessment

The Kiddie Schedule for Affective Disorders and Schizophrenia, Present and lifetime Version [K-SADS-PL] (Chambers, 1985; Kaufman et al., 1997), a semi-structured diagnostic interview, was utilized for diagnostic purposes. Independent KSADS-PL interviews were completed with the youth and one parent, and summary scores were generated. In the case of significant discrepancy between parent and child reports, the parent and youth were interviewed conjointly to determine consensus. The diagnosis was confirmed further through a separate evaluation with the parent and youth by a board certified psychiatrist.

To obtain a more comprehensive mood assessment, the KSADS Mania Rating Scale (Chambers, 1985) and Depression Rating Scale (Axelson et al., 2003) were substituted for the mood modules of the K-SADS-PL. These measures convert the KSADS items to 1–6 or 1–7 scales of severity, allowing for a more fine-grained assessment of symptom severity. Criterion A symptoms (elevated or irritable mood) were rated as present only if a distinct and notable change from the adolescent's normal mood was observed. Criterion B symptoms were rated if they began or intensified with the onset of the criterion A symptoms. In addition, significant mood symptoms during at least 1 week of the prior month, as assessed by the MRS (total score > 17) and DRS (total > 16) was required for participation. Reliability among 12 independent raters from all three sites was strong for both the DRS and MRS ($\kappa=0.89$ and $\kappa=0.81$, respectively; 12 examples).

2.2.2. Suicidal ideation

To be consistent with the two prior studies of suicidal ideation in pediatric BD (Algorta et al., 2011; Goldstein et al., 2009), individuals were grouped based on their response to the 'suicide ideation' item of the KSADS. Those with a score of at least a "3" (i.e., occasional thoughts of suicide but no thoughts of a specific method)

on this item were classified as having current suicidal ideation (SI, $n=40$). Those scoring below a "3" on this item were classified as low-SI ($n=55$). This cutoff describes individuals whose thoughts have shifted from thoughts of death to the actual act of suicide (e.g., taking an action to harm oneself purposefully with the intention of death). These thoughts had to have occurred for at least 1 week in the prior month.

2.2.3. Expressed emotion assessment

The five-minute speech sample (Magaña et al., 1986) was completed by parents regarding their relationship with the child. The parent was instructed to "talk for 5 min about what kind of person (your child) is and how the two of you get along together." FMSS audiotapes, masked regarding treatments, were coded by the developer of the FMSS-EE system (Magaña et al., 1986). Families were classified as high in EE ($n=50$) if one or both parents made at least one critical comment, displayed evidence of emotional over involvement, or demonstrated hostility during the FMSS. Families in which neither parent expressed criticism, hostility or over involvement were classified as low EE ($n=45$). Within the sample, only 27 (28.4%) of fathers provided an FMSS, while 84 (88.4%) of mothers provided a sample. Single-parent families were classified according to the FMSS of the individual parent. A subset of 10 FMSS tapes were coded during the study interval by a group of 12 newly trained raters. Reliability for high versus low-EE classification was excellent ($\kappa=0.95$) between the primary rater and these trained raters.

2.2.4. Self-reports of family environment

To assess family cohesion and flexibility, the self- and parent-report versions of the Family Adaptability and Cohesion Evaluation Scale-II (FACES-II: (Olson and Tiesel, 1991)) were administered to the parents and child. The two subscales of Cohesion and Adaptability were computed for each participant. In order to reconcile single and dual parent homes, the parent score was determined using the higher of the two scores, which in the majority of cases (97%) was from the mothers' report.

2.3. Data analysis

The factors correlated with SI classification were determined using univariate statistics. Categorical variables (e.g., sex, gender, bipolar subtype, EE) were compared to the low and high SI groups using χ^2 tests, whereas t -tests were used to assess whether continuous variables (e.g., depression severity, age, family adaptability and cohesion scores) were associated with SI group. Next, we compared high and low-EE families on proportion of adolescents in the high and low SI groups, as well as the relationships between family adaptability/cohesion (child and parent) and SI classifications. The variables associated with SI classification in univariate analyses were then entered into a logistic regression model to estimate the variance explained by each variable on current suicidal ideation.

3. Results

3.1. Sample characteristics

Of the 95 adolescents, 40 (42.1%) endorsed suicidal ideation on the KSADS-DRS for at least 1 week of the prior month. Of these, 20 (50%) had mild thoughts (i.e., occasional thought of suicide but no method), 15 (37.5%) reported moderate thoughts (i.e., often thinks of suicide and has thought of a method), three (7.5%) had severe thoughts (i.e., often thinks of suicide, has thought of a method, and has mentally rehearsed a plan/made a suicidal gesture), and two (5%) reported extreme thoughts (i.e., made preparations for an attempt). Within this same sample, three (3%) reported making a "definite" attempt during this same time period (i.e., worst week in the past month). There were no differences between youth with and without SI in gender, age, ethnicity, SES, bipolar type (I versus II), parent marital status or comorbid diagnoses (Table 1).

To determine the concurrent validity of the KSADS measure of suicidal ideation, we examined the relationship between baseline SI groups (based on the DRS) and scores on the Suicidal Ideation Questionnaire-Junior (SIQ-JR; (Reynolds, 1988)), which were available on 87 of the youth covering the prior 4 weeks. The current sample's scores ranged from 0 to 90 ($M=24.07$, $S.D.=24.95$), which falls below the clinical cutoff (Reynolds, 1988). This comparison revealed a significant relationship between the variables ($r=0.43$, $p<0.001$). The low SI ($n=50$, $M=14.86$, $S.D.=18.48$)

Table 1
Suicidal ideation and related demographic and clinical variables.

	Low suicidal ideation (low-SI) (n=55)	Suicidal ideation (SI) (n=40)	χ^2 or <i>t</i>	<i>p</i> -value
Sex (male)	26 (47.3%)	17 (42.5%)	0.21	> 0.1
Age	15.63 (± 1.45)	15.41 (± 1.33)	0.74	> 0.1
Race (Caucasian)	51 (92.7%)	36 (90%)	0.22	> 0.1
Socioeconomic status (SES)	3.79 (± 1.18)	3.87 (± 1.12)	−0.53	> 0.1
Parent marital status (married)	29 (53%)	15 (16%)	4.38	> 0.1
Bipolar type			0.52	> 0.1
BPI	28 (50.9%)	23 (57.5%)		
BPII	27 (49.1%)	17 (42.5%)		
Comorbid conditions (currently present)				
ADHD	16 (29.1%)	12 (21.8%)	0.01	> 0.1
ODD	15 (27.3%)	10 (25%)	0.06	> 0.1
Anxiety	15 (27.3%)	11 (27.5%)	0.001	> 0.1
EE-type (high)	22 (40%)	28 (70%)	8.35	0.01

and the high SI ($n=37$; $M=36.5$, $S.D.=27.30$) groups differed on total SIQ score at intake ($F(1, 85)=19.45$, $p<0.001$).

T-tests revealed no significant differences between SI groups in severity of manic symptoms, $t(93)=-0.94$, $p=0.35$ or depressive symptoms, $t(93)=0.54$, $p=0.59$, as assessed using the total score of the MRS/DRS. These relationships remained even after the suicide item score was removed from the total depressive symptoms score.

3.2. Family environment and SI group

High and low EE groups ($N=95$) differed in current SI ($\chi^2=8.36$, $p=0.01$). Of the 45 low-EE families, 12 (26.7%) had adolescents with significant SI, while 28 (56%) of the 50 high-EE had an adolescent endorse SI. Low-EE families were more likely to have an adolescent with low-SI ($n=33$; 60%) than were high-EE families ($n=22$, 40%). In a logistic regression model that included all demographic and illness variables (Table 1, $n=95$), being in a high-EE family increased the odds of having significant SI by a factor of 3.5 (95% CI = 1.42–8.80, $p<0.01$).

We further examined the subtypes of EE (low ($n=45$), critical ($n=33$), and overinvolved ($n=17$)) to determine if one type was more strongly associated with SI. Results indicated that high-EE, critical families (56%) and high-EE, emotionally overinvolved families (59%) were more likely to have a child with current SI than low-EE families (26.7%) ($\chi^2=8.53$, $p=0.04$).

Youth-reported family cohesion ($t(77)=-0.45$, $p>0.10$) and adaptability ($t(77)=-0.62$, $p>0.10$) were not associated with suicidal ideation. Further, parent-reported cohesion and adaptability were also not associated with SI group (cohesion: $t(77)=0.91$, $p>0.10$; adaptability: $t(77)=0.01$, $p>0.10$).

4. Discussion

The current study is the first to examine the association between family EE and suicidal ideation in adolescents with bipolar I and II disorders. Our results indicate that high EE environments are associated with a greater likelihood of suicidal ideation in adolescents with bipolar disorder than are low EE environments. No other differences emerged between youth with and without significant SI in either demographic or symptom variables.

The cross-sectional design of this study could not determine the direction of the association between high EE parental attitudes and suicidal ideation. One hypothesis is that the critical, hostile or overprotective attitudes of parents contribute to a negative family atmosphere. Over time, this atmosphere results in suicidal thoughts in a biologically vulnerable offspring. Alternatively, another hypothesis is

that high EE attitudes among parents are the result of caring for a child who expresses self-destructive or hopeless thoughts.

A bidirectional framework for understanding the development of high EE (Miklowitz, 2004) may best explain the results. In this view, both the parent and the adolescent share temperamental attributes that result in a continuous cycle of negative behaviors. For example, stress in the home caused by the difficult symptom presentation of pediatric bipolar disorder (i.e., irritability, low frustration tolerance, mood instability, and high anxiety) may be worsened by a parent who has their own neurobiological vulnerabilities to mood dysregulation. This bidirectional interactional pattern suggests that the ways that parents and patients interact is deeply rooted in biological, cognitive and psychological processes (Miklowitz, 2004) and highlights the need to integrate genetic and psychosocial models to understand the emergence of suicidal thinking in certain family contexts. Longitudinal work that examines the relationship between family EE and suicidal ideation is necessary to examine the development of familial EE attitudes and suicidal ideation.

4.1. Clinical implications

This interplay of the family system in the association between EE and SI highlights the importance of family oriented treatments for bipolar youth with SI and their parents. Family-oriented psychoeducational interventions have been supported as effective for children with mood disorders such as depression (Asarnow et al., 2011) and bipolar disorder (Miklowitz et al., 2006). However, the co-occurrence of high EE parental attitudes and adolescent suicidal ideation may result in a particularly toxic environment for the youth and suggests that a greater focus should be placed on the dynamics of the family environment. Family focused treatment has been shown to be particularly efficacious in families with high EE relatives in reducing patient depression symptoms over time (Miklowitz et al., 2000, 2009), but there are no data on whether this or similar treatments lead to reductions in parental EE. The most effective treatments may involve augmenting more traditional family therapies to include psychoeducation about EE and its effects on symptoms, as well as increased coaching and skill building around negative, critical or hostile communication styles. Further, these results suggest that specifically targeting parental emotion reactivity may be a particularly effective therapeutic direction for these families.

4.2. Limitations

First, the present study used the FMSS to assess parental attitudes rather than relying on self-reports of family environments. The FMSS is considered an alternative to the Camberwell Family

Interview (CFI), which is the gold standard for obtaining information on the family's affective climate (Van Humbeeck et al., 2002). Unfortunately, the CFI interview requires extensive training for administration and takes approximately 90 min to complete. Given that the CFI provides more detailed responses, this information may have helped to clarify the genesis of critical, hostile or overinvolved attitudes in relation to suicidal thinking or behavior in the offspring.

Our use of the FMSS may also help to explain why cohesion and adaptability – either as rated by the child or parents – were not related to suicidal ideation. The FMSS provides an independently rated assessment, whereas cohesion and adaptability are based on self-report. Self-report measures limit participants' response options and may be more subject to social desirability effects. Specifically, adolescents and parents may display biased reporting of family experiences to avoid being classified as “extreme” on either end of the scale. It may also be that EE (critical or hostile) behaviors in parents are more salient to the offspring than features of the larger family system, such as closeness or adaptability.

Lastly, our logistic regression models may have been underpowered by the limited sample size and the inclusion of a number of exploratory predictor variables. The sample size was also not large enough to examine potential moderators of the EE and SI association. For example, we were not able to examine the moderating effects of the mother versus father EE levels, or the effects of different gender pairings (e.g., mother/daughter, father/daughter). Further, the infrequency of suicidal attempts in this sample limited our ability to examine whether high EE family environments are associated with risk for suicide attempts. Because risk of suicide attempts increases with the presence of suicidal thinking, these individuals may be at even greater risk (e.g., Roberts et al., 1998), and classifying families according to EE status may help to identify bipolar youth who are most vulnerable for a suicide attempt.

In summary, bipolar adolescents with high EE parents were more likely to display suicidal ideation than those with low EE parents. These results underscore the importance of family environmental variables as treatment targets and their potentially mediating effects on reductions in suicide attempts within this population.

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