

Peer Functioning, Family Dysfunction, and Psychological Symptoms in a Risk Factor Model for Adolescent Inpatients' Suicidal Ideation Severity

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Examined models of suicidal ideation severity that include two psychosocial risk factors (i.e., peer and family functioning) and four domains of psychological symptoms (i.e., generalized anxiety, depression, conduct problems, and substance abuse/dependence). Participants were 96 psychiatric inpatients (32 boys, 64 girls), ages 12 to 17, who were hospitalized because of concerns of suicidality. Adolescents completed a structured diagnostic interview, measures of suicidal ideation, and several dimensions of family and peer functioning. Results supported a model in which greater levels of perceived peer rejection and lower levels of close friendship support were associated directly with more severe suicidal ideation. In addition, indirect pathways included deviant peer affiliation and global family dysfunction related to suicidal ideation via substance use and depression symptoms. The results are among the first to demonstrate relations between suicidal ideation and several areas of adolescent peer functioning, as well as divergent processes for peer and family predictors of suicidal ideation.

Recent data indicate that within a 12-month period, approximately 20.5% of adolescents in the United States seriously consider attempting suicide, 15.7% develop a suicide plan, 7.7% attempt suicide, and 2.6% attempt suicide in a manner requiring emergency medical treatment (Centers for Disease Control [CDC], 1998). Over the past 40 years, the rate of documented adolescent suicide attempts has tripled (CDC, 1995). Suicide is currently the third leading cause of death for children ages 10 to 14 and adolescents 15 to 19 years (CDC, 1999).

Given the severity and alarmingly high prevalence of this problem, substantial efforts have been made to identify risk factors for adolescent suicidal ideation. Although numerous studies have identified significant

individual risk factors (e.g., demographic factors: sex, age, exposure to suicide; psychosocial stressors: family conflicts, parental divorce; cognitive/behavioral factors: impulsivity, coping; psychological factors: anger, hopelessness, depression, conduct disorder, substance abuse), models that integrate several of these risk factors to predict suicidal ideation rarely have been examined empirically (for reviews, see Lewinsohn, Rohde, & Seeley, 1996; Orbach, 1997; Spirito, Brown, Overholser, & Fritz, 1989).

In conceptual models, it has been suggested that adolescent suicidal ideation and behavior may result from a combination of the major risk factor domains described previously, mediated by psychological impairment, such as depression symptoms (Lewinsohn et al., 1996; McDowell & Stillion, 1994). Recent empirical work has supported this general model in normative samples of adolescents (e.g., Lewinsohn et al., 1996). For instance, Harter, Marold, and Whitesell (1992) revealed that psychosocial factors such as self-concept and social support from parents and peers were related to suicidal ideation, partially mediated by a composite of depression variables (i.e., negative affect, hopeless-

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ness, low self-worth; Harter et al., 1992). Lewinsohn et al. also demonstrated that psychosocial factors (e.g., environmental or health stressors) and history of psychopathology were associated with suicidal behavior, via depressogenic cognitions. Support for similar models within a sample of at-risk suicidal adolescents would be particularly important given the elevated rates of suicidal ideation and psychiatric disturbance in clinically referred adolescents.

In this study, we examined a model of social/psychological risk factors for suicidal ideation within a clinically referred adolescent sample. Two psychosocial factors of significant developmental importance in adolescence (peer and family functioning) were included as distal predictors, and four domains of psychological symptoms previously linked with suicidal ideation (i.e., depression, generalized anxiety, conduct problems, and substance use; Pfeffer, Soloman, Plutchik, Mizruchi, & Weiner, 1982) were included as potential mediators. This design contributed to past work by focusing on multiple domains of peer functioning as possible predictors of suicidal ideation and allowing for comparisons between peer- and family-based pathways to suicidal ideation in a clinically referred population.

Surprisingly few investigations have examined associations between peer functioning and suicidal ideation; however, there is good reason to suspect that adolescent peer relationships are an important predictor and potential area for preventive work in suicidality (CDC, 1992). Approximately one third of adolescents who attempt suicide report interpersonal concerns (e.g., isolation from peers, lack of supportive friendships, a recent peer conflict, or boyfriend/girlfriend breakups) as precipitants to suicidal behavior (e.g., Berman & Schwartz, 1990; Hawton, Fagg, & Simkin, 1996). In addition, consistent findings have indicated that peer functioning is a predictor of related domains of adolescent psychological adjustment, such as depression (Aseltine, Gore, & Colten, 1998; Boivin, Poulin, & Vitaro, 1994; Cole & Carpentieri, 1990; Panak & Garber, 1992), conduct problems, and substance use (Dishion, Capaldi, Spracklen & Li, 1995; Dishion, Patterson, Stoolmiller, & Skinner, 1991). Early studies based on clinical interview data or problem checklists also have indicated that peer problems (e.g., social isolation from peers) are frequently reported by hospitalized suicidal adolescents (Khan, 1987; Kosky, Silburn, & Zubrick, 1986; Rohn, Sarles, Kenny, Reynolds, & Heald, 1977; Tishler, McKenry, & Morgan, 1981) and sometimes more frequently than by nonsuicidal hospitalized controls (Topol & Reznikoff, 1982). Similarly, low levels of friendship quality, peer social support, and social self-concept have been linked with suicidal ideation in normative samples (Harter et al., 1992; Lewinsohn, Rohde, & Seeley, 1993; Rubenstein, Heeren, Housman, Rubin, &

Stechier, 1989); however, these links have not been tested within clinically referred samples. Moreover, there is little evidence to suggest the mechanisms potentially responsible for links between peer functioning and suicidal ideation. In this study, therefore, we examined several areas of peer functioning and tested pathways between each of these peer factors, psychological symptoms, and suicidal ideation.

Peer factors included three distinct aspects of peer functioning that previously have been associated with adolescent adjustment (Hartup, 1996), including (a) adolescents' support within a specific friendship, (b) indicators of adolescents' broader peer status (e.g., victimization, peer crowd affiliation), and (c) adolescents' deviant peer affiliation. Prior work has demonstrated that adolescents who lack a close, supportive dyadic friendship are at risk for difficulties in social and psychological adaptation (Bagwell, Newcombe, & Bukowski, 1994) and may have increased difficulties coping with severe life stressors (Cohen & Wills, 1985; Sandler, Wolchick, & Braver, 1985). Peer victimization and peer crowd affiliation have been similarly linked to adolescent adjustment (Boivin, Hymel, & Bukowski, 1995; Brown & Lohr, 1987; Vernberg, Ewell, Beery, Freeman, & Abwender, 1995). Specifically, information on adolescent peer crowds indicates the degree to which teens affiliate with reputation-based peer groups across different levels of peer status (e.g., "jocks," "populars," "brains," "burn-outs"). This ecologically valid assessment captures information on teens' social standing among peers and is associated significantly with a variety of risk-taking and internalizing outcomes (Brown & Lohr, 1987; Sussman et al., 1990). Peer crowd assessment also provides information on deviant peer affiliation, which has been associated with several suicide-related domains of adjustment, including adolescents' delinquent, impulsive, and substance use behavior (Dishion et al., 1995); however, deviant peer affiliation has not been linked with suicidal ideation. Thus, this investigation offered initial data on peer factors associated with suicidal ideation severity and a potential extension of the literature on peer predictors of maladjustment.

In contrast with the lack of research on peer functioning and suicidal ideation, studies on family dysfunction as a risk factor for adolescent suicidality are more numerous. Manifestations of family dysfunction (e.g., poor family problem solving, family conflict) are reported as precipitants to suicidal behavior by approximately 50% of suicidal adolescents (Berman & Schwartz, 1990; Hawton et al., 1996; Spirito et al., 1989; Tishler et al., 1981). In addition, prior work has revealed that adolescents' global family dysfunction is consistently correlated with suicidal ideation and behavior (Wagner, 1997) within normative samples (e.g., Rubenstein et al., 1989) and clinical samples (e.g., M. L. Miller, Chiles, & Barnes, 1982) and differentiates

between suicidal and nonsuicidal clinical adolescents (Asarnow, 1992; King, Segal, Naylor & Evans, 1993; Morano, Cisler, & Lemerond, 1993) and between suicide-ideating and suicide-attempting adolescent inpatients (Kosky, Silburn, & Zubrick, 1990). For instance, Joffe, Offord, and Boyle (1988) found that adolescents' reports on the global dysfunction scale of the Family Assessment Device (FAD) significantly predicted suicidal behavior among 14- to 16-year-olds. Similarly, King, Hill, Naylor, Evans, and Shain (1993) found that global family dysfunction, measured by the same FAD subscale, was related to suicidal ideation among suicidal inpatient girls. It may be that links between family dysfunction and suicidality are attributable to deficits in family communication and problem-solving ability (Orbach, 1996; Wagner, 1997). Indeed, prior work on adolescent suicidality also has focused on these specific problems areas and has revealed that in addition to overall family dysfunction, FAD communication and problem-solving subscales each differentiate suicidal from nonsuicidal adolescents (King, Segal, et al., 1993; Wagner, 1997).

However, there also is evidence that family functioning may not have a strong direct association with suicidal ideation but may share variability with other predictors, such as indicators of psychological distress, to contribute to a cumulative effect on suicidal ideation. For instance, Hovey and King (1996) found that among Hispanic high school adolescents, FAD global family dysfunction was not related to suicidal ideation directly but was a significant predictor of ideation in a model that also included adolescents' expectations for the future. Similarly, Levy, Jurkovic and Spirito (1995) revealed a significant pathway between combined FAD subscales of family dysfunction and communication, hopelessness, and ideation, although no significant direct relation between the combined FAD scale and suicidal ideation was observed. This study aimed to more thoroughly examine family functioning and adolescents' suicidal ideation in a risk factor model that included global family dysfunction, family communication, and

problem solving as well as multiple domains of psychopathology.

Thus, as depicted in the hypothesized model (see Figure 1), we anticipated that both peer and family functioning would be related to suicidal ideation, as mediated by psychological symptoms. Specifically, significant associations were expected for deviant peer affiliation with conduct problems and substance use; peer acceptance/rejection with depression and conduct problems; and close friendship support with depression symptoms. With regard to family functioning, we expected significant association for each of the three family variables with depression, conduct problems, and substance use symptoms.

Method

Participants

Participants were 96 adolescents (32 boys, 64 girls) admitted to a psychiatric inpatient program in New England. All adolescents were between 12 and 17 years old ($M = 14.82$, $SD = 1.44$). The ethnic composition of the sample was 72.9% ($n = 70$) Caucasian, 10.4% ($n = 10$) Hispanic, 4.2% ($n = 4$) African American, and 12.5% ($n = 12$) mixed ethnicity/other. The majority of adolescents came from middle-class socioeconomic status classified by census tract data (poverty = 14.3%, low = 18.2%, middle = 54.5%, high = 13.0%).

Chart data indicated that on intake, 37.5% of adolescents reported suicidal ideation, 27.1% had threatened to attempt suicide, 14.6% had attempted suicide, and 20.8% had attempted suicide in a manner requiring emergency medical treatment. Lifetime suicide attempts for this sample by adolescent report on the National Institute of Mental Health Diagnostic Interview Schedule for Children (NIMH-DISC) were 33.0% zero attempts, 15.6% one attempt, 17.4% two attempts, 11.9% three attempts, 22.1% four or more attempts ($M = 2.62$, $SD = 3.85$). However, adolescents' reports of

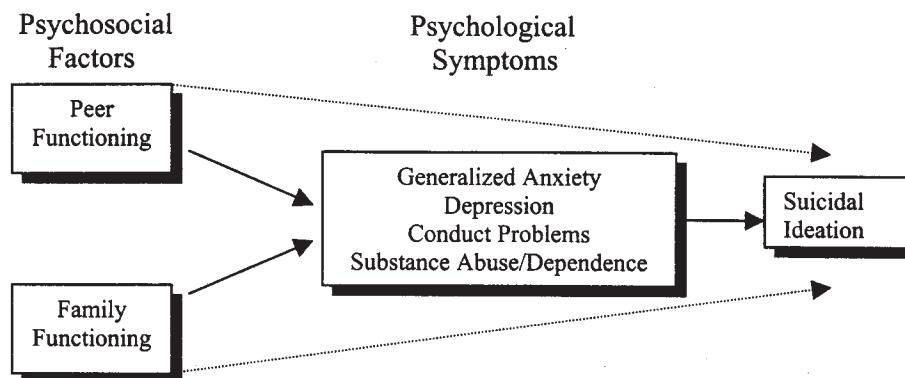


Figure 1. Hypothesized psychosocial model of suicidal ideation.

suicide attempts included behaviors (i.e., nonlethal gestures) that might not be rated by a clinician as a life-threatening attempt and, thus, these data are presented for descriptive purposes only.

Procedures

Adolescents admitted to the inpatient program from which these data were obtained are screened routinely for suicidal ideation/behavior during a comprehensive intake evaluation. Adolescents who are identified with concerns of suicidality are administered a supplemental assessment battery in conjunction with their psychological evaluation to assess a broader range of factors potentially associated with suicidality. These data were collected as part of the clinical evaluation, and a written evaluation was provided to adolescents' treatment providers. The data used in this study were obtained from these written summaries of supplemental evaluations and were approved for research purposes by the Institutional Review Board.

Of 320 consecutive inpatient admissions, 79% ($n = 253$) indicated suicidal ideation/behavior. Of these, 16 were actively psychotic, 5 were under 12 years of age, 13 had lower than borderline IQ according to treatment records, and 41 were repeat admissions who had already completed the assessment battery. The final sample was drawn from the remaining 178 adolescents eligible for testing. The characteristics of the inpatient program (i.e., adolescents' daily schedule, short duration of hospitalization, length of the evaluation, personnel, etc.) imposed some limits on the total completion of the battery by all eligible adolescents; complete data for this study were available on a final sample of 96 adolescents. Chi-square and *t*-test analyses revealed no significant differences between adolescents who completed the battery and other eligible adolescents on age, sex, ethnicity, or socioeconomic status. Chart data also revealed no significant differences between participants and other eligible adolescents on the reason for inpatient admission, discharge diagnosis, or severity of psychiatric disturbance.

Data were collected by a clinical psychology postdoctoral fellow and trained assistant. All assessment measures were read aloud to adolescents during one-on-one interviews, and responses were entered directly into a computer.

Measures

NIMH-DISC. The NIMH-DISC (Shaffer, Fisher, et al., 1996) is a structured interview developed for use with children and adolescents ages 6 to 17. The NIMH-DISC contains items that assess current and past symptoms, behaviors, and emotions correspond-

ing to *Diagnostic and Statistical Manual of Mental Disorders* (4th ed. [DSM-IV]; American Psychiatric Association, 1994) diagnostic criteria. Items are grouped into separate diagnostic modules, each based on a set of related diagnoses. Modules included in this study included Generalized Anxiety Disorder, Major Depressive Disorder/Dysthymia, Conduct Disorder, Oppositional Defiant Disorder, and several Substance Use Disorders, including Alcohol and Marijuana Abuse and Dependence. The computer version of the NIMH-DISC was administered in this study. A total score was computed for each module indicating the summed number of DSM-IV symptoms for which adolescents met criteria. A summed score for Generalized Anxiety ranged between 0 and 9. Depression symptoms, omitting the symptoms of suicidality, ranged between 0 and 8; symptoms of Oppositional Defiant Disorder and Conduct Disorder were combined into a Conduct Problems composite score, ranging between 0 and 19; and Alcohol and Marijuana Abuse and Dependence modules were combined to produce a composite score of Substance Use, ranging from 0 to 22.¹ The NIMH-DISC has demonstrated good to excellent diagnostic sensitivity (e.g., Fisher et al., 1993). The interrater reliability (e.g., Shaffer et al., 1993), test-retest reliability (e.g., Jensen et al., 1995), and construct validity (e.g., Costello, Edelbrock, & Costello, 1985; Weinstein, Noam, Grimes, Stone, & Schwab-Stone, 1990) of the NIMH-DISC are comparable to or better than other structured diagnostic interviews.

Suicidal Ideation Questionnaire (SIQ). The SIQ-Sr. (30 items) and SIQ-Jr. (15 items; Reynolds, 1985) are self-report measures designed to assess thoughts about suicide in adolescents. Items are scored on a 0- to 6-point scale with greater scores reflecting greater frequencies of suicidal ideation severity. The scales were developed through field testing with over 2,400 respondents. Coefficient alpha internal consistency measures for the SIQ-Sr.² have been reported at .97. Construct validity of the SIQ-Sr. has been demonstrated by correlations with highly related constructs such as depre-

¹Frequencies of adolescents meeting full diagnostic criteria on the NIMH-DISC were Generalized Anxiety Disorder (17.7%, $n = 17$); Major Depression (37.5%, $n = 36$); Oppositional Defiant Disorder (37.5%, $n = 36$); Conduct Disorder (44.8%, $n = 43$); Alcohol Abuse (16.7%, $n = 16$); Alcohol Dependence (13.5%, $n = 13$); Marijuana Abuse (12.5%, $n = 12$); and Marijuana Dependence (25.0%, $n = 24$).

²Although reliability data on these measures were not available for the sample of adolescents in this study, Chronbach's alphas were computed for these same measures on a related dataset including 140 adolescent inpatients matched in age and sex, using an identical procedure on the same unit: SIQ-Sr. $\alpha = .98$; SIQ-Jr. $\alpha = .96$; FAD Global Dysfunction $\alpha = .88$; Social Support Scale for Children and Adolescents Close Friend Support $\alpha = .77$; UCLA Loneliness Scale $\alpha = .91$.

sion (.59) and hopelessness (.48), as well as strong convergence with scores from a structured clinical interview regarding suicidal behavior (Reynolds, 1990). Additionally, Pinto, Whisman, and McCoy (1997) presented concurrent validity of the SIQ-Sr. in a sample of psychiatrically hospitalized adolescents. For adolescents younger than 14, the SIQ-Jr. (Reynolds, 1985) was administered. High internal consistency has also been reported for the SIQ-Jr. ($\alpha = .91$), as well as adequate test-retest reliability ($r = .89$; Reynolds & Mazza, 1999). Significant differences on the SIQ-Jr. between clinical samples and normative controls also have supported the criterion-related validity of this measure (e.g., King, Hill, et al., 1993). Scores were standardized within each version of the SIQ administered.

FAD. The FAD (Epstein, Baldwin, & Bishop, 1983) is a 60-item instrument based on the McMaster model of family functioning. The Global Dysfunction (12 items) subscale, as well as subscales indicating dysfunction in the areas of communication (9 items) and problem solving (6 items), were used in this study. Adolescents respond to each item on a 1 to 4 scale of agreement, with higher scores reflecting greater family dysfunction and greater levels of communication difficulties and problem solving difficulties. Internal consistency coefficients for FAD subscales between .72 and .92 have been reported, as well as 1-week test-retest reliability ranging from .66 to .76 (Epstein et al., 1983; I. W. Miller, Epstein, & Bishop, 1985). In addition, correlations with social desirability measures are low (Keitner et al., 1990). As stated previously, these FAD subscales have been associated consistently with adolescents' suicidal ideation in past research (Wagner, 1997).

Social Support Scale for Children and Adolescents (SSSCA). The 24-item SSSCA (Harter, 1989) assesses children's perceptions of social support from parents, classmates, teachers, and close friends (six items each). Each question is scored on a 4-point scale, with higher scores reflecting greater perceived support. Harter provided extensive data to support the reliability and validity of this instrument for adolescents. Internal consistency has ranged from .72 to .83 for the SSSCA subscales in several samples of children and adolescents. Several additional studies support the validity of the SSSCA (e.g., Dubow & Ullman, 1989; East, Hess, & Lerner, 1987). The Close Friend subscale of the SSSCA was administered in this study, and a summed score ranging between 6 and 24 was computed.

Presence of a close friend. Adolescents were asked to list the number and first names of their closest friends. To examine the importance of having at least one close friendship in which support may be provided,

a variable was created to indicate the presence (1) or absence (0) of a close friend.

UCLA Loneliness Scale. The 20-item UCLA Loneliness Scale (Russell, Peplau, & Cutrona, 1980) is a widely used, reliable instrument for the assessment of loneliness in adolescence. Responses are on a 4-point Likert-type scale, with some items positively worded and reverse coded to control for social desirability. Internal consistency ($\alpha = .94$), test-retest reliability, and concurrent and discriminant validity support are provided by Russell et al. (1980).

Peer rejection questionnaire (PRQ). The PRQ was developed by Vernberg, Jacobs, and Hershberger (1999) as a self-report measure of peer victimization. The nine items for this measure were adapted from related studies on rejection and aggressive experiences between peers (i.e., Cairns, Cairns, Neckerman, & Ferguson, 1989; Olweus, 1991; Vernberg et al., 1995; Whitney & Smith, 1993) and include items reflecting confrontive verbal aggression (i.e., threats, intimidation), confrontive physical aggression (i.e., hitting), and ostracism (i.e., excluding from activities, spreading rumors). Adolescents respond to each item on a 5-point scale, ranging from 1 (*never*), 2 (*once or twice*), 3 (*a few times*), 4 (*about once a week*), to 5 (*several times a week*). Vernberg et al. reported good psychometric properties for this scale based on a sample of more than 1,200 adolescents, including adequate internal consistency for the total summed score on this measure ($\alpha = .78$). Internal consistency in this sample was also adequate ($\alpha = .79$). Although validity data for the PRQ are not currently available, data from similar instruments of peer victimization have demonstrated significant associations with peer-report victimization and with social-psychological adjustment (Crick & Bigbee, 1998).

Peer group questionnaire (PGQ). The PGQ (La Greca, Prinstein, & Fetter, in press) is an adaptation of prior self-report measures on adolescent peer crowds (e.g., Brown & Lohr, 1987; Mosbach & Leventhal, 1988). Items were generated by asking two focus groups of adolescents to provide a description and name of local peer crowds in their schools and neighborhood. Six peer crowds were reported by both adolescent focus groups, including adolescent crowds who (a) were athletic and were likely to be on a school team ("jocks"); (b) enjoyed academics and had good grades ("brains"); (c) skipped school and got into trouble ("burnouts"); (d) were leaders, were social, and were involved in activities ("populars"); (e) were nonconformists, wore unique clothes ("alternatives"); and (f) were not accepted into any peer crowd or were followers ("loners/wannabees"). These peer crowd reputations were consistent with prior work in this area

(Brown, 1989; Mosbach & Leventhal, 1988; Urberg, 1992).

As an orienting procedure, adolescents were asked whether they were familiar with each peer crowd reputation, if they could identify a group of adolescents from their school or neighborhood who fit each description, and to provide a name they are familiar with to fit each description. Next, adolescents were asked to rate on a 10-point scale, ranging from 1 (*not at all*) to 10 (*very much*), how much they identified with each peer crowd and to indicate on a 5-point scale, ranging from 1 (*very disliked*), 3 (*neutral*), to 5 (*very liked*), how much their group was liked or disliked by other teens.

Prior work with this measure has yielded promising initial support for the validity of adolescents' report of peer crowd affiliation. For instance, work has demonstrated that adolescents are acceptably accurate in self-identification of peer crowd affiliation, when compared with peer ratings. For instance, using a similar procedure, Brown, Clasen, and Niess (1987) found agreement of 75% between self- and peer-reported crowd affiliation. In addition, adolescents' ratings of peer crowd affiliations on the PGQ were significantly related to peer-rated sociometric nominations, with burnouts least likely to be nominated as a best friend and receiving lowest "like-most" scores (Prinstein & La Greca, 1998). Populars report the highest levels of social acceptance; burnouts and alternatives report the

highest levels of illegal behavior, substance use, risky sexual behavior, and general risk-taking behavior; and brains are least likely to engage in these risk-taking behaviors (La Greca et al., *in press*).

Results

Preliminary Analyses

We conducted preliminary analyses to examine distributions of the primary variables (see Table 1) as well as age and sex differences. As would be expected in this clinically referred sample, mean scores for suicidal ideation indicated a moderate to high level of ideation (between the 11th and 99th percentile; M percentile = 86.21; SD = 19.10); standardized scores in Table 1 correspond to the following raw scores: SIQ-Jr. (M = 44.07, SD = 23.80), SIQ-Sr. (M = 72.14, SD = 42.91). Additionally, approximately 16.7% of the sample reported that they did not have a close friend.

A series of t tests, chi-square analyses, and correlations were conducted to examine sex and age differences. Boys (M = 7.63, SD = 4.90) were significantly more likely to report symptoms of conduct problems on the NIMH-DISC as compared to girls (M = 4.91, SD = 4.02), $t(94) = 2.90, p < .01$. Boys (M = 17.94, SD = 5.97) also reported significantly lower levels of close friend social support than girls (M = 20.63, SD = 4.93), $t(94) =$

Table 1. Observed Means, Standard Deviations, and Ranges of Primary Variables for Boys and Girls

Variable	M	SD	Observed Range
Psychological Symptoms^a			
Generalized Anxiety	1.89	2.81	0–9.00
Conduct Problems	3.03	2.28	0–9.50
Depression	2.60	2.72	0–8.00
Substance Use	1.35	-1.92	0–9.00
Suicidal Ideation (z Score) ^b	0.00	1.00	-1.85–1.68
Family Functioning^c			
Global Family Dysfunction	30.40	7.37	13–48
Problem Solving	15.60	3.66	7–24
Communication	23.28	4.73	13–35
Peer Functioning^c			
Close Friend Social Support ^d	19.73	5.42	6–24
Loneliness ^e	41.03	13.92	20–75
Peer Rejection Experiences ^f	14.52	5.14	9–32
No Close Friend (<i>n</i> , %)	16.00	16.70	—
Affiliation: Alternatives ^g	4.08	3.22	1–10
Affiliation: Brains	3.35	2.48	1–10
Affiliation: Burnouts	4.75	3.59	1–10
Affiliation: Jocks	4.39	3.19	1–10
Affiliation: Populars/Preps	5.82	3.73	1–10
Affiliation: Loners/Wannabes	2.52	2.54	1–10
Affiliation: Peer Group Acceptance	3.84	1.16	1–5

Note: $N = 96$.

^aMeasured with Diagnostic Interview Schedule for Children. ^bMeasured with Suicide Ideation Questionnaire. ^cMeasured with Family Assessment Device. ^dSubscale score from Social Support Scale for Adolescents. ^eMeasured with UCLA Loneliness Scale. ^fMeasured with Peer Rejection Questionnaire. ^gPeer group affiliation scores from the Peer Group Questionnaire.

$-2.20, p < .05$, and a trend emerged for girls ($M = 2.94, SD = 2.87$) to report more depressive symptoms on the NIMH-DISC than boys ($M = 1.94, SD = 2.29$), $t(94) = -1.85, p = .07$. Age was positively associated with adolescents' affiliation in the "brains" group ($r = .27, p < .01$) and negatively associated with peer victimization ($r = -.21, p < .05$). Because of these differences, and in light of consistent findings from survey studies indicating that suicidal ideation increases with age and is more prevalent for girls (CDC, 1998; Lewinsohn et al., 1996), in subsequent analyses we controlled for age and sex.

Data Reduction

To form composite variables for further analyses, data reduction procedures were conducted on the variables of peer functioning. A factor analysis with varimax rotation was computed including all 11 peer functioning variables listed in Table 1. Given the sample size available for this type of analysis (i.e., approximately nine participants per variable), a factor loading of .50 or greater was required for significance and retention in the factor structure (Stevens, 1996), and conclusions regarding the underlying constructs revealed from this analysis are interpreted with some caution.

The factor analysis yielded five factors with eigenvalues more than 1.0, which cumulatively accounted for 71.94% of the variance (see Table 2). Factor 1 included variables reflecting Perceived Peer Acceptance, including peer group acceptance, and affiliation with high-status peer groups (i.e., populars/preps and jocks). Factor 2 was labeled Close Friendship Support, including the presence of a close friend, close friend social support, and loneliness (negatively loaded). Factor 3 included Perceived Peer Rejection variables, such as peer rejection/victimization experiences and affiliation with peers who are not accepted into a peer group (i.e., loners/wannabees). Factor 4 was labeled Deviant Peer

Affiliation, which included identification with deviant and risk-taking peer crowds (i.e., burnouts and alternatives). A fifth factor included only one variable, affiliation with brains and therefore was excluded from subsequent analyses. All factor loadings were above .50, and most exceeded .70; there were no significant cross-loadings across the factors. Factor scores were computed as composite variables for these four domains of peer functioning. A summary of all primary variables for remaining analyses is presented in Table 3.

Bivariate Relations

Before testing the hypothesized model, we examined bivariate relations by computing partial correlation coefficients, controlling for age and sex. These preliminary results suggested that higher levels of suicidal ideation were associated with low close friendship support, greater levels of peer rejection, and higher levels of family global dysfunction (see Table 3). Results also suggested several significant relations between peer and family functioning. Specifically, greater levels of global family dysfunction and family communication and problem-solving difficulties were related to greater perceived peer rejection. Greater family dysfunction and problem-solving difficulties also were related to lower peer acceptance.

Preliminary Examination and Modifications of the Hypothesized Model

Using LISREL, a path model was tested to examine the hypothesized model presented in Figure 1, which tested pathways between the seven distal predictors (i.e., four factors of peer functioning and the three domains of family functioning) with the four psychological symptom areas and, subsequently, each of these symptom areas with suicidal ideation. The inclusion of all predictors and symptom areas allowed us to test both

Table 2. Factor Analysis Results for Peer Functioning Variables

Variable	Factor Loadings				
	I	II	III	IV	V
Affiliation: Populars/Preps	<u>0.79</u>	0.14	-0.01	0.08	-0.02
Peer Group Acceptance	<u>0.76</u>	-0.05	-0.22	-0.15	0.03
Affiliation: Jocks	<u>0.56</u>	-0.11	0.45	-0.26	0.38
Close Friend Social Support	-0.05	<u>0.84</u>	-0.06	0.12	0.02
Presence of a Close Friend	0.05	<u>0.83</u>	0.13	-0.08	-0.03
Loneliness	-0.46	<u>-0.57</u>	0.24	-0.14	-0.15
Affiliation: Loners	-0.07	0.05	<u>0.85</u>	0.10	0.08
Peer Rejection Experiences	-0.43	-0.13	<u>0.57</u>	-0.08	-0.34
Affiliation: Alternatives	-0.19	0.02	-0.07	<u>0.86</u>	0.18
Affiliation: Burnouts	0.29	0.12	0.27	<u>0.67</u>	-0.42
Affiliation: Brains	0.07	0.05	0.03	0.05	<u>0.89</u>
Explained Variance (%)	17.89	16.29	13.77	12.19	11.80

Note: Factor loadings $\geq .50$ are underlined (Stevens, 1996).

Table 3. Bivariate Associations Among Primary Variables

Variable	Psychological Symptoms					Family Dysfunction		
	Suicidal Ideation	Generalized Anxiety	Depression	Conduct Problems	Substance Use	Global Dysfunction	Problem Solving	Communication
Psychological Symptoms								
Generalized Anxiety	.22*							
Depression	.52***	.39***						
Conduct Problems	.20*	.02	.24*					
Substance Use	.23*	-.02	.35***	.56***				
Peer Functioning								
Close Friendship Support	-.26*	-.09	-.08	-.12	.00	-.10	-.04	-.15
Perceived Peer Acceptance	-.11	-.13	-.17	.11	.09	-.21*	-.26*	-.19
Perceived Peer Rejection	.27**	.01	.23*	.08	.07	.38***	.32**	.23*
Deviant Peer Group Affiliation	.13	.09	.24*	.14	.38***	.02	-.04	.02
Family Functioning								
Global Dysfunction	.21*	.08	.06	.22*	.09			
Problem Solving	.14	.09	.03	.20	-.05	.87***		
Communication	.13	.09	-.09	.13	.05	.83***	.76***	

Note: N = 96 for all correlations. Partial correlations computed controlling for age and sex.

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

direct and indirect pathways to suicidal ideation severity. Interrelations between the seven distal predictors and between the four symptom areas also were included in the structural model. This yielded a significant chi-square, $\chi^2(10, N = 96) = 42.86, p < .00001$, RMSEA = .17, suggesting a poor fit to the data. Accordingly, a number of modifications were made to the model. Most notably, the revised model considered depression symptoms as a potential mediator between the other psychological symptoms areas and suicidal ideation. This followed from prior empirical models (Harter et al., 1992; Lewinsohn et al., 1996) and also from the data presented in Table 2. Specifically, the partial correlations in Table 2 revealed that all four symptom areas were significantly associated with suicidal ideation. In addition, generalized anxiety, conduct problems, and substance use symptoms were significantly associated with depression symptoms. Supplemental analyses confirmed that after controlling for depression symptoms, however, generalized anxiety symptoms ($r = .02, ns$), conduct problems ($r = .10, ns$), and substance use symptoms ($r = .06, ns$) were no longer significantly associated with suicidal ideation, thus suggesting a mediating role of depression (Baron & Kenny, 1986; Holmbeck, 1997).

Examination of the Revised Model

The final model providing the best fit for these data is presented in Figure 2, with the standardized solution for each significant pathway displayed. Overall, this model provided a good fit with the data, $\chi^2(30, N = 96)$

= 21.04, $p = .89$, root mean square error approximation (RMSEA) = 0, normed fit index = .96, comparative fit index = 1.00, and accounts for 32% of the variance in suicidal ideation.

As shown in the figure, several significant direct and indirect pathways were found between the variables of peer and family functioning and suicidal ideation. For peer functioning, the results suggested that lower levels of close friendship support (standardized effect size $\eta = -.23$) and greater levels of perceived peer rejection ($\eta = .30$) each were directly related to suicidal ideation. Perceived peer acceptance ($\eta = -.09$) and rejection ($\eta = .12$) were also indirectly related to suicidal ideation via symptoms of depression. Last, greater levels of deviant peer affiliation were indirectly associated with suicidal ideation via substance use and depression symptoms ($\eta = .05$).

With regard to family functioning, there were no direct effects between family dysfunction, problem solving, or communication and suicidal ideation; however, a significant indirect effect was observed for global dysfunction ($\eta = .09$) and problem solving ($\eta = -.09$) via substance use and depression, and also for family communication ($\eta = .11$) via depression symptoms³.

³Observed effects between family problem solving and substance use symptoms, and between communication and depression symptoms, were revealed with beta weights indicating counterintuitive relations, namely poorer family functioning related to lower levels of psychological symptoms. These negative beta values are likely caused by suppressor effects and do not necessarily reflect negative associations of this magnitude. Table 3 indicates strong intercorrelations between the three areas of family functioning, indicating a high potential for multicollinearity and suppression in the

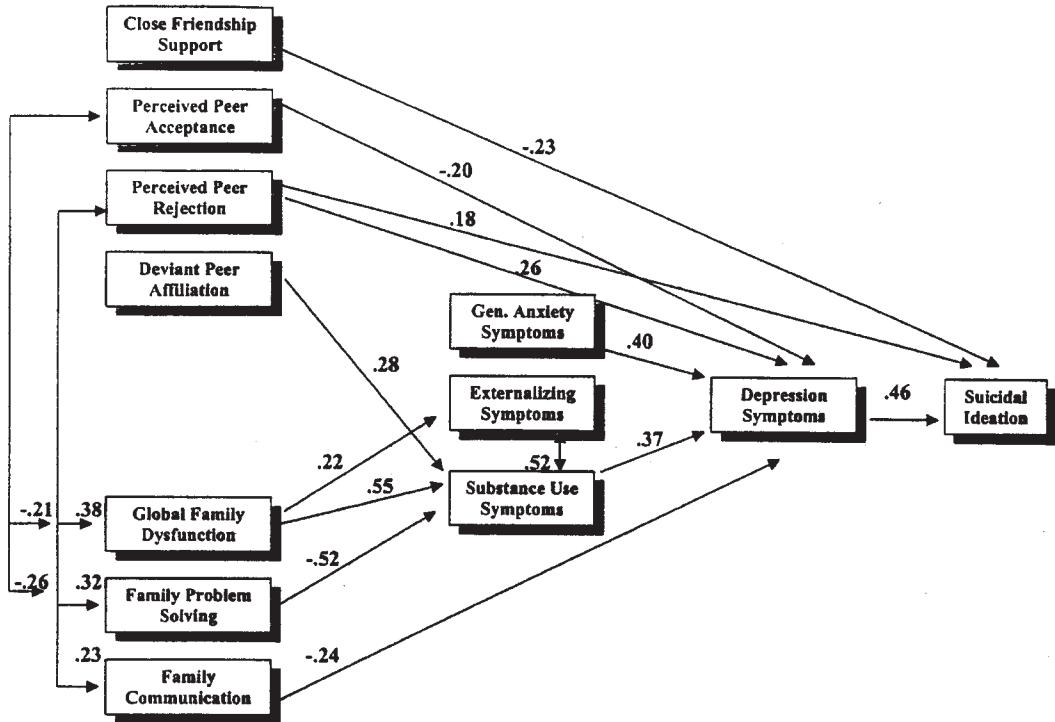


Figure 2. Standardized solution (β s) for best-fit structural equation model of suicidal ideation. All pathways displayed are significant, $p < .05$. Effect size coefficients (η) are listed in the text.

The model also revealed information regarding the associations between symptom domains and suicidal ideation. As noted in Figure 2, these results revealed a significant direct effect between depression symptoms and suicidal ideation ($\eta = .46$). Indirect effects for both generalized anxiety ($\eta = .18$) and substance use symptoms ($\eta = .17$) and suicidal ideation via depression were observed; however, the indirect effect between conduct problems and suicidal ideation via substance use and depression symptoms did not reach significance.

In addition to findings for suicidal ideation severity, the final model also accounted for 39% of the variance in depression symptoms. A brief summary of significant direct and indirect effects using depression symptoms as an outcome is included here. For peer functioning, significant direct effects between perceived peer acceptance ($\eta = -.20$) and peer rejection ($\eta = .26$) and depression were revealed. A significant indirect effect between deviant peer affiliation and depression via substance use symptoms ($\eta = .10$) was also indicated. For family functioning, a direct effect be-

tween family communication and depression was observed ($\eta = -.24$) as well as indirect effects between both family problem solving ($\eta = -.19$) and global dysfunction ($\eta = .20$) and depression via substance use symptoms. Last, direct effects between both generalized anxiety ($\eta = .40$) and substance use symptoms ($\eta = .37$) and depression symptoms also were revealed.

Discussion

This study is among the first to provide empirical support for models of suicidal ideation that include both psychosocial and psychological risk factors within a sample of adolescent psychiatric inpatients. Because so few studies have investigated adolescent peer relationships as a factor associated with suicidal ideation, this study also offers an important, comprehensive assessment of this link.

This study provides good preliminary support for an association between adolescents' peer relationship disturbances and suicidal ideation. All four peer factors in this study, including close friendship support, perceived peer acceptance and rejection, and deviant peer crowd affiliation appeared to contribute, either directly or indirectly, to suicidal ideation severity, although these associations were not always consistent with hypotheses. Consistent with findings from the peer relations literature, adolescents who reported affiliation with low-status peer crowds and high levels of peer victimization revealed more symptoms of depression on

path model, which was configured to account for shared variability among the three family variables. Additionally, partial correlations in Table 3 also suggest that at a bivariate level, these areas of family functioning had correlations with psychological symptoms that approached zero. To ensure that the observed model was not overly dependent on these negative relations, however, we tested a separate model with these two pathways removed. The resulting fit indexes were not substantially or meaningfully changed, suggesting that these pathways were not essential to the overall fit of the model.

the structured diagnostic assessment, which was subsequently related to suicidal ideation. There was also support for an unmediated relation between perceived peer rejection experiences and suicidal ideation; this finding complements clinical reports on the prevalence of peer precipitants to suicidal behavior. Also as expected, adolescents' reports of affiliation with high-status peer crowds were associated with lower levels of depression symptoms and lower levels of suicidal ideation, and deviant peer-group affiliation was linked with substance abuse/dependence symptoms, which was subsequently related to depression and suicidal ideation. Overall, given the increasing developmental significance of peer functioning during adolescence, it is not surprising that the failure to develop adequate peer relationships is associated with severe psychological distress, such as suicidal ideation.

Contrary to expectations, however, two hypothesized associations were not observed in this study. First was the expected mediated relation between close friendship support, depression symptoms, and suicidal ideation. Rather, these data revealed that this association was not mediated by any of the areas of psychological symptoms and that close friendship support was not significantly related to any psychological symptom area in this sample. This may highlight the more complex association between close friendship support and adjustment in adolescence and for clinically referred adolescents in particular. Specifically, the role of close support is likely to vary considerably based on characteristics of adolescents' close friends (Hartup, 1996). The lack of close friendship support may be a general risk factor for loneliness and depression for adolescents; however, the presence of support from deviant friends may exacerbate delinquent activities (Dishion, McCord, & Poulin, 1999). In this inpatient sample, this might suggest that close friendship support was both a protective factor and a risk factor for psychopathology severity. This hypothesis deserves more attention in future work designed to test these potential relations specifically by examining characteristics of adolescents' closest friends, as well as their crowd affiliation and close friendship support. Despite the complexity of close friendship support as a risk factor for psychopathology, however, these data suggested that low levels of close friendship support may be an important risk factor for suicidal ideation among adolescents who are experiencing severe levels of psychological distress. This is an important consideration for clinical work with suicidal adolescents.

These data also revealed no significant direct association between peer functioning and conduct problems. Rather, peer functioning was more closely associated with suicidal ideation via depression symptoms and, to some extent, symptoms of substance use. The idea that peer difficulties may contribute to symptoms of depression, which in turn leads to suicidal ideation, is consis-

tent with the notion that teenagers may increasingly derive a sense of self from peer contexts and social comparisons during adolescence (Brown & Lohr, 1987). Internalization of poor peer experiences, as indicated by greater levels of perceived peer rejection scores, may therefore lead to low self-worth, hopelessness, and ultimately suicidal ideation (Harter et al., 1992). Although none of the peer functioning variables was directly associated with the conduct problems composite score, which included oppositional defiant and conduct disorder symptoms, deviant peer affiliation was linked with substance use, which shared a significant amount of variability with conduct problems. In addition, substance use symptoms were an important predictor of suicidal ideation via symptoms of depression in this sample, which is consistent with psychological autopsy findings that suggest this is a common pathway for suicidality (Shaffer, Gould, et al., 1996).

In this correlational study, these findings are equally suggestive of the possibility that adolescents' distress, marked by suicidal ideation, may influence relationships with peers. Children experiencing psychological difficulties, including severe withdrawal or aggression, for instance, are likely to be rejected by peers and exhibit difficulties establishing and maintaining friendships (Rubin, LeMare, & Lollis, 1990). Although longitudinal studies have frequently supported the prospective effects of peer functioning on later adjustment difficulties, suicidal ideation rarely has been examined as an outcome. Thus, further examination of a transactional relation between peer functioning and suicidal ideation is an important direction for future research.

It was also considered that symptoms of depression may have influenced adolescents' reports of peer experiences, as the data in this study were collected at a single time point and relied heavily on self-report assessment. This is an important issue that warrants further attention in studies of this type. Given that adolescent participants in this study were psychiatric inpatients, this measurement approach was a practical necessity (Zakriski et al., 1999). Adult-informant measures of adolescent peer functioning typically are judged to have inferior validity, and obtaining peer reports from school classmates while adolescents are hospitalized threatens the participants' confidentiality. Moreover, because the adolescents in this study originated from multiple school districts, the use of peer-report measures would have been prohibitively complex, literally involving thousands of peers across grades and schools. As an initial investigation to thoroughly examine peer functioning and suicidal ideation severity, however, these results offer important directions for future work in this area. In this regard, there was some evidence to suggest that adolescents' depression symptoms were not wholly responsible for the observed relations between peer functioning and suicidal ideation. First, not all adolescents were depressed; in-

deed, 42.7% did not report any *DSM-IV* symptoms within the major depressive disorder module on the DISC. Also relevant were the significant associations between low close friendship support and perceived peer rejection with ideation that remained significant after we controlled for depression and the fact that close friendship support and perceived peer acceptance were not significantly correlated with depression, thereby suggesting that reports of peer functioning were not completely dependent on depressive symptoms.

With regard to family functioning, these data were consistent with previous research indicating that although global family dysfunction appears to be significantly related to suicidal ideation when examined as a bivariate association, the magnitude of the direct effect of family functioning may be tempered when areas of psychological distress are considered as possible mediators. Specifically, these data revealed a significant indirect linkage suggesting that increased dysfunction within the family may be related to adolescents' increased oppositional/conduct problems and substance use, which in turn may increase symptoms of depression and suicidal ideation. After we accounted for these mediators, however, there were no significant direct associations between family dysfunction and suicidality. The findings also failed to indicate that problems in family communication or problem solving contributed uniquely to the prediction of suicidal ideation beyond what was accounted for by global family dysfunction; indeed, this overall index appeared to overlap considerably with the more specific indexes of family dysfunction. Future work may aim to better explicate the roles of specific family disturbances as risk factors for suicidal ideation.

Examination of etas in the structural model suggested that family functioning was a somewhat weaker correlate to suicidal ideation than was peer functioning. This is especially important, because studies on adolescent suicidal ideation and behavior have emphasized family more than peer functioning as a predictor of suicidal ideation. Thus, these data emphasize the importance of considering the relative contributions of peer and family functioning in the development of psychiatric disturbance and suicidal ideation. The results also highlight the need for clinicians to evaluate adolescents' distress in both peer and family domains to assess potential risk for suicidal ideation.

This study comprehensively examines potential linkages between peer functioning and suicidal ideation and highlights deficits in peer relationships that may lead to severe psychopathology, including suicidal ideation. This approach to examining adolescents' risk for suicide is consistent with current theoretical models of adolescent suicide as a product of severe psychopathology, and this risk model effectively accounted for a substantial proportion of variance in adolescent inpatients' suicidal ideation severity. Although

this model is useful, in that the vast majority of suicidal adolescents typically meet criteria for at least one psychiatric diagnosis (Lewinsohn et al., 1996), not all adolescents experiencing severe psychopathology are necessarily at risk for suicidal ideation and behavior. Indeed, to further explain adolescent suicidality, this model should be supplemented by investigations of moderators between psychopathology and suicidal ideation. This is important for further understanding variability in suicidality among symptomatic adolescents.

Future work would benefit by addressing some of the limitations of this investigation. For instance, researchers attempting to replicate these results may wish to use peer-report as well as self-report measures of peer functioning. The window of peer functioning yielded by adolescent perceptions in this study is important in understanding adolescents' self-evaluation of their peer competence and how this relates to the development of suicidal ideation. These results may be best interpreted as adolescents' perceptions and cognitive frame of their peer functioning, which may be particularly relevant to cognitive-behavioral intervention efforts with suicidal adolescents. Indeed, prior work has suggested that children's cognitive attributions of peer rejection, as indicated by perceived peer rejection scores, are a significant mediator between actual peer rejection and depression symptoms (Panak & Garber, 1992).

The assessment of family functioning also may have benefitted from the inclusion of different reporters (i.e., parent or clinician report). Because prior work on family risk factors for suicidality has used the FAD or a similar adolescent report instrument, we could directly compare these data with prior findings in this area. However, future studies may benefit from alternate perspectives (Wagner, 1997).

We should also note that the hypotheses in this investigation were tested using cross-sectional data. The use of prospective data in future investigations will be important to further assess the direction of associations or transactional associations among psychosocial variables, psychological symptoms, and suicidal ideation.

In sum, this study comprehensively assessed peer functioning and suicidal ideation within a sample of adolescent inpatients and provides good preliminary support for this link. This study is also among the first to offer several symptom areas as mediators of the associations between peer and family functioning and suicidal ideation. Overall, there was support for the multifinality of peer functioning as a risk factor for several areas of psychopathology, one of which may be suicidal ideation, and the equifinality of suicidal ideation as an outcome related to several different symptom domains. The results place increasing importance on the possible consequences of problematic peer and family relationships in adolescence and offer new

directions for preventing suicidal behavior among at-risk teens.

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