Journal of Abnormal Child Psychology, Vol. 32, No. 2, April 2004, pp. 147–158 (© 2004)

Cognitive Moderators of the Longitudinal Association Between Peer Rejection and Adolescent Depressive Symptoms

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Received May 14, 2003; revision received September 10, 2003; accepted September 17, 2003

This longitudinal study examined peer rejection as a predictor of adolescent depressive symptoms during the critical developmental period associated with substantial increases in the prevalence of girls' depression. In a sample of 158 adolescents aged 15–17 years, a peer nomination, sociometric assessment was conducted to examine adolescents' peer status at an initial time point, along with self-report measures of depressive symptoms, depressogenic attributions, and peer importance. Adolescents completed a second measure of depressive symptoms 17 months later. Results were consistent with integrated cognitive vulnerability-stress and cognitive dissonance models, particularly for girls. Specifically, peer rejection was a significant prospective predictor of depressive symptoms when combined with high levels of importance ascribed to peer status and high levels of adolescents' depressogenic attributional styles.

KEY WORDS: depression; peer relations; attributional style; cognitive dissonance.

Social-cognitive models of depression generally suggest that negative social experiences, and individuals' interpretations of these experiences, can be significant predictors of depressive symptoms (e.g., Abramson, Metalsky, & Alloy, 1989; Hammen, 1999). For example, rejection in the context of an interpersonal relationship (e.g., marital relationship) is often conceptualized as a significant stressor that may be associated with the development, maintenance, or relapse of depressive symptoms among adults, particularly if this stressor is accompanied by attributions that pertain to the salience, personal relevance, or negative interpretation of the rejection experience (Beach & Jones, 2002; Monroe & Hadjiyannakis, 2002). To date, these hypotheses have been tested in adult populations more extensively than among children and adolescents (e.g., Garber & Horowitz, 2002; Gladstone & Kaslow, 1995).

In the developmental psychopathology literature, substantial research has accumulated to suggest that rejection by peers may be a significant stressor associated with deleterious adjustment outcomes (Coie, 1990). For example, results from prospective longitudinal studies have revealed that peer rejection is uniquely associated with increases in externalizing behaviors, health-risk behaviors, academic functioning, and related developmental outcomes (Parker & Asher, 1987; Rubin, Bukowski, & Parker, 1998). However, prospective, longitudinal studies examining the effects of peer rejection on the development of depressive symptoms are relatively rare, and extant studies in this area have yielded some mixed results (see Bagwell, Newcomb, & Bukowski, 1998; Boivin, Hymel, & Bukowski, 1995; Dumas, Neese, Prinz, & Blechman, 1996; Kupersmidt & Patterson, 1991; Panak & Garber, 1992; Vernberg, 1990).

Equivocal findings regarding the longitudinal associations between peer rejection and depression are most likely due to three sets of limitations in prior work. First, past studies have examined peer rejection and depression at various developmental stages without providing a developmental rationale for the selection of participants of a certain age. This is a particularly unfortunate shortcoming of past work given evidence suggesting that the prevalence, presentation, and correlates of depression may

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vary substantially across the life span (Nolen-Hoeksema, Girgus, & Seligman, 1992; Weiss & Garber, 2003). For example, epidemiological data suggest that the prevalence of depression sharply increases during adolescence, particularly for girls (Angold, Costello, & Worthman, 1998; Angold & Rutter, 1992; Nolen-Hoeksema, 1990), leading many theorists to speculate that negative interpersonal experiences may play an especially important role during this developmental stage (Cyranowski, Frank, Young, & Shear, 2000; Hankin & Abramson, 1999, 2001; Rudolph & Hammen, 1999). Recent studies suggest that the greatest increase in depression symptoms may occur between the ages of 15 and 18 years (e.g., Hankin et al., 1998). Accordingly, this study focused specifically on the associations between depression and peer rejection within this specific age period.

Adolescence may be a developmental context in which the deleterious effects of peer rejection are especially salient (Rudolph & Hammen, 1999). As compared with younger children, adolescents spend a substantially greater proportion of their waking hours involved in peer interactions (Ellis, Rogoff, & Cromer, 1981). Through increased expression of intimacy and emotional support among peers, adolescents tend to rely on peers as primary sources of social support in response to stressors (Brown, 1996). Moreover, developmental theorists suggest that as part of the process of identity formation, adolescents use peers as primary bases for social comparison and reflected self-appraisal (Harter, Stocker, & Robinson, 1996). In other words, acceptance and rejection by peers offers direct feedback for adolescents' sense of worth and self-concept (Damon & Hart, 1982; O'Brien & Bierman, 1988).

A second limitation of past studies has been the relative neglect of possible gender differences in the longitudinal associations between peer rejection and depression. In addition to differential prevalence rates noted above, there are good theoretical reasons to predict that peer rejection may be an especially potent predictor of depressive symptoms in girls, as compared to boys. For instance, research has suggested that as compared to boys, girls experience more negative life events within the interpersonal domain, and these experiences appear to be more predictive of negative affect for girls (Larson & Ham, 1993; Rudolph & Hammen, 1999; Windle, 1992). Girls also exhibit greater affiliative needs during adolescence contributing to an increased awareness of and sensitivity to conflict and rejection within interpersonal relationships (Cyranowski et al., 2000; Larson & Richards, 1989). It is therefore hypothesized that peer rejection will be an especially relevant predictor of depressive symptoms among girls.

A third and especially important limitation of past work has been the absence of refined hypotheses guided by theoretical models from the clinical literature. Inconsistent results from prior studies may be due to the almost exclusive examination of main effect models, testing the effects of peer rejection as an individual risk factor on later outcomes. In contrast, the examination of theoretically informed moderators may help to reveal factors that change the magnitude of the association between peer rejection and depression (i.e., understand the conditions under which adolescents' peer rejection is most predictive of depression), and better identify subgroups of adolescents at risk. Indeed, the examination of moderator models has previously proven fruitful in identifying subgroups of rejected children (i.e., specifically rejected-aggressive youth) most at risk for externalizing symptoms (e.g., Bierman & Wargo, 1995). The focus of this study was to examine moderators of the longitudinal association between peer rejection and depression. Specifically, this study examined two sets of cognitions as potential moderators, consistent with cognitive vulnerability-stress and cognitive dissonance theories.

Cognitive vulnerability-stress models, such as the reformulated learned helplessness/hopelessness model, (Abramson et al., 1989) suggest that the tendency to attribute negative life events to internal, global, and stable causes is predictive of the onset, maintenance, and relapse of depressive symptoms (Abramson et al., 1989; Hankin, Abramson, & Siler, 2001; Nolen-Hoeksema et al., 1992; Panak & Garber, 1992; Robinson, Garber, & Hillsman, 1995), particularly when this attributional style is combined with the experience of a life stressor. With one known exception (Panak & Garber, 1992), this model has not been applied to the study of peer rejection as a developmentally salient life stressor among youth. Hammen, Rudolph, and colleagues have offered considerable evidence to suggest that stressful interpersonal experiences may contribute substantially to the development of depression and depressed cognitions among adolescents (e.g., Hammen & Brennan, 2001; Hammen, Shih, Altman, & Brennan, 2003; Rudolph et al., 2000). Consistent with a cognitive vulnerability-stress model, it was anticipated that the combination of peer rejection and a depressogenic attributional style would be most predictive of depression. Given elevated levels of cognitive vulnerability among girls as compared to boys (Hankin & Abramson, 2001), it was expected that this model would be most relevant for girls.

A second model evaluated in this study examined the importance that adolescents placed on their peer status as a potential moderator of the association between peer rejection and depression. Although past research has

generally indicated that peers serve an increasingly important role in identity and social development during adolescence (Damon & Hart, 1982), it is possible that peer rejection is not a salient, or personally meaningful stressor to *all* adolescents. Indeed, for those who do not place particular importance on their social status within the peer group, peer rejection may not be a relevant stressor, and thus, may not be predictive of depression.

Our hypotheses regarding the potential moderating effects of the importance adolescents' ascribed to their peers status are reminiscent of cognitive dissonance theory. Social psychological theories suggest that a state of cognitive dissonance results from simultaneously holding two discordant cognitions. For instance, dissonance would be produced by failing to succeed in domains that are judged to be personally important and relevant (Festinger, 1957). In this manner, peer rejection among adolescents who value the importance of their social status would produce dissonance and negative affect (Pelham & Swann, 1989). To reduce this dissonance, rejected adolescents might be inclined to change their evaluation of the personal importance of their social status among peers. Conceivably, this could be protective against depression. However, rejected adolescents who retain their beliefs regarding the importance of peer status will maintain a state of dissonance, and would be likely to experience negative affective states, including an increased risk for symptoms of depression over time (Pelham & Swann, 1989). Past research on peer crowd affiliation offers some preliminary support for this theory as applied to the peer domain. Brown and Lohr (1987) revealed that adolescents who were unaffiliated with a peer crowd, yet placed little importance on crowd membership, reported greater levels of self esteem than unaffiliated adolescents who ascribed higher levels of importance to crowd affiliation. Thus, it was hypothesized that peer rejection would be a significant prospective predictor of depression under conditions of high levels of importance ascribed to peer status by adolescents. Given that girls evidence higher affiliative needs than boys in adolescence (Larson & Richards, 1989), it was anticipated that this model would be especially relevant for girls.

A final goal of this study was to examine combined cognitive vulnerability-stress and cognitive dissonance models. Simply, it was anticipated that peer rejection would be most predictive of depression if adolescents evidenced both a tendency towards internal, global, and stable attributions for negative events, and placed high levels of importance on their peer status. The combined model was also examined by gender to test the hypothesis that this combination of interpersonal experiences and cognitions would be most predictive of depression symptoms in girls.

METHODS

Participants

Participants included 158 adolescents (97 girls and 61 boys) who were in the 10th grade at a suburban high school and ranged in age from 15 to 17 years ($M = 16.31$; $SD = .50$) at the outset of the study. The ethnic distribution of the sample was 80.4% White/Caucasian; 6.3% African American; 1.9% Latino American, and 11.4% Other/Mixed Ethnicity within a city of fairly homogeneous, middle-class socioeconomic status (Per capita income = $25,175). According to school records, approximately 22.3% of students were eligible for free or reduced-lunch.

Procedures

At Time 1, all 10th-grade students were recruited for participation, with the exception of students in self-contained special education classes ($n = 364$). Consent forms were returned by 70% of families ($n = 255$); of these 92% of parents gave consent for their child's participation ($n = 235$).[3] Time 1 data were obtained for all of these adolescents, with the exception of three students who were absent on the days of testing and were unable to provide assent.

Approximately 17 months later, adolescents were invited to participate in a follow-up study (Time 2). Consent forms again were mailed to all families with students in the 12th grade, including 209 Time 1 participants who were still enrolled in this school. Forms were returned by 70% of the 12th-grade families; of these, 92% consented for their child to participate. Consent was obtained for 158 (67.7%) of Time 1 participants, or 75.6% of all

[3]Recruitment procedures were designed to maximize participation within this adolescent sample. A letter of consent was initially mailed to each adolescent's family followed by a series of reminders and additional letters distributed directly to teens by school and research personnel. Response forms included an option for parents to grant or deny consent; adolescents were asked to return their signed response form regardless of their parents' decision. Three incentives directed to teachers and students were included to enhance the response rate. Teachers collecting response forms were given $10 for each classroom participating in the study, with an additional $10 for each class in which over 80% of classroom students returned consent forms. Students were given an individual reward during classtime (i.e., a candybar) on the day they returned their response form. Lastly, five raffles were conducted over the school PA system at regular intervals during the 3 weeks of recruitment, awarding a total of 20 prizes (e.g., movie tickets, music gift certificates) and one grand prize (i.e., a Sony Playstation 2 machine) to randomly selected students who had returned their response form by the time of the raffle.

Time 1 participants still available for recruitment.[4] A total of 21 students who provided incomplete data on Time 2 measures were initially excluded from the statistical analyses, yielding a sample of 137 participants. Chi-square analyses revealed no significant differences in gender or ethnicity between students who participated at both time points as compared to those who participated at Time 1 only, or as compared to those with missing or incomplete data. Analyses also revealed no significant differences between these groups on any of the primary measures. Thus, missing data for these 21 consented participants at Time 2 were imputed with an expectation–maximization procedure, which utilized available self- and peer-reported data at Time 2, as well as all data available at Time 1. Data were missing completely at random according to Little's test, $\chi^2(456) = 465.97$, *ns*), which justified the use of imputation procedures to increase power. As expected, analysis of unimputed data revealed a similar pattern of results; however, less power was available to detect statistically significant findings.

Measures

Peer Acceptance/Rejection

At Time 1, adolescent peer acceptance/rejection was measured using a peer-nomination sociometric procedure. Using a roster of all grade-mates, adolescents nominated an unlimited number of peers whom they "liked to spend time with the most" and "liked to spend time with the least." The order of names was counterbalanced on these rosters to control for possible effects of alphabetization on nominee selection. For each sociometric item, a standardized score was computed based on the number of nominations received by each adolescent. The difference between "like most" and "like least" standardized scores was computed and restandardized as a measure of *social preference*, with higher scores indicating greater acceptance among peers, and lower scores indicating greater rejection (Coie & Dodge, 1983). Using this procedure it was possible to obtain an ecologically valid measure of peer acceptance/rejection that was not influenced by adolescents' self-report. Data from sociometric nominations are widely considered the most reliable and valid indices of acceptance and rejection among peers (Coie & Dodge, 1983).

[4]Examination of the data revealed one extreme outlier on measures of peer rejection and depression, with scores over five standard deviations from the overall sample mean. This participant therefore was excluded from statistical analyses.

Attributional Style

The 24 item version of the Childen's Attributional Style Questionnaire (CASQ; Thompson, Kaslow, Weiss, & Nolen-Hoeksema, 1998) was used as a measure of depressogenic attributional style at Time 1. This measure assesses three attributional dimensions (internal–external, stable–unstable, and global–specific) that have been associated with depression (Abramson et al., 1989). The CASQ lists 12 positive and 12 negative events; for each, adolescents are asked to select one of two possible causes. For both positive and negative events, a score of 1 was coded for each internal, stable, or global attribution, and a score of 0 was coded for each external, unstable, or specific attribution. Consistent with prior research (Panak & Garber, 1992; Seligman et al., 1984), a sum of attributions for negative events was subtracted from a sum of attributions for positive events to derive a overall summary score, with lower total CASQ scores indicating higher levels of depressogenic attributional style. Results from the current sample suggested good internal consistency for this measure, $\alpha = .73$ as has been revealed in prior research (Gladstone & Kaslow, 1995).

Peer Importance

A 5 item self-report measure designed for this study was used to examine adolescents' cognitions regarding the importance and personal salience of acceptance and rejection by peers (e.g., "It is important for me to be popular with kids of my age"). These questions were included in the context of a larger checklist of cognitions regarding interpersonal experiences at Time 1. Three of these items were worded conversely and reverse-coded to control for social desirability (e.g., "I do not care at all about what other kids think of me"). Adolescents were asked to indicate the extent to which each item was true using a 7 point likert scale (i.e., "not at all true"; "very true"). A summed total score (i.e., "*peer importance*") was computed, with higher scores indicating that adolescents placed high levels of importance on their acceptance by peers. Overall, the scale had satisfactory psychometric properties. Internal consistency for these items was high, $\alpha = .77$. In addition, adolescents' peer importance score was significantly correlated with other indices of adolescents' desire to be accepted by peers, supporting the validity of this measure. For instance, adolescents were also asked to report their current and desired (i.e., actual–ideal) level of acceptance among peers. Scores on the peer importance scale were moderately correlated with the difference between these ideal–actual scores, $r = .46$, $p < .001$.

Table I. Descriptive Statistics for Main Study Variables, Means (Standard Deviations)

	Total ($n = 158$)	Boys ($n = 61$)	Girls ($n = 97$)	$t(156)^a$
Time 1 variables				
Depressive symptoms	8.40 (6.26)	6.39 (4.54)	9.67 (6.85)	3.31*
Attributional style	6.08 (3.41)	6.67 (2.88)	5.71 (3.67)	1.73
Social preference	0.09 (1.11)	−0.22 (1.12)	0.29 (1.06)	2.88*
Peer importance	3.71 (1.32)	4.11 (1.20)	3.46 (1.35)	3.06*
Time 2 variables				
Depressive symptoms	8.18 (6.22)	6.69 (5.26)	9.11 (6.61)	2.42*

[a] t Test examines gender differences.
* $p < .001$.

Depressive Symptoms

At Time 1 and Time 2, adolescents' depressive symptoms were assessed utilizing the Children's Depression Inventory (CDI; Kovacs, 1992). The CDI is a 27 item[5] self-report measure assessing affective, cognitive, motivational, and somatic symptoms of depression (Kovacs, 1992). For each item, children choose from one of three statements, scored 0 through 2, which best described their level of depressive symptoms in the previous 2 weeks. A summed total score was computed, with higher scores indicating greater levels of depressive symptoms. Good psychometric properties have been reported for the CDI as a reliable and valid index of depressive symptoms (Saylor, Finch, Spirito, & Bennett, 1984); it can be used with youth between the ages of 7 and 18 years of age (Kazdin, 1990). In the current sample, internal consistency (Cronbach's alpha) was .85 at Time 1 and .86 at Time 2.

RESULTS

Preliminary Analyses

Table I includes descriptive statistics for each of the primary measures used in this study. As anticipated, greater levels of depressive symptoms were observed for girls at Time 1 and Time 2. No significant within subjects (i.e., Time) effects or Time × Gender interactions were revealed, $Fs(1, 156) < 1$, *ns*, however, suggesting no significant changes in the overall level of depressive symptoms over time, or gender differences in the pattern of depressive symptoms over time in this sample. Significant gender effects were also revealed for social preference and peer importance, indicating that girls were more likely to be accepted by peers than boys, and that boys ascribed higher levels of importance to their peer status than did girls.

[5]One item on suicidality was omitted to address concerns raised by the Human Subjects Committee.

Correlations analyses were conducted to examine bivariate associations among the primary variables in this study (see Table II). As would be expected from past research, results indicated lower CASQ scores at Time 1 (indicating higher levels of a depressogenic attributional style) were associated with concurrent and future levels of depressive symptoms. Results also indicated that depressive symptoms were moderately stable over time. Importantly, there were no significant associations revealed among measures of adolescents' social preference, attributional style, or peer importance, suggesting that these were generally orthogonal constructs.

Prospective Analysis of the Cognitive Vulnerability-Stress Model

An initial goal of this study was to examine a cognitive vulnerability-stress model of depression using peer rejection (i.e., social preference) as a developmentally salient stressor (Panak & Garber, 1992), and to examine possible gender effects for this model. To control for the overall familywise error rate in this study, hypotheses were tested in one hierarchical linear regression analysis (see Table III). Using Time 2 CDI scores as a dependent variable, this regression model controlled for Time 1 levels of depressive symptoms on an initial step, followed by gender and scores for attributional style (CASQ) and social preference on a second step. The examination of a three-way interaction (i.e., a Social preference × Attributional style × Gender) on the fourth step required entry of all possible two-way product terms on Step 3 of the analysis. Results at each step of the regression and for the final regression model are presented in Table III.

Examination of the results at each step yields a pattern of findings generally consistent with hypotheses. Main effects (i.e., at Step 2) indicated that attributional style, but not social preference, was a significant prospective predictor of depressive symptoms. However, ultimately all effects were qualified by a significant three way interaction between social preference, attributional style, and

Table II. Intercorrelations Among Primary Variables at Time 1 and Time 2

	Time 1			Time 2
Time 1 predictors	Attributional style	Peer importance	Depression	Depression
Social preference	.03	.05	.14	.00
Attributional style		−.07	−.65*	−.57*
Peer importance			−.03	−.03
Depression				.67*

* $p < .001$

gender. In short, analyses revealed significant support for the cognitive-vulnerability stress model for girls, but not for boys.

Holmbeck's most recent guidelines for post hoc probing of moderational effects (Holmbeck, 2002) were used to examine the three-way interaction. This included the computation of slope estimates using centered variables as a means for reducing multicollinearity, and examining the significance of the slopes at high and low levels of attributional style, and by gender. For girls, results suggested that under conditions of depressogenic attributional styles (i.e., CASQ scores lower than one standard deviation below the mean), social preference was significantly and prospectively associated with girls' depression scores (i.e., $b = -1.38$, $p < .05$), such that low levels of social preference were significantly associated with high levels of girls' depressive symptoms over time. However, under conditions of adaptive attributional styles (i.e., CASQ scores exceeding one standard deviation above the mean), social preference was not significantly associated with girls' depressive symptoms (i.e., slopes were not significantly different from zero, $b = .60$, *ns*). In other words, results suggested that the combination of peer rejection and a depressogenic attributional style was longitudinally associated with girls' depressive symptoms. A different pattern of results emerged for boys; post hoc analyses revealed nonsignificant slopes under conditions of either adaptive or depressogenic attributional styles ($bs = -.53$ and .88, *ns*, respectively).

Prospective Analysis of the Cognitive Dissonance Model

A second goal of this study was to examine a cognitive dissonance model in which peer importance moderated the prospective effects of social preference on depression. Again, gender effects were anticipated. A hierarchical regression analysis was conducted, similar to above. Using Time 2 CDI scores as a dependent variable, initial levels of depression were entered on an initial step of the regression model. Gender, social preference, and peer importance were entered on a second step. All two-way product terms

Table III. Cognitive Vulnerability-Stress Model: Hierarchical Multiple Regression Analysis of Social Preference, Attributional Style, and Gender Predicting Depressive Symptoms at Time 2

	Statistics at step		Final statistics
Time 1 predictors	ΔR^2	β	β
Step 1	.27***		
Time 1 depression		.49***	.45***
Step 2: Main effects	.05**		
Gender[a] (G)		.10	−.01
Social preference (SP)		.06	.39***
Attributional style (AS)		−.31**	−.40**
Step 3: Two-way interactions	.04*		
SP × AS		−.15	−.41***
SP × G		−.15	−.56***
AS × G		.10	.05
Step 4: Three-way interaction	.07***		
SP × AS × G			.54***
Total R^2	.43***		

[a] Gender coding: 1 = *Female*.
* $p < .05$. ** $p < .01$. *** $p < .001$.

Table IV. Cognitive Dissonance Model: Hierarchical Multiple Regression Analysis of Social Preference, Peer Importance, and Gender Predicting Depressive Symptoms at Time 2

	Statistics at step		Final statistics
Time 1 predictors	ΔR^2	β	β
Step 1	.27***		
Time 1 depression		.49***	.56***
Step 2: Main effects	.00		
Gender[a] (G)		.09	−.26
Social preference (SP)		.02	−.23
Peer importance (PI)		−.03	−.14
Step 3: Two-way interactions	.03		
SP × PI		−.24	.46
SP × G		−.40	.40
PI × G		−.24	.37
Step 4: Three-way interaction	.03**		
SP × PI × G			−.67**
Total R^2	.34***		

[a]Gender coding: 1 = *Female*.
*$p < .05$. **$p < .01$. ***$p < .001$.

(i.e., Social preference × Peer importance, Social preference × Gender, and Gender × Peer importance) were entered on a third step, and a three-way interaction was entered on a final step (see Table IV).

A significant three-way interaction was revealed, indicating gender differences in the utility of the cognitive dissonance hypothesis to prospectively predict depressive symptoms. Post hoc analyses of slopes revealed significant support for the cognitive dissonance model for girls, but not for boys. Specifically, for girls, under conditions of high peer importance, social preference was significantly associated with depression ($b = -2.44$, $p < .01$), such that lower levels of social preference were associated with higher levels of depression over time. However, under conditions of low peer importance there was no significant association between social preference and depressive symptoms ($b = .08$, *ns*). In other words, peer rejection was longitudinally associated with girls' depressive symptoms only when girls ascribed high levels of importance to their peer status. For boys, social preference was not significantly associated with depressive symptoms under conditions of either high or low levels of peer importance (bs = 1.32 and −0.74, *ns*, respectively).

Analysis of a Combined Cognitive Vulnerability-Stress and Dissonance Model

Lastly, it was predicted that adolescents' peer acceptance/rejection (i.e., social preference) would be most strongly associated with depressive symptoms under conditions in which adolescents exhibited both a depressogenic attributional style and placed high levels of importance on their status among peers. Examination of this model, and potential gender effects, required testing a four-way interaction between social preference, attributional style, peer importance, and gender. As above, Time 2 CDI scores were used as a dependent variable in this analyses, with Time 1 depressive symptoms entered on an initial step, all main effects on Step 2, all two-way interactions on Step 3, three-way interactions on Step 4, and lastly, a four-way interaction term entered on Step 5 (see Table V).

A significant four-way interaction was revealed. To examine the nature of this interaction, Holmbeck's guidelines (Holmbeck, 2002) were used to examine the significance of slopes separately for boys and girls. For boys, analysis of slopes indicated no significant effects for the combined cognitive vulnerability-stress and dissonance model. However, for girls, the three way-interaction term was significant, $\Delta R^2 = .03$, $p < .05$. Significant slopes indicated that the greatest risk of depressive symptoms was associated with low levels of social preference (i.e., indicating peer rejection), low CASQ scores (i.e., indicating depressogenic attributional styles), and high levels of peer importance.[6]

DISCUSSION

Empirical tests of cognitive vulnerability-stress models have provided compelling evidence for the identification of attributional styles that may alter the impact of

[6]Post hoc probing of the four-way interaction effect yielded 24 slope estimates. For ease of presentation, these statistics were omitted from this paper, but can be obtained by contacting the authors.

Table V. Combined Cognitive-Vulnerability Stress and Cognitive Dissonance Model: Hierarchical Multiple Regression Analysis of Social Preference, Attributional Style, Peer Importance, and Gender Predicting Depressive Symptoms at Time 2

	Statistics at step		Final statistics
Time 1 predictors	ΔR^2	β	β
Step 1	.27***		
Time 1 depression		.49***	.43
Step 2: Main effects	.05*		
Gender[a] (G)		.09	.01
Social preference (SP)		.07	−.06
Attributional style (AS)		−.32***	−.35
Peer importance (PI)		−.06	−.23
Step 3: Two-way interactions	.10***		
AS × PI		.17*	.32
SP × AS		−.24*	.00
SP × PI		−.19*	−.17
SP × G		−.22*	.05
AS × G		.06	−.02
PI × G		.28*	.26
Step 4: Three-way interactions	.05**		
AS × PI × G		−.41*	−.33
SP × AS × PI		.09	−.34
SP × AS × G		.27*	.16
SP × PI × G		.07	.03
Step 5: Four-way interaction	.03**		
SP × AS × PI × G		.34**	.34**
Total R^2	.50***		

[a] Gender coding: 1 = *Female.*
* $p < .05$; ** $p < .01$. *** $p < .001$.

stressors on psychological adjustment; however, in many studies this model has been applied without consideration of developmentally salient stressors that may have an important influence on adaptation. In contrast, some developmental studies have largely focused on the impact of significant life stressors (e.g., peer rejection), but have not considered predisposing vulnerabilities that may mitigate or magnify the effects of these stressors on development. By examining a specific interpersonal stressor that is highly relevant to the developmental tasks of adolescence, and examining cognitive styles that may affect the salience or interpretation of this stressor, this study aimed to integrate findings from both literatures, and elucidate the manner in which peer experiences may present risks for the development of depression. Interestingly, the results revealed that our hypotheses were particularly relevant for girls.

Results from the first model examined in this study indicated that peer rejection was a significant longitudinal predictor of depression symptoms when coupled with high levels of a depressogenic attributional style. This finding complements both developmental studies regarding the importance of peer rejection and a growing number of clinical investigations that generally provide support for cognitive vulnerability-stress models in adolescence (Dixon & Ahrens, 1992; Hankin et al., 2001; Hilsman & Garber, 1995; Nolen-Hoeksema et al., 1992; Robinson et al., 1995). Findings regarding the specificity of this model for girls are consistent with recent theories regarding the importance of interpersonal stressors in the development of depressive symptoms among females in particular, as well as increased cognitive vulnerabilities among girls during this critical developmental period associated with differential prevalence of depression (Hankin & Abramson, 2001). Thus, findings may prove helpful in the identification of factors that may partially account for emerging gender differences in the prevalence of depression among adolescents (Hankin & Abramson, 2001).

Unlike many prior studies on cognitive vulnerability-stress models, however, this investigation examined a discrete interpersonal experience rather than the results from a broad life events checklist to conceptualize and measure adolescents' experience of stress. The focus on peer rejection as a discrete stressor offered a unique opportunity to minimize potential informant biases in a test of the cognitive vulnerability-stress model. Specifically, the use of a peer-reported instrument to assess peer rejection

eliminated the possibility that adolescents' depressive symptoms might influence their reports of interpersonal stressors or daily hassles, offering a stringent test of the cognitive model. A liability of this approach, however, is that it was more difficult in this study to determine whether peer rejection was experienced by adolescents as a source of *stress*. Indeed, it is conceivable that adolescents might vary in the level of stress experienced as a result of rejection by peers.

Developmental research offers some evidence to suggests that peer rejection is indeed an aversive and salient interpersonal experience among children and adolescents that can serve as a source of substantial stress (Coie, 1990). For instance, rejected children are more likely than others to be targets of peers' aggressive acts, including both overt victimization (e.g., hitting, kicking, teasing) and relational victimization (e.g., ostracism, withdrawal of friendship support, gossip). Peer rejection is also a significant predictor of children's loneliness and can serve as a precipitant to adolescent suicidal behavior (Boivin et al., 1995; Prinstein, 2003).

However, it is also possible that in the present study, peer rejection simply served as a proxy variable for other negative interpersonal experiences or developmental liabilities. Peer rejection has been associated with a host of related interpersonal variables that also may cause significant distress and depressive symptoms, including family conflict, low quality friendships, or unsatisfying romantic relationships (e.g., see Rubin et al., 1998 for a review). The study of peer rejection in conjunction with these and more distal predictors of adolescent depression is an important avenue for further research.

Overall, the results from this study represent an important step by incorporating developmentally relevant interpersonal stressors into cognitive vulnerability-stress models of depression in adolescence. As with most other studies examining cognitive vulnerability-stress theories, a measure of global attributional style was included, with results suggesting that adolescents may generally tend to attribute stressors to internal, global, and stable causes. However, it is unclear from these results whether adolescents possess specific cognitive vulnerabilities associated with peer rejection. In other words, an important next step will be to determine whether adolescents with a global depressogenic attributional style are likely to attribute the specific stressor of peer rejection to internal, global, and stable causes. Cognitive theories suggest that this is especially likely in the event that adolescents regard the stressor to be emotionally salient or relevant to cognitive vulnerabilities (Abramson et al., 1989; Beck, 1987). A second model examined in this study offered some evidence to address this point.

In addition to adolescents' attributional styles, a second moderator examined in this study pertained to the level of importance adolescents ascribed to their status among peers. Two findings pertaining to the prediction of depression were revealed. First, as would be predicted by dissonance theory, results suggested that adolescents' failure to succeed in a domain of competence (i.e., peer rejection) was predictive of increases in depression over time when that domain was judged to be personally relevant and important. Second, the results revealed that the importance that adolescents placed on this interpersonal stressor significantly moderated the effect of the cognitive vulnerability-stress model. In other words, findings were consistent with the idea that only when peer status was rated as an important and salient domain, was the combination of peer rejection and depressogenic attributional styles a significant predictor of depression. The results support past theories predicting that adolescents may be most susceptible to cognitive vulnerabilities when encountering a stressor that is personally relevant and important.

The cognitive dissonance model, and study of adolescents' cognitive vulnerabilities, may be especially fruitful in explaining potential associations between peer experiences and psychopathology among adolescents, and in developing preventive interventions. The developmental significance of peer relationships in adolescence might suggest that this domain should be of equally high importance to all adolescents. Yet, results suggest that there is meaningful variability in the level of importance ascribed to peer status. Adolescents who place low levels of importance on their status among peers are more resilient to peer rejection as a stressor. Indeed, this may be an adaptive approach for adolescents who are at risk of peer rejection. Results from the developmental literature suggest that peer status is quite stable across time and contexts (Coie & Dodge, 1983); even with intervention (e.g., social skills training, peer pairing techniques), children and adolescents experience considerable difficulty changing their levels of acceptance and rejection among peers (La Greca, 1993). The results suggest that in addition to cognitive interventions addressing the interpretation of interpersonal stressors, therapeutic techniques may be successful by addressing the level of importance that adolescents place on their status among peers.

The results also offer important directions for the continued study of peer rejection as a developmental stressor that may be experienced by adolescents with considerable heterogeneity. Although the findings supported cognitive vulnerability-stress and cognitive dissonance models incorporating peer rejection as a predictor of girls' depressive symptoms, significant findings were not revealed for boys. This finding was not due to lower overall

levels of peer rejection among boys or lower levels of importance placed upon peer status among boys; in fact, results revealed an opposite trend. Rather, gender differences in the predictive utility of these peer rejection models might pertain to the manner in which peer rejection is differentially manifested among girls and boys. For instance, peer rejection may be particularly stressful among girls because it is more often accompanied by withdrawal of friendship support or character assassinations in the peer domain (e.g., via relational victimization; Crick, 1996). Thus, it may be that a similar type of stressor differentially affects girls' and boys' depressive symptoms because the stressful event is manifested in qualitatively different ways across gender.

Overall, the results offer important contributions to the applicability of cognitive vulnerability-stress models to youth, the examination of gender differences in cognitive predictors of depression during the developmental period most closely associated with differential prevalence rates, and the focus on peer experiences that may contribute to adolescent depression. The study also offers promising evidence for a cognitive dissonance model, as well as preliminary support for a combined vulnerability-stress/dissonance hypothesis among adolescents that may help to elucidate the specificity between stressors and vulnerabilities that uniquely combine to create increased risk for depression. Future work is needed to examine peer rejection in the context of other interpersonal and peer stressors, including family conflict, romantic relationship difficulties, and deficits in friendship quality that may also contribute to adolescent depression. Developmental models that consider more distal predictors of peer rejection, depressogenic attributional style, and depression should also be examined in future work, as well as reciprocal, transactional associations between depression and subsequent interpersonal difficulties. This could be more easily accomplished in investigations involving a larger sample of adolescents than in this study. It would also be important for subsequent work to examine adolescents' perceptions of their peer experiences in addition to their actual rejection by peers, as rated by external, objective informants. Lastly, future work would also benefit from an exploration of these questions in samples of adolescents who are experiencing clinically significant levels of depressive symptoms; it should be noted that the CDI captures generalized subjective distress, as well as some symptoms specific to depression. The use of additional assessment instruments (e.g., diagnostic interviews) in additional contexts will be important to determine the generality of this model to clinically referred samples of youth.

The study of depression during this critical developmental period in adolescence addresses a public health phenomenon and offers a unique scientific opportunity. Not only might findings help explain dramatic increases in the prevalence of symptoms, but also results can elucidate factors that are related specifically to the onset of symptoms, and gender differences in the presentation of depression. Findings from this study support the need to study peer interactions that are especially relevant during this developmental period, and may provide a unique insight to the study of gender differences.

Results also offer new directions for cognitive intervention efforts among youth experiencing peer difficulties. Although interventions aimed at changing adolescents' overall reputations among peers may prove difficult, strategies directed towards modifying adolescents' attributions for negative peer experiences and the value placed on acceptance at the group level may help to protect rejected youth from experiencing depressive symptoms. Additionally, results have important implications for the inclusion of a thorough assessment of peer experiences when examining potential risk factors of depression among adolescent girls.

ACKNOWLEDGMENT

This work was supported, in part, by a grant from the National Institute of Mental Health (R01-MH59766) awarded to the first author.

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