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Family environment as a moderator of the association between anxiety and suicidal ideation

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Abstract

The present study examined associations among anxiety symptoms, anxiety disorder diagnoses, perceptions of family support and conflict, and suicidal ideation (SI) in a clinical sample of psychiatrically hospitalized adolescents. Participants were 185 adolescents (72% female; 84% white, mean age = 15.02 years, SD = 1.33) hospitalized on an acute psychiatric inpatient unit. Results indicated that anxiety disorders and symptoms were positively associated with SI, even after controlling for mood disorder diagnoses and sex. Moreover, this relationship was stronger among youth who reported lower (versus higher) levels of family support. Family conflict was positively associated with SI but did not moderate the relationship between anxiety and SI. Results suggest that family support may represent an important intervention target to decrease suicide risk among anxious youth. Integrating positive parenting techniques (e.g., attending to positive behaviors, providing praise, emotion coaching) and effective parent-child communication into treatment with anxious youth may help achieve this aim.

Keywords

anxiety; suicidal ideation; family support; family conflict

Suicide is currently the third leading cause of death among pre-adolescents, adolescents, and young adults, ages 10–24 [1]. Also concerning is the even greater prevalence of non-lethal suicide attempts and suicidal ideation among youth. Results of the National Comorbidity Replication Adolescent Supplement (NCS-A), a large national survey that employed structured psychiatric interviews, found that 4.1% of adolescents made a suicide attempt, 4% made a suicide plan, and 12.1% seriously considered suicide during their lifetime [1]. Higher rates are reported in national surveys that use anonymous self-report measures. For example, according to the national Youth Risk Behavior Surveillance Survey (YRBSS), 8% of adolescents attempted suicide, 13.6% made a suicide plan, and 17% seriously considered suicide in the last year [2]. Several research studies have shown that severity (frequency and specificity) of suicidal ideation (SI) predicts subsequent suicide attempts (SA) [3]. Thus, SI is not only highly prevalent among adolescents but may also lead to suicidal behavior if

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unaddressed. Research that examines risk factors associated with SI, as well as factors that may moderate this association, is of great importance.

One potential risk factor that has received recent attention in the adolescent suicide literature is anxiety. Anxiety disorders are among the most common psychological disorders of childhood and adolescence [4]. Adolescents diagnosed with anxiety tend to feel overwhelmed, trapped in their symptoms of anxiety, and may contemplate suicide as a means of escape [5]. Indeed, in one sample of treatment seeking youth with anxiety disorders, 41% endorsed SI [6], highlighting the importance of assessing for SI among anxious youth. However, results are mixed as to whether the association between anxiety and suicidality (i.e., ideation, plans, attempts, completion) exists independent of common comorbid conditions known to be associated with suicidality, such as depression. Although some studies failed to find a unique association between anxiety and SI [7, 8] more recent research suggests that anxiety is an independent risk factor [6].

Given evidence suggesting that anxiety is a risk factor for suicidality, whether in combination with depression or alone, it is important to explore factors that affect this relationship. Yet, few studies have explored moderators or mediators of this association. In one study conducted with a community sample [9], the relationship between anxiety and suicidality was found to be stronger among youth without a history of bullying victimization. In another study conducted with a clinical sample of psychiatrically hospitalized adolescents, loneliness was found to mediate the relationship between social anxiety and SI [10]. Although this research is informative, additional theory-driven research is needed to improve our understanding of the mechanisms through which anxiety affects suicidality among high-risk youth.

One theory that may inform research on factors that influence the association between anxiety and SI is the Interpersonal-Psychological Theory of Suicide [11]. According to the IPTS, the convergence of perceived burdensomeness and thwarted belongingness leads individuals to question the value of their lives and contemplate death. Perceived burdensomeness refers to the belief that one is highly ineffective, incompetent, and the object of disappointment for other people. Thwarted belongingness signifies feelings of being rejected by friends, family or other valued social contacts.

As suggested by the IPTS [11], social perceptions and connectedness may influence suicide risk. Finding a sense of value and belongingness in relationships with family members, peers, and teachers is particularly important for adolescents. However, given the substantial social impairment that commonly accompanies anxiety disorders [e.g., deficient peer relations, poor social skills, low social acceptance; 12, 13], this may be difficult for youth with anxiety to achieve. Their degree of difficulty connecting with others may be largely influenced by social contextual factors. Adolescents may be less likely to perceive that they are a burden on others or feel a thwarted sense of belongingness in social contexts that are high in support [14] and low in conflict [15], which in turn may affect their suicide risk. In line with the IPTS, the purpose of the present study was to examine whether perceptions of the family context, including degree of perceived support and conflict, affect the association between anxiety and SI in a clinical sample of adolescents.

A sense of inclusion within the family is critical to adolescents' emotional mental health, even more so than status in peer groups [16]. For example, one study found that adolescent symptoms of social anxiety and avoidance were influenced by perceptions of heightened conflict between parents (for males) and low family cohesion (for females) [17]. Similar results have been found in the area of adolescent suicidality [19]. Perceptions of low family cohesion and high family conflict have been associated with SI and/or suicide attempts in child [20] and adolescent [21] samples. Moreover, perceptions of low family support have been shown to correlate with suicide attempts among psychiatrically hospitalized adolescents [22] and predict SI and suicidal behavior six months post-psychiatric hospitalization [23].

As is evident, adolescent anxiety and SI are inter-related, and the family environment is associated with both forms of mental health problems. Thus, perceptions of the family environment hold the potential to decrease or increase the risk for suicidality among anxious youth. The present study explored whether perceptions of family support and family conflict moderate the association between anxiety and SI in a sample of psychiatrically hospitalized adolescents. We hypothesized that family support would serve as a protective factor that attenuates the relationship between anxiety and SI. Family conflict, on the other hand, should confer additional risk and strengthen the relationship between anxiety and SI. Moreover, given prior research which suggests that co-occurring depression may account for the association between anxiety and SI [7, 8], mood disorder diagnoses was controlled for in study analyses to provide a conservative test of study hypotheses.

Method

Participants

Recruitment occurred over the span of three years as part of a larger study on the relationship between psychopathology, cognition, and adolescent suicidality. Two hundred and one adolescents who were hospitalized on an acute psychiatric inpatient unit and their parents agreed to participate. Sixteen participants did not complete the entire assessment battery after enrollment (most were discharged from the inpatient unit early or reported that they changed their mind about study participation), resulting in a final sample size of 185 adolescents. Inclusion criteria were: 1) fluency in English for both adolescent and parent; 2) parental consent and adolescent assent; and 3) a verbal IQ estimate at or above 70 (at least borderline intelligence range), assessed using the Kaufman Brief Intelligence Test [24]. Exclusion criteria were: 1) active psychosis; and 2) full placement in the legal guardianship of the Department of Children, Youth, and Families (DCYF). Participants ranged in age from 13 to 18 years ($M = 15.02$, $SD = 1.33$). The sample was primarily female (72%) and white (84%), with the remainder identifying themselves as black (2.7%), Asian (2.2%), Native American (3.2%), or from other racial backgrounds (7.6%).

Procedure

Trained research assistants recruited adolescents and their parents/guardians during family visits or family meetings on an adolescent inpatient unit. Parental consent and adolescent assent were obtained. Parents and adolescents were administered the assessment battery by

bachelors level research assistants while the adolescent was hospitalized. Master/doctoral level clinicians conducted the diagnostic interview. Parent and adolescent assessments were conducted separately and occurred over the course of one or two sessions. Parents received \$50 and adolescents received four movie tickets for study participation. In addition, a feedback summary form with responses on clinical assessments was provided to the adolescent's treatment team. Affiliated University and Hospital Institutional Review Boards approved this study.

Measures

Anxiety and mood disorders—Anxiety and mood disorders were assessed using the Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version (K-SADS-PL) [25]. The K-SADS-PL is a semi-structured diagnostic interview that provides a reliable and valid assessment of *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV, 4th ed.) [26] diagnoses in children and adolescents. Although the full K-SADS-PL was administered to study participants, only the anxiety and mood disorder diagnoses (made via consensus of parent and adolescent report) were examined in the present study.

Trained masters or doctoral-level clinical psychology trainees, all of whom underwent extensive training in the K-SADS-PL provided by the third author, conducted the K-SADS-PL diagnostic interviews. Parents and adolescents completed the K-SADS-PL separately. All interviews were audiotaped. Audio-recordings were randomly selected and reviewed for 10% of the 185 cases, which included two interviews per case (adolescent K-SADS and parent K-SADS), for a total of 37 interviews. Inter-rater reliability ratings reflected fair to strong agreement across all diagnoses, including mood (κ s = .48–1.0) and anxiety (κ s = .92–1.0) disorders. All cases were discussed during weekly clinical consensus team meetings, where a common best-estimate clinical consensus procedure [27] was used to resolve discrepancies between parent and adolescent reports.

Anxiety symptoms—Anxiety symptoms were assessed using The Screen for Child Anxiety Related Emotional Disorders-Child Version (SCARED) [28]. The SCARED is a 41-item measure designed to assess for the presence and severity of anxiety symptoms occurring in the previous 3 months. Adolescents respond to items such as “I worry about things working out for me” using a 3-point scale ranging from 0 (*not true or hardly ever true*) to 2 (*very true or often true*). The SCARED has demonstrated good internal consistency (α = .74 to .93), test-retest reliability (intraclass correlation coefficients = .70 to .90), and discriminative validity [28]. In the present study, internal consistency was excellent (α = .96).

Suicide Ideation—The Beck Scale for Suicide Ideation (BSS) [29] was used to assess for SI. This 21-item self-report instrument is designed to detect and measure severity of SI experienced over the last week in adults and adolescents. Items 1–19 measure SI and items 20 and 21 assess past suicide attempts. Only items 1–19 were included in the BSS total score [29]. Participants respond to items using a 3-point Likert scale. Excellent internal consistency and validity (content, construct, and concurrent) for the BSS has been reported

in adult inpatient and outpatient samples [29] and high internal consistency in adolescent inpatient samples [30]. In the present study, internal consistency was excellent ($\alpha = .90$).

Adolescent Perceptions of Family Support—Adolescent perceptions of family support were assessed using of The Survey of Children's Social Support Scale-Short Version (SOCSS-SV) [31]. The SOCSS-SV is a 9-item abbreviated version of the original 41-item scale [32] that measures perceived support from family, teachers, and peers. Only the family subscale was used for the present study. Adolescents responded to items such as "Some kids feel like their family is there when they need them, but other kids don't feel this way. Do you feel like your family is there when you need them?" on a 5-point scale ranging from 1 (*always*) to 5 (*never*). The SOCSS-SV has demonstrated acceptable internal consistency, test-retest reliability, and concurrent and factorial validity [32]. The family subscale has also demonstrated acceptable reliability ($\alpha = .75$) [31]. In the present study, internal consistency for the family support subscale was good ($\alpha = .88$).

Adolescent Perceptions of Family Conflict—Adolescent perceptions of family conflict were assessed using The Conflict Behavior Questionnaire (CBQ) [33]. The CBQ is a 20-item measure of perceived conflict between parents and adolescents. Both parents and adolescents rate items such as "At least once a day we get angry with each other." as either true or false. Previous studies have indicated that both adolescent and parent versions of the scale demonstrate good test-retest reliability and adequately differentiate distressed from non-distressed families in clinical samples [34]. In the present study, only the adolescent report was used, and internal consistency for adolescent report of conflict with mother ($\alpha = .94$) and father ($\alpha = .94$) was excellent.

Results

Descriptive statistics

Means and standard deviations of variables were within expected ranges for a clinical sample, and are reported in Table 1. Approximately 48% of adolescents reported clinically significant anxiety symptoms (SCARED total score ≥ 25), and 62% of the adolescents were diagnosed with an anxiety disorder (social phobia, generalized anxiety disorder, post-traumatic stress disorder, acute stress disorder, panic disorder, and/or agoraphobia). Approximately 71% of adolescents in the sample met criteria for a DSM-IV unipolar mood disorder (major depressive disorder, dysthymia, and/or depressive disorder NOS).

Preliminary analyses

Correlational analyses were conducted to examine bivariate relationships between SI, demographic variables, anxiety symptoms and disorders, mood disorders, and the potential moderators (adolescent perceptions of family support and family conflict; Table 1). As expected, anxiety symptoms, anxiety disorder diagnosis, mood disorder diagnosis, and adolescent perceptions of family conflict with both mother and father were significantly positively related to SI. Adolescent perceptions of family support were significantly negatively related to SI. Age was not related to any variables of interest, but sex was

significantly correlated with SI, anxiety symptoms, and anxiety disorder diagnosis. All subsequent analyses include mood disorder diagnosis and sex as covariates.

Regression analyses testing potential moderators

Family support—Two separate models, one for anxiety symptoms and one for anxiety disorder diagnosis, were run to examine the relationships among anxiety, adolescent perceptions of family support, and SI. In the models testing main effects (anxiety symptoms, anxiety disorder diagnosis, adolescent perceptions of family support) and interactions among anxiety and perceived family support controlling for covariates (sex and mood disorder diagnosis; Table 2), there were main effects for anxiety symptoms, anxiety disorder diagnosis, and adolescent perceptions of family support. Specifically, higher levels of anxiety symptoms and anxiety disorder diagnosis, and lower levels of perceived family support, predicted greater severity of SI.

There was also a significant interaction between anxiety symptoms and adolescent perceptions of family support ($b=-2.03$, $t=-3.25$, $p<.01$). A simple slopes analysis of the interaction revealed that higher levels of anxiety symptoms were associated with greater severity of SI among youth who reported lower (vs. higher) perceived family support. When youth reported low levels of perceived family support, anxiety symptoms were significantly associated with greater SI (slope= 0.25 , $t=4.80$, $p<.001$). However, when youth reported high levels of perceived family support, there was no significant relationship between anxiety symptoms and SI (slope= 0.03 , $t=0.54$, $p=.59$). In other words, high levels of perceived family support attenuated the effect of anxiety symptoms on SI (Figure 1). Similarly, there was a significant interaction between anxiety disorder diagnosis and adolescent perceptions of family support ($b=-1.72$, $t=-2.75$, $p<.01$). A simple slopes analysis of the interaction revealed that anxiety disorder diagnosis was significantly associated with greater SI at low levels of perceived family support ($b=7.79$, $t=4.09$, $p=.001$), while there was no significant relationship between anxiety disorder diagnosis and SI at high levels of perceived family support ($b=0.57$, $t=0.30$, $p=.76$). In other words, high levels of perceived family support attenuated the effect of anxiety disorder diagnosis on SI (Figure 1).

Family Conflict—In the model testing main effects (anxiety symptoms, anxiety disorder diagnosis, family conflict) and interactions among anxiety and adolescent perceptions of family conflict controlling for covariates (sex and mood disorder diagnosis; Table 3), there were main effects for anxiety symptoms, anxiety disorder diagnosis, and perceived family conflict. Specifically, higher levels of anxiety symptoms, anxiety disorder diagnosis, and higher levels of perceived family conflict predicted greater severity of SI.

Contrary to our hypotheses, there were no significant interactions between anxiety symptoms or anxiety disorder diagnoses and any of the perceived family conflict variables in the prediction of SI (all $ps>.05$; Tables 3 and 4). This indicates that adolescent perceptions of family conflict do not significantly influence the relationship between anxiety and SI.

Discussion

This study is among the first to examine whether family factors influence the association between anxiety and SI in a clinical sample of adolescents. Results suggest that anxiety disorders and anxiety symptoms are independently and positively associated with SI even after controlling for mood disorder diagnoses and sex. Moreover, this relationship is stronger among youth who report low levels of family support, suggesting that adolescent perceptions of family support serves as a protective factor that attenuates the association between anxiety and SI. Adolescent perceptions of family conflict, on the other hand, demonstrated an independent positive relationship with SI, but contrary to our hypotheses, did not moderate the relationship between anxiety and SI.

There is substantial support for the relationship between family environment and adolescent suicidality. Youth who perceive their families as supportive and cohesive are considerably less likely to experience SI than their counterparts who do not perceive high levels of family support [21, 23]. Recent research suggests that parental support may be even more important than peer support when understanding adolescent suicidality [35]. Given the important role of family factors in youth suicidal behaviors, treatments for youth anxiety may benefit from the inclusion of skills designed to enhance parental support. Past research has shown that the family can be successfully incorporated into youth anxiety treatment. Cognitive behavioral treatments that include a parent component, such as parent training and psychoeducation, have been shown to be as effective as individual CBT treatment for reducing anxiety symptoms and functional impairment among youth with anxiety disorders [36]. Taken together, this research suggests that family support is broadly important for youth mental health, and may be particularly influential for reducing suicide risk among anxious youth.

Interestingly, adolescent perceptions of family conflict did not moderate the relationship between anxiety and SI, but was associated with more severe SI in the sample as a whole. One potential explanation for this finding is that high levels of family conflict were reported by the majority of youth in our acute psychiatrically hospitalized sample, leading to a restricted range of scores on this measure. Indeed, the mean level of perceived family conflict reported in our sample was higher than the levels reported by community-based samples in previous research [37]. Future research should investigate whether this finding can be replicated in a community sample with a wider range of perceived family conflict.

Although the current findings offer important contributions to the study of adolescent anxiety and suicidality, they should be considered in light of several limitations. First, adolescent perceptions of family support and family conflict were assessed via self-report. Although we used well-validated measures, self-report data are limited and future research should replicate these findings using observational data. Second, because we explored these relationships in a psychiatrically hospitalized sample, we cannot assume that our results are generalizable to other, less severe clinical or community samples of anxious youth. Finally, our data was cross-sectional, limiting our ability to infer causality or establish temporal relationships among our variables of interest. Given the bivariate relationships between anxiety and perceptions of family support/conflict, it is possible that a mediational model

may better explain the relationship between these two variables. It will be important for future research to examine this question using longitudinal data.

Despite the aforementioned limitations, study results add uniquely to existing literature and hold important clinical implications. Given the independent association between anxiety and SI observed in the current sample, clinicians should take special care to assess suicide risk in adolescents presenting with an anxiety disorder or anxiety symptoms. Additionally, results suggest the importance of assessing perceptions of family support when working with anxious adolescents. Anxiety is an identified risk factor for youth SI [6] and study results suggest that increasing family support may help decrease suicide risk among anxious youth. Moreover, though not specific to anxious youth, study results also suggest that decreasing family conflict among youth in clinical care may also lead to reductions in SI. One therapeutic approach that may prove to be particularly helpful in this regard is cognitive behavioral therapy (CBT). Cognitive-behavioral therapy (CBT) is an empirically supported treatment for adolescent anxiety disorders [36, 38] and suicidality [39]. CBT for anxiety disorders commonly includes psycho-education and skill building (e.g., affect regulation/recognition, cognitive restructuring, relaxation, exposure to feared stimuli) [38]. Integrating training in positive parenting techniques (e.g., attending to positive behaviors, providing praise, emotion coaching) as well as family sessions dedicated toward improving parent-child communication and cohesion, may help decrease and/or protect against suicide risk. These types of parent training and family therapy techniques have been successfully used in treatment protocols for suicidal youth [e.g., 40], and are worth further exploration in the context of anxiety treatment protocols.

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Highlights

- We examined links among anxiety, family environment, and suicidal ideation (SI).
- We used a clinical sample of psychiatrically hospitalized adolescents.
- Anxiety was independently and positively associated with SI.
- Family support, but not conflict, moderated the link between anxiety and SI.
- Treatments for youth anxiety should target family support to reduce suicide risk.

Figure 1. Moderating effect of adolescent perceptions of family support on relation between anxiety and SI.

Table 1

Bivariate correlations and descriptive statistics

	1	2	3	4	5	6	7	8	9
Bivariate correlations									
1. Age	–								
2. Sex	–.05	–							
3. Mood diagnosis	.10	.11	–						
4. Anxiety diagnosis	.08	.22**	.30**	–					
5. SCARED total	.01	.28**	.24**	.50**	–				
6. BSS total	.04	.16*	.26**	.27**	.35**	–			
7. Family Support	–.05	–.01	–.21**	–.10	–.14	–.44**	–		
8. Family Conflict Mother	.05	.12	.09	.11	.15*	.25**	–.60**	–	
9. Family Conflict Father	–.08	.03	.16	.18*	.20*	.26**	–.41**	.23**	–
Descriptive Statistics									
Mean / %	15	72 [^]	71 [^]	62 [^]	27	8	4	7	8
SD	1	–	–	–	18	9	1	6	7
Alpha	–	–	–	–	.96	.90	.88	.94	.94

[^] = % female or % with the disorder,* $p < .05$,** $p < .01$,

SCARED = measure of anxiety symptoms, BSS=measure of suicidal ideation

Table 2

Hierarchical regression with anxiety and family support predicting suicidal ideation

Predictor	Beta	se	Adjusted R ²	R ²
Step 1			.075	.085 ***
Sex	0.13	1.54		
Mood disorder diagnosis	0.25 ***	1.61		
Step 2			.279	.210 ***
Anxiety symptoms	0.24 ***	.04		
Family support	−0.39 ***	.63		
Step 3			.316	.040 **
Anxiety symptoms × Family support	−0.21 ***	.63		
Step 1			.075	.085 ***
Sex	0.13	1.54		
Mood disorder diagnosis	0.25 ***	1.61		
Step 2			.267	.198 ***
Anxiety disorder diagnosis	0.20 **	1.38		
Family support	−0.40 ***	.62		
Step 3			.293	.030 **
Anxiety disorder diagnosis × Family support	−0.18 **	.63		

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

Table 3

Hierarchical regression with anxiety and family conflict with mother predicting suicidal ideation

Predictor	Beta	se	Adjusted R ²	R ²
Step 1			.068	.078**
Sex	0.11	1.56		
Mood disorder diagnosis	0.24***	1.63		
Step 2			.163	.103***
Anxiety symptoms	0.26***	1.58		
Family conflict (mother)	0.19**	.11		
Step 3			.176	.018
Anxiety symptoms × Family conflict (mother)	0.14	.68		
Step 1			.068	.078**
Sex	0.11	1.56		
Mood disorder diagnosis	0.24**	1.63		
Step 2			.138	.079***
Anxiety disorder diagnosis	0.19*	1.51		
Family conflict (mother)	0.20**	.11		
Step 3			.139	.006
Anxiety disorder diagnosis × Family conflict (mother)	0.08	.74		

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

Table 4

Hierarchical regression with anxiety and family conflict with father predicting suicidal ideation

Predictor	Beta	se	Adjusted R ²	R ²
Step 1			.069	.099**
Gender	0.16*	1.69		
Mood disorder diagnosis	0.26**	1.74		
Step 2			.177	.101***
Anxiety symptoms	0.25**	.04		
Family conflict (father)	0.18*	.11		
Step 3			.181	.009
Anxiety symptoms × Family conflict (father)	0.10	.74		
Step 1			.069	.099**
Gender	0.16*	1.69		
Mood disorder diagnosis	0.26**	1.74		
Step 2			.135	.060**
Anxiety disorder diagnosis	0.12	1.75		
Family conflict (father)	0.21**	.11		
Step 3			.152	.022
Anxiety disorder diagnosis × Family conflict (father)	0.15	.81		

*
p<.05,

**
p<.01,

p<.001