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## **A MODEL OF BEHAVIORS, PEER RELATIONS AND DEPRESSION: PERCEIVED SOCIAL ACCEPTANCE AS A MEDIATOR AND THE DIVERGENCE OF PERCEPTIONS**

MELANIE J. ZIMMER-GEMBECK, TRACEY A. HUNTER AND RHIARNE PRONK  
*Griffith University – Gold Coast Campus*

A theoretically derived latent-variable structural model of children's (age 9 to 13,  $N = 334$ ) behaviors (physical and relational aggression, withdrawal, and prosocial behavior), like-dislike as rated by classmates (peer dislike), perceptions of social acceptance, and depressive symptoms was tested. Results provided evidence that children's perceived social acceptance is a direct correlate of depressive symptoms, and a mediator of the link between peer dislike and self-reported depressive symptoms. In models testing physical and relational aggression separately, children's aggression, withdrawal, and prosocial behavior were directly associated with peer dislike. Freeing paths to differ for boys and girls did not significantly improve the fit of any model. Additionally, the discrepancy between actual and perceived peer acceptance (e.g., children's under- or overestimation of acceptance) was considered. Children who perceived low acceptance or underestimated their acceptance were relatively more depressed, and perception, rather than actual dislike by classmates, was most directly linked to children's functioning.

The most common perspective on the link between mental health and peer relationships among young people has been one of "psychopathology as a consequence of disturbances in the peer system" (Rudolph & Asher, 2000, p. 159) or what Cole and his colleagues have called a "cause model" (Cole, Martin, Peeke, Serocynski, & Hoffman,

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Address correspondence to Melanie J. Zimmer-Gembeck, School of Psychology, Griffith University – Gold Coast, PMB 50 GCMC, QLD 9726, Australia; E-mail: m.zimmergembeck@griffith.edu.au.

1998; Hoffman, Cole, Martin, Tram, & Seroczynski, 2000). Hence, consistent with many theories (Alloy, 2001; Alloy, Abramson, & Francis, 1999; Beck, 1976) and in most previous studies, depressive symptoms have been expected to follow from problems in peer relationships (e.g., Boivin, Poulin, & Vitaro, 1994; Martin, Cole, Clausen, Logan, & Strosher, 2003; Panak & Garber, 1992). Many of these theories and empirical studies have also identified individual ways of thinking about social failure, success or competence as a mediator and/or moderator of the impact of stressful experiences (such as peer rejection) on mental health difficulties. In the current study, these theories and research were used to guide our testing of a model of depressive symptoms as an outcome of both classmate reports of whom they like or dislike (peer likeability) and children's own perceptions of their social acceptance. Perceived social acceptance was expected to mediate the association between classmate reports of likeability and depressive symptoms. In addition, children's own aggressive (relational and physical), withdrawn, and prosocial behaviors in the peer group were expected to partly account for children's likeability.

In recent years there have been some investigations of depressive symptoms as a correlate of both classmate reports of peer likeability and children's own perceptions of their relationships or competence with peers (Hoffman et al., 2000; Graham, Bellmore, & Juvonen, 2003). In addition, a few research groups have emphasized the importance of examining discrepancies between "real" difficulties in encounters with others and children's perceptions of their competence or difficulty (Cole et al., 1998; Graham, Bellmore, & Juvonen, 2003; Hoffman et al., 2000; Pomerantz & Rudolph, 2003). Hence, in the current study, we not only tested an extended path model of children's depressive symptoms that included behaviors with peers, peer likeability and children's perceptions of their peer relations, but we also expected that depressive symptoms would be associated with children's accuracy and discrepancy when reporting their social competence with peers compared to others' reports of likeability. More specifically, similar to the findings of Hoffman et al. (2000) we expected that children who underestimated their competence would be relatively more depressed, while children who were more accurate or overestimated their competencies would be relatively less depressed.

## **THEORETICAL FOUNDATIONS**

The path model tested in the current study was developed after consideration and consolidation of (a) models of individual differences in cognitions when people are faced with stress or failure (Alloy, 2001;

Rudolph & Asher, 2000), (b) the sociometer model (Leary & Downs, 1995; Leary, Schreindorfer, & Haupt, 1999), (c) the human motive to belong and avoid exclusion (the "need to belong"; Baumeister & Leary, 1995), and (d) a developmental psychopathology perspective (Parker, Rubin, Price, & DeRosier, 1995). Models of cognitions when people are faced with failure or stress focused our attention on the influence of individual differences in perceptions or attitudes on depression (Rudolph, Hammen, & Burge, 1997; see Rudolph & Asher, 2000 for a review). Sociometer theory and the motive to belong and avoid rejection pointed toward the importance of environmental cues of being ignored or rejected, and the associated perception of a lack of social belongingness as the correlates of a negative affective state. In sociometer theory, self-esteem is identified as the internal sociometer that signals the possibility/perception of exclusion and lack of acceptance. In addition, self-esteem and depressive affect have been found to strongly covary (Harter, 1999; Leary, 1990). This link between self-esteem and perceptions of social failure found in sociometer theory, and the empirical evidence that depressive affect will covary with self-esteem, suggests that depressive affect also will be associated with perceived social failures or problems. Being relatively more disliked by peers and actively rejected by peers have been associated with depressive symptomatology among children (Boivin et al., 1994; Harter & Whitesell, 1996). Hence, relatively lower acceptance or outright rejection by peers was expected to be associated with elevated depressive symptoms, but sociometer theory suggested that this association would be mediated by children's perceptions of their peer social acceptance. Finally, a developmental psychopathology perspective provided background on how chains of events link children's own behaviors with their social experience, cognition, and maladjustment. In this case we examined children's aggressive and prosocial behaviors as the first links in the path model.

### **DEPRESSIVE SYMPTOMS, ACCEPTANCE BY PEERS, AND SELF-PERCEIVED SOCIAL ACCEPTANCE**

Many children have negative interactions with peers. For those with significant problems in peer relationships, mental health may suffer in the short or long-term (Parker & Asher, 1987; Parker et al., 1995). In studies of peer relationships and mental health, a child's position within the peer group, such as being generally liked or disliked by others, has been captured by self-report or by asking children to rate how much they like or dislike each of their classmates (Asher & Coie, 1990; Cillessen & Bukowski, 2000). In cross-sectional (Altmann & Gotlib, 1988; Faust, Baum & Forehand, 1985; Oldenburg & Kerns, 1997; Rudolph, Hammen,

& Burge, 1997) and longitudinal research (French, Conrad, & Turner, 1995; Lochman & Wayland, 1994; Vernberg, 1990), depression has been one of the mental health outcomes linked to these classmate reports of dislike and rejection by peers.

Although actual likeability by one's peers has been correlated with children's mental health, the important contribution of perceived social competence and acceptance by others, or, more generally, children's cognitive representations of their interpersonal relationships (also referred to as internal working models or interpersonal/relational schemas, see Rudolph & Clark, 2001) have been identified as the more direct cause of depressive symptoms in cognitive vulnerability models (see also Beck's Cognitive Model of Depression, 1976, and Cole's competence-based theory of depression, Cole, 1991; Cole, Martin, & Powers, 1997). The importance of self-perceived competence has been supported by past research (Caldwell, Rudolph, Troop-Gordon, & Kim, 2004; Cole et al., 1998; Martin et al., 2003; Rudolph et al., 1997). For example, in longitudinal studies of children at the transition to adolescence, relatively lower perceptions of social competence were associated with later depression (Cole, Martin, Powers, & Truglio, 1996; Hoffman et al., 2000). In the current study, perception of social acceptance by peers was expected to be the bridge between likeability as rated by peers and depressive symptoms. Hence, it was expected that children would need to be aware of their interpersonal failure with peers in order for actual peer problems to covary with depressive symptoms, but, alternatively, negative self-perceptions—even in the face of being relatively accepted by peers—may also be predictive of depressive symptoms.

#### AWARENESS OF OTHERS' VIEWS AND DISCREPANCY

Awareness of one's problems or perception of a problem when none exists seems to be a critical component in this process. With regard to theory, sociometer theory suggests that it is perceptions that are important, but the theory does not explicitly discuss consistency or discrepancy between actual and perceived social rejection, and exclusion. Individuals are expected to monitor their environments for signs of exclusion or disapproval, but it is unclear whether there are individual differences in the accuracy of this monitoring system (Leary & Downs, 1995). Yet, other components of the theory do suggest that discrepancy might occur when actual acceptance is compared to perceived acceptance. For example, the perception of actual or anticipated/possible disapproval, rejection or exclusion is emphasized. Hence, it might be the case that discrepancies will emerge when no actual rejection is occurring, but children are *anticipating or expecting* rejection.

In the empirical literature, there have been few studies that have had the opportunity to compare children's self-reports of acceptance to the reports of others. Yet, one group of researchers has concluded that it is self-views that are most predictive of depression (Graham et al., 2003). This has been extended to a focus on errors that children may make in interpreting and perceiving others' views of them. In a handful of studies, erroneous perceptions (i.e., perceptions that are discrepant or less consistent from those of others) have been found to be associated with depression (Hoffman et al., 2000; Graham et al., 2003; Graham & Juvonen, 1998).

## CHILDREN'S BEHAVIORS WITH PEERS AND PEER PROBLEMS

A developmental psychopathology perspective has emphasized the potential for the influence of individual behaviors and environmental experiences on mental health (Rutter et al., 1997). In studies of peer problems and children's internalizing symptoms or externalizing behaviors, some of the key child characteristics of interest have been children's behaviors when interacting with peers. From middle childhood, the qualities of children's peer relations have been associated with how they behave in these interactions. For example, children's aggressive and socially withdrawn behaviors have been identified as precursors of peer rejection (Coie, Dodge, & Kupersmidt, 1990; Zimmer-Gembeck, Geiger, & Crick, 2005), and, in a recent study, it was important to consider individual factors and environmental factors, such as rejection by peers, as parts of a pathway to maladjustment in middle childhood (e.g., Ladd & Troop-Gordon, 2003).

## PHYSICAL AND RELATIONAL AGGRESSION

Physical aggression has been described as the best predictor of peer relationship problems in childhood (Coie et al., 1990). However, many studies examining the link between aggression and peer problems have only considered overt forms of aggression (i.e., physical and verbal), considered more salient for boys than for girls by many researchers (Crick & Grotpeter, 1995; Geiger, Zimmer-Gembeck, & Crick, 2004). Considering only physical aggression can be limiting primarily because few girls engage in these behaviors. Hence, we examined physical as well as relational aggression, a form of aggression that has been found to be more common than overt aggression in girls (Crick & Grotpeter, 1995).

Relational aggression involves harming others through damage to peer relationships for the purpose of controlling the behavior of others, such as using social exclusion or threat of withdrawal of affiliation. Some researchers have found that in late childhood and early adoles-

cence, girls exhibit higher rates of relational aggression compared to boys (Bjorkqvist, 1994; Crick, 1997; Crick & Grotpeter, 1995). Yet, relational aggression has been associated with peer rejection in girls and boys (Zimmer-Gembeck et al., 2005). These studies have highlighted the importance of including a range of negative behaviors when predicting peer difficulties, so that findings have the potential to be more representative of both girls and boys.

### SOCIAL WITHDRAWAL

Social withdrawal can also be problematic, with peer relationship problems and subsequent internalizing problems identified as two of the more serious negative outcomes of social withdrawal (Hymel, Rubin, Rowden, & LeMare, 1990; Rubin, Chen, & Hymel, 1993). Yet, shyness has not always been associated with peer rejection (Coie, Dodge, & Coppotelli, 1982), despite this type of behavior often featuring in measures of social withdrawal. This highlights the need for research to outline more specifically the type of social withdrawal associated with peer problems (Parker & Asher, 1987). Recent research has addressed this and identified two types of social withdrawal, including inhibited/wary and self-conscious/anxious (Younger, Schneider, Wadeson, Guiguis, & Bergeron, 2000). Inhibited/wary involves an avoidance of others and more interest in playing with objects than peers. Self-conscious/anxious involves sensitivity to social evaluation by others. The inhibited/wary subtype has been more predictive of peer problems (see Rubin et al., 1993; Younger et al., 2000) and was assessed in the current study.

### PROSOCIAL BEHAVIOR

From middle childhood, peer relationships have been found to be associated with children's abilities to engage in positive, prosocial behaviors when interacting with others, such as being fair and sharing (Foster, 1989). Acceptance by peers has been found to shift from being influenced by external attributes (such as material possessions) in early childhood, to more interpersonal qualities in middle childhood (Rogosch & Newcomb, 1989). Others (Crick, 1996; Zimmer-Gembeck et al., 2005) have also reported that prosocial behavior is a correlate of peer acceptance. The amount of acceptance received from peers can be at least partially determined by a child's positive, as well as negative, conduct within the school environment. Assessments of children's prosocial behavior, as well as aggression and inhibited/wary behaviors when interacting with peers, were included in the current study.

## CHILDREN'S SEX AS A MODERATOR

A moderating role of a child's sex was predicted. Crick and Zahn-Waxler (2003) highlight that studies of psychopathology must consider the possible moderating role of sex in order to increase the ability to accurately identify developmental linkages and pathways. For example, by adolescence, females have higher rates of depression than males, and theories link these differences to females' greater exposure to interpersonal stress and/or elevated reactivity to these stressors when they occur (e.g., Crick & Zahn-Waxler, 2003; Nolen-Hoeksema, 2001; Rudolph, 2002). In this study, we expected that participant sex would also moderate the associations between peer dislike and social cognition, and between social cognition and depressive symptoms. Additionally, although the evidence is mixed (Crick, 1996; Zimmer-Gembeck et al., 2005), we hypothesized stronger associations between girls' peer rejection and their prosocial behavior, withdrawal, and physical aggression when compared to boys, and a stronger association between relational aggression and peer rejection among boys than girls.

## STUDY AIMS

There have been several studies of portions of the model tested here, but there have been few previous investigations of children's likeability as reported by classmates and children's self-perceptions of their peer relationships *as parts of a pathway* from aggressive, withdrawn and prosocial behaviors to depressive symptoms (see Ladd & Troop-Gordon, 2003, for an exception). The aim of the current study was to test this integrative model. Children who are relatively more disliked by their peers ("peer dislike") were expected to have higher levels of depressive symptoms. However, this association was expected to be indirect rather than direct. The association between peer dislike and depressive symptoms was expected to be indirect due to a full mediating role of children's perceptions of their social acceptance by peers. Additionally, peer dislike was expected to be directly predicted by children's aggressive, withdrawn, and prosocial behaviors as nominated by their peers, and child sex was expected to moderate model paths.

In a final analysis, depressive symptoms were correlated with a measure of the discrepancy (and, conversely, the consistency) between classmate reports of peer likeability and children's self-perceived peer acceptance. We expected that children's erroneous beliefs about their social acceptance would be linked to higher levels of depressive symptoms, and this would be particularly true when children's self-perceptions

were either consistent with the negative views of others or underestimated the views of others.

## METHOD

### PARTICIPANTS

A total of 350 students from three Queensland, Australia state primary schools (18 classrooms) had parental consent to participate in the study (consent rate was just over 70%). Participants ( $n = 16$ ) who did not answer more than 10% of items on any one of the measures were excluded from all analyses resulting in a final sample size of 334. Participants were in grades 5, 6 and 7; age ranged from 9 to 13 ( $M = 11$ ,  $SD = .9$ ). Approximately equal numbers of males and females participated (48% and 52%, respectively).

### PROCEDURE

After approval of the study by human subject review boards and parents, questionnaires were administered to all participants with parental consent within their regular classrooms during school hours. Participants received a token of appreciation at the time of testing (candy and a pencil). Questionnaires were read aloud. Individual debriefing was made available to students by the researchers following the data collection and a parent was notified if his/her child scored above 20 (i.e., scored in the clinical range) on the measure of depressive symptoms.

### MEASURES

*Depressive Symptoms.* The Children's Depression Inventory (CDI) was used to assess depressive symptoms. The CDI is a 27-item self-report questionnaire designed to measure the presence and severity of a wide range of depressive symptoms. Respondents were required to choose one of three statements. An overall score was obtained by summing responses to all items. Possible scores range from a minimum of 0 to a maximum of 54, with higher scores reflecting more severe depressive symptoms. This scale had high internal consistency,  $\alpha = .88$ .

*Peer Dislike.* Children rated each classmate on a 5-point scale ranging from 1 ("do not like at all"), to 5 ("like a lot"). On average, classrooms had 20 students, so each child received, on average, 19 ratings. Scores were reversed so that higher scores indicated more peer dislike. We refer to this measure as "peer dislike" for brevity. Ratings for each child were averaged so that each child received a continuous score that ranged from

1 to 5. The use of this type of rating scale has been encouraged (Hymel et al., 1990), as it obtains information about how much each child is liked or disliked by classmates *in general*.<sup>1</sup> Upon further examination, peer dislike did reflect the general perspective of all other children in a classroom and was based on a range of ratings from others. Few children had skewed distributions of scores. Most children received at least some negative and some positive ratings with 83% of participants receiving at least one rating of "do not like at all" and 92% of kids receiving at least one rating of "like a lot." Most children also received the full range of possible ratings (1 to 5). On average, 15% ( $SD = 14\%$ ) of an individual child's ratings were "do not like at all," while 20% ( $SD = 13\%$ ) were ratings of "like a lot." Only 16 children (5%) had a range of ratings that was somewhat restricted—with one child receiving only the two highest responses (like and like a lot), four children receiving the lowest three rating options, two children receiving only the three middle range responses, and nine children receiving only the highest three response options. Hence, when a child did not receive all possible ratings, she/he was more likely to be one of the few children liked by everyone.

*Self-Perceived Social Acceptance by Peers.* The Perceived Social Acceptance scale of The Self-Perception Profile for Children (Harter, 1985) was used to assess children's perceptions of their peer social acceptance. The social acceptance subscale included 6 items (Harter, 1999). Each child was asked to select one of two opposing statements that is most like him/her and rates whether this statement is "sort of true for me" or "really true for me." An example item is: "some kids find it hard to make friends BUT other kids find it pretty easy to make friends." Item responses were averaged to form social acceptance scores (range 1 to 4). Higher scores reflect higher self-perceived social acceptance by peers. Social acceptance had high internal reliability in the current study,  $\alpha = .82$ .

*Children's Social Behaviors.* Children nominated up to three classmates who best fit each of a series of 12 behavioral descriptors with three items each assessing children's physical aggression, relational aggression, prosocial behavior, and inhibition with peers. Items from the Children's

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1. All analyses were repeated using a measure based on the number of ratings of 1 (*do not like at all*) each child received. This measure was similar to the use of peer nominations when children are asked to directly nominate/identify those children they do not like (or do not like to play with). This nomination-based measure has been referred to as 'peer rejection.' However, since results using this peer rejection measure were generally similar to those reported here, we report analyses using the average rating scores so that all of the ratings gathered could be used in the final scores and because the ratings measure better met the distributional assumptions of structural equation modeling.

Social Behavior Scale (Crick & Grotpeter, 1995) measured relational and physical aggression, and prosocial behavior (Crick, 1996). Three items from the Inhibited/Wary subscale of social withdrawal assess withdrawn behavior in the peer group (Younger et al., 2000). A sample item from the physical aggression subscale: "This child hits or kicks other kids." A sample item from the relational aggression subscale: "This child spreads rumors or gossips about some classmates." A sample item from the prosocial subscale: "This child is helpful to other kids." A sample item from the inhibited subscale: "This child stays by him/herself most of the time." Nominations for each item were standardized within classroom to adjust for unequal class sizes and appropriate items were summed to yield subscale scores. These summed scores were used for descriptive statistics and regression; items were used as indicators of latent constructs of children's behaviors for fitting of structural equation models. Reliability analyses of the three items on each subscale showed good interitem correlations for all measures, physical aggression  $\alpha = .96$ , relational aggression  $\alpha = .77$ , prosocial  $\alpha = .92$ , and inhibited/wary  $\alpha = .84$ . We refer to the Inhibited/Wary subscale as "withdrawal" in the following sections.

#### OVERVIEW OF THE ANALYTIC STRATEGY

Structural equation modeling (SEM; see Kaplan, 2000) was completed using maximum likelihood estimation with AMOS software (SmallWaters Corporation, 1999). Model fit was assessed with commonly available fit indices, including the  $\chi^2$  test statistic and the Comparative Fit Index (CFI; Bentler & Bonett, 1980). These fit indices compared the specified model to a model with complete independence. The CFI is more acceptable as it approaches values of 1 and values over .9 are considered indicative of good model fit. The Root Mean Square Error of Approximation (RMSEA; Browne & Cudeck, 1993) also provided an estimate of error due to approximate fit of the model. RMSEA values below .05 are considered good, between .05 and .08 are considered indicative of fair fit, and between .08 and .10 are considered an indication of mediocre fit (Kaplan, 2000). In addition, we provide standard errors of estimates and 95% confidence intervals when appropriate.

The model included three measured indicators (one for each item) for each type of child behavior and single composite score indicators for other variables. In the SEM literature decisions about the number of measured indicators of latent constructs can be difficult and is referred to as item parceling (Landis, Beal, & Tesluk, 2000; Little, Cunningham, Shahar, & Widaman, 2002; Hall, Snell, & Foust, 1999). It has been recom-

mended that, when constructing latent variables in structural equation modeling, variables have at least three measured indicators to ensure that models are not underidentified or overidentified (Little, Cunningham, Shahar, & Widaman, 2002). In the case of measures of children's behaviors with peers, all constructs were assessed with three items making it a straightforward decision to use the three items as measured indicators of latent constructs. Other measures also were designed as one-dimensional constructs, but had many more than three items or were based on a single item rated by different sets of children. In addition, analyses comparing classmate and self reports relied on composite scores. Because of this, we used single composite scores (i.e., measured variables) as other model components in order to reduce the modeling decisions that would be particular to this study and, simultaneously, increase the ability to compare results between the different analyses conducted within this current study, and to compare the current results to previous research findings.

We conducted SEM using a sequential process (McDonald & Ho, 2002). The first step was to determine the fit of the measurement model.<sup>2</sup> The second step was to fit the structural model including all aspects of the measurement model plus hypothesized covariances and directional paths. We used these steps to draw conclusions regarding the fit of the hypothesized paths between variables apart from the fit of the measurement model.

Based on procedures described by Holmbeck (1997) and Shrout and Bolger (2002), we first fit two models to determine if social acceptance mediated the association between peer dislike and depressive symptoms. The first model tested included all hypothesized paths plus a direct path from peer dislike to depressive symptoms (see Figure 1). Self-perceived social acceptance was removed from the model prior to fitting Model 2. In combination, these two models allowed us to make a preliminary determination about the mediational role of social accep-

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2. All variables had somewhat skewed distributions; all departed significantly from normal. However, the distributions of the social behaviors were most problematic. To improve distributions of each item measuring children's behaviors, we used a log<sub>10</sub> transformation after adding a constant. Transformations resulted in distributions that were much closer to, and often did not significantly differ from, normality. Others have reported robustness of maximum likelihood estimation methods (McDonald & Ho, 2002) and that appeared to be the case in the current study, with the results of maximum likelihood estimation and fit indices of the measurement model essentially the same with and without transformed data. Hence, results using untransformed variables are reported. Other results are available from the authors upon request. Asymptotically distribution free estimation was also conducted, but the sample size was insufficient to be confident in the results (McDonald & Ho, 2002).

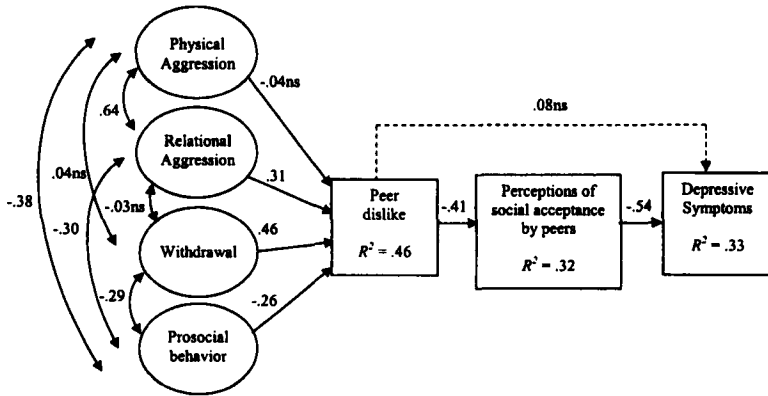


FIGURE 1. Standardized path coefficients estimated for the one-group mediation model of children's peer relationships and depressive symptoms. All paths were significantly different from 0 with  $p < .01$  except where indicated. ns = not significant ( $p > .05$ ). Latent constructs are identified with circles. Measured (manifest) variables are shown as squares.

tance. In addition, before concluding that social acceptance played a full mediational role, the direct path from peer dislike to depressive symptoms was expected to be significantly larger than 0 in Model 2 and *not* significantly different from 0 in Model 1. We also used bootstrapping techniques (Shrout & Bolger, 2002) to estimate the standard errors and 95% confidence intervals for all covariances, and direct and indirect paths in the model. All bootstrapped standard errors and confidence intervals were obtained with 1000 iterations of 200 participants each. These samples were randomly selected with replacement (see Shrout & Bolger, 2002). These additional estimates were used to draw more firm conclusions about full, partial, or no mediational role of social acceptance.

Finally, the moderating role of children's sex was examined by estimating a multigroup model ("2-group": boy, girl) following the procedure for qualitative moderators described by Jaccard and Wan (1996, p. 23). To assess moderation, we compared the fit of this 2-group model to a model with directional paths constrained to be equal for boys and girls; it was expected that the 2-group model would fit the data significantly better, as determined by the  $\chi^2$ -difference test.

## RESULTS

### DESCRIPTIVE STATISTICS, ZERO-ORDER CORRELATIONS, AND COMPARISONS OF BOYS AND GIRLS

Correlations between all measured variables were examined and data from boys and girls were compared (see Table 1). Correlations were similar to findings in structural models, as reported in the following sections. As shown in Table 1, we also compared the depressive symptoms, peer relationships, and behaviors of boys and girls. Boys and girls had similar levels of depressive symptoms, social acceptance, relational aggression, and withdrawn behavior. Boys were more physically aggressive than girls, whereas girls were more prosocial than boys.

### MEASUREMENT MODEL: CHILDREN'S BEHAVIORS WITH PEERS

The measurement model fit the data adequately,  $\chi^2(48, N = 334) = 142.3$ ,  $p < .01$ , CFI = .97, RMSEA = .077. In this model, covariances between all latent factors were freed and covariances between errors were fixed to 0. All but 2 factor loadings were .79 or above. The two items with loadings under .79 were removed, but the model fit and estimates were similar (i.e., increase of .01 for CFI, and no change in the RMSEA). Given this fit of the measurement model, we proceeded to fitting the structural models.

### STRUCTURAL MODEL

*Perceived Social Acceptance as a Mediator.* Figure 1 shows the standardized path estimates when Model 1 was fit to the data. Table 2 reports unstandardized and standardized direct path estimates, standard errors and 95% confidence intervals of estimates. The model had an adequate fit to the data,  $\chi^2(80, N = 334) = 231.5$ ,  $p < .01$ , CFI = .95, RMSEA = .075, and a significantly improved fit when compared to the measurement model,  $\chi^2$ -difference(32) = 89.2,  $p < .05$ .

As can be seen in Figure 1, most correlations between children's behaviors were significant,  $p < .01$ , and, with the exception of physical aggression, all behaviors were directly and significantly associated with peer dislike, all  $p < .01$ . The four social behaviors accounted for 46% of the variance in peer dislike. In turn, there was a direct and significant association between peer dislike and self-perceived social acceptance,  $p < .01$ . Additionally, there was a direct and significant association between social acceptance and depressive symptoms,  $p < .01$ , and an *indirect* association between peer dislike and depressive symptoms via social accep-

TABLE 1. Means, Standard Deviations and Correlations between all Measured Variables (N = 334, 161 males, 173 females)

	1	2	3	4	5	6	7
1. Depressive symptoms	—						
2. Perceived social acceptance	-.57**	—					
3. Peer dislike (CR)	.30**	-.41**	—				
4. Physical aggression (CR)	.09	.00	.28**	—			
5. Relational aggression (CR)	.12*	.00	.29**	.50**	—		
6. Prosocial behavior (CR)	-.27**	.29**	-.46**	-.36**	-.19**	—	
7. Withdrawal (CR)	.22**	-.46**	.46**	.01	-.08	-.26**	—
All participants, M (SD)	8.8 (7.3)	3.1 (.73)	2.8 (.59)	-.02 (.93)	-.01 (.80)	.01 (.91)	-.01 (.85)
Males, M (SD)	8.9 (6.6)	3.1 (.69)	2.9 (.60)	.37 (1.14)	-.05 (.70)	-.38 (.62)	-.01 (.90)
Females, M (SD)	8.7 (7.9)	3.1 (.76)	2.7 (.58)	-.37 (.44)	.03 (.89)	.38 (1.00)	.01 (.80)
Gender comparison: F(1,332)	.08	.02	2.6	63.7**	.84	68.6**	.01

\*p < .05. \*\*p < .01. CR = Classmate report.

TABLE 2. Path Estimates, Standard Errors and 95% Confidence Intervals for the Hypothesized Model (Model 1, see Figure 1; N = 334)

Model paths	Unstandardized			Standardized		
	Estimate (SE)	Lower 95% CI	Upper 95% CI	Estimate (SE)	Lower 95% CI	Upper 95% CI
<b>Covariance/correlations</b>						
Physical aggression, Relational aggression*	.44 (.07)	.32	.61	.64 (.06)	.50	.76
Physical aggression, Prosocial behavior*	-.29 (.04)	-.38	-.22	-.38 (.03)	-.44	-.32
Physical aggression, Withdrawal	.03 (.06)	-.08	.18	.04 (.08)	-.11	.22
Relational aggression, Prosocial behavior*	-.20 (.04)	-.28	-.13	-.30 (.05)	-.39	-.19
Relational aggression, Withdrawal	-.02 (.05)	-.11	.07	-.03 (.07)	-.16	.10
Prosocial behavior, Withdrawal*	-.21 (.04)	-.30	-.14	-.29 (.04)	-.36	-.20
<b>Directional paths</b>						
Physical aggression → Peer dislike	-.03 (.04)	-.11	.06	-.04 (.07)	-.17	.09
Relational aggression → Peer dislike*	.23 (.05)	.15	.39	.31 (.06)	.19	.46
Prosocial behavior → Peer dislike*	-.18 (.04)	-.26	-.10	-.26 (.05)	-.35	-.15
Withdrawal → Peer dislike*	.31 (.04)	.23	.40	.46 (.05)	.35	.56
Peer dislike → Depressive symptoms	.93 (.59)	-.11	2.17	.08 (.05)	-.01	.17
Peer dislike → Perceived social acceptance*	-.51 (.06)	-.39	-.39	-.41 (.05)	-.51	-.32
Perceived social acceptance SA → Depressive symptoms*	-5.37 (.54)	-6.40	-4.24	-.54 (.05)	-.62	-.44

Note. CI = Confidence interval. \*p < .01.

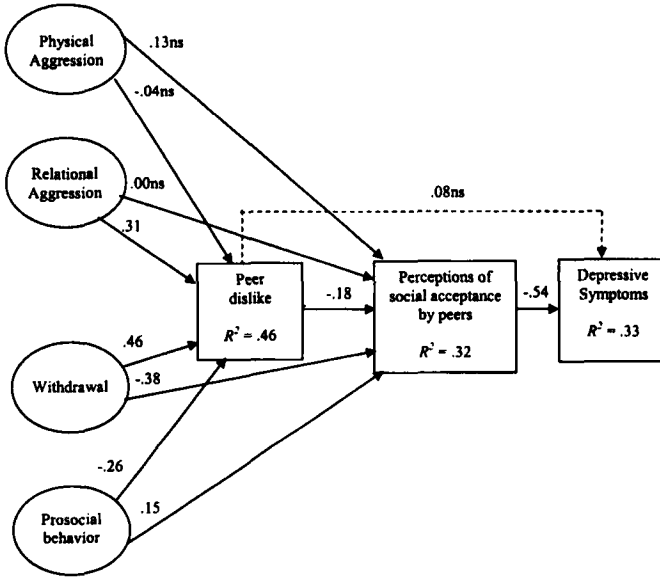


FIGURE 2. Standardized path coefficients estimated for the one-group mediation model of children's peer relationships and depressive symptoms with added paths from children's behaviors to social acceptance. All paths were significantly different from 0 with  $p < .01$  except where indicated. *ns* = not significant ( $p > .05$ ). Latent constructs are identified with circles. Measured (manifest) variables are shown as squares. Paths between children's behaviors were freed but are not shown; see Figure 1 for these path estimates.

tance that was significantly larger than 0, standardized path estimate = .22,  $p < .05$ , 95% CI .16 to .29. Also, as expected, the *direct* association between peer dislike and depressive symptoms was small in magnitude and not significant, standardized path estimate = .08,  $p > .05$ , 95% CI -.01 to .17. In sum, these analyses provide support for most linkages in the model and the hypothesis that social acceptance would mediate the link between peer dislike and depressive symptoms.

Next, Model 2 was fit to test the *direct* path from peer dislike to depressive symptoms after removal of social acceptance from the model (see Cole & Maxwell, 2003; Shrout & Bolger, 2002). This final condition of mediation was supported; there was a direct effect of peer dislike on depressive symptoms when social acceptance was *not* included as a mediator in the model, standardized path estimate = .30,  $p < .01$ , 95% CI .21 to .41. Hence, the condition of mediation that the A  $\rightarrow$  C (i.e., peer dislike  $\rightarrow$  depressive symptoms) link is significant when B (i.e., social acceptance) is not included in the model was met (Holmbeck, 1997).

*Direct Paths From Children's Social Behaviors to Social Acceptance.* Although not hypothesized, direct paths from children's social behaviors to self-perceived social acceptance were tested (see Table 3 and Figure 2). This model (Model 3) had an adequate fit to the data,  $\chi^2(76, N = 334) = 177.8, p < .01, CFI = .97, RMSEA = .063$ , and a significantly better fit to the data when compared to the hypothesized model reported in Table 2,  $\chi^2\text{-difference}(4) = 53.7, p < .01$ . This improvement in fit was primarily due to a significant direct path from children's withdrawal to social acceptance,  $p < .01$ . Not anticipated, the direct path from prosocial behavior to self-perceived social acceptance also was significant,  $p < .01$ , but small in magnitude with a 95% confidence interval that had a lower bound close to 0, 95% CI .06 to .26. As hypothesized, the direct paths from physical and relational aggression to social acceptance were not significant.

#### EXAMINATION OF SUPPRESSION—PHYSICAL AND RELATIONAL AGGRESSION

We had some concerns about suppression in SEM given (a) the fairly high covariance between latent constructs of physical and relational aggression, (b) the significant zero-order associations of peer dislike with both physical and relational aggression (summary scores, see Table 1), (c) the direct effect of relational aggression, but not physical aggression, on peer dislike in SEM, and (d) the change in sign of the association between physical aggression and peer dislike from positive in the zero-order correlation to negative in SEM. This made us uncertain whether direct effects of each form of aggression on peer dislike would be similar when the other form was removed from the model. To examine this, we estimated two modified versions of the above model (Model 3). Model 3a included physical aggression, but not relational. Model 3b included relational aggression, but not physical.<sup>3</sup>

*Model 3a—Physical Aggression Without Relational.* The fit of this model was good,  $\chi^2(45, N = 334) = 86.0, p < .01, CFI = .99, RMSEA = .052$ . Of most

3. We also estimated an alternative model with a higher order structure for aggression. In this model, we included a second order latent construct labeled 'aggression' that was indicated by the two latent constructs, physical aggression and relational aggression (with 3 measured indicators each). This model also fit the data well,  $\chi^2(79, N = 334) = 189.5, p < .01, CFI = .97, RMSEA = .065$ . The direct association between aggression and peer rejection was moderate in magnitude and significantly different from 0,  $.28, p < .01$ . The direct effect of aggression on perceived social acceptance was also significant,  $.15, p < .05$ . We selected to present separate models for physical aggression and relational aggression because of gender differences in associations *between* these two latent forms of aggression,  $r = .93$  for boys and  $r = .55$  for girls. This suggested that these forms of aggression may be best examined separately, especially as gender differences were of interest in the current study.

TABLE 3. Path Estimates, Standard Errors and 95% Confidence Intervals for the Hypothesized Model with Additional Direct Paths from Children's Behaviors to Social Acceptance (Model 3; N = 334)

Model paths	Unstandardized			Standardized		
	Estimate (SE)	Lower 95% CI	Upper 95% CI	Estimate (SE)	Lower 95% CI	Upper 95% CI
<b>Covariance/correlations</b>						
<b>Directional paths</b>						
Children's behaviors → Peer dislike						
Physical aggression → Perceived social acceptance	.11 (.06)	-.01	.25	.13 (.08)	-.01	.30
Relational aggression → Perceived social acceptance	.00 (.08)	-.17	.15	.00 (.09)	-.17	.16
Prosocial behavior → Perceived social acceptance*	.13 (.04)	.05	.23	.15 (.05)	.06	.26
Withdrawal → Perceived social acceptance*	-.31 (.06)	-.44	-.19	-.38 (.07)	-.50	-.23
Peer dislike → Depressive symptoms	.93 (.59)	-.11	2.17	.08 (.05)	-.01	.17
Peer dislike → Perceived social acceptance*	-.22 (.09)	-.41	-.06	-.18 (.07)	-.33	-.05
Perceived social acceptance → Depressive symptoms*	-5.37 (.54)	-6.40	-4.24	-.54 (.05)	-.62	-.44

See Table 2

See Table 2

Note. CI = Confidence interval. \*  $p < .01$ .

interest here and in contrast to Model 3, the standardized direct effect of physical aggression on peer dislike was significant and positive, standardized path estimate = .15,  $p < .05$ . Hence, relational aggression seemed to have been suppressing the direct association between physical aggression and peer dislike in Model 3. Associations between physical aggression and other constructs were very similar when Model 3 and Model 3a were compared (standardized path estimate change of  $< .01$  in all cases). Also, other associations were similar in Model 3 compared to Model 3a.

*Model 3b—Relational Aggression Without Physical Aggression.* The fit of this model was adequate,  $\chi^2(45, N = 334) = 118.2, p < .01, CFI = .96, RMSEA = .070$ . The standardized direct association between relational aggression and peer dislike was significant and positive, standardized path coefficient = .21,  $p < .01$ . Associations between relational aggression and other constructs were similar when Model 3 and Model 3b were compared (standardized path estimate change of  $< .01$ ), with the exception of the direct association between relational aggression and self-perceived social acceptance, changing from a nonsignificant .00 in Model 3 to a nonsignificant .07 in Model 3b.

#### PARTICIPANT SEX AS A MODERATOR: TESTING THE TWO-GROUP (BOY, GIRL) MODEL

Two 2-group (boy/girl) models were estimated to examine hypotheses about participant sex as a moderator of directional links in the model. One 2-group model included physical aggression, but not relational. The second 2-group model included relational aggression, but not physical. The fit of each 2-group model to the data was good, physical aggression model,  $\chi^2(90, N = 334) = 148.0, p < .05, CFI = .98, RMSEA = .044$ , and relational aggression model,  $\chi^2(90, N = 334) = 151.2, p < .05, CFI = .97, RMSEA = .045$ . In each case, however, the fit of the 2-group model was not significantly different from the fit of a model with all unstandardized directional effects constrained to equality for boys and girls, physical aggression model  $\chi^2$ -difference(9) = 15.1 and relational aggression model  $\chi^2$ -difference(9) = 15.4, both  $p > .05$ . In contrast to our hypothesis, allowing estimation of different directional paths for boys and girls did not improve the fit of these models.

#### CHILDREN'S DISCREPANT VS. ACCURATE BELIEFS ABOUT THEIR PEER ACCEPTANCE

To examine whether discrepant vs. relatively more accurate beliefs about peer acceptance are associated with children's depressive symp-

toms, we followed a technique reported by Hoffman et al. (2000). A continuous measure of discrepancy/accuracy between classmate reports of peer dislike and children's self-perceived social acceptance by peers was created by regressing children's self-perceptions of their peer acceptance on classmate reports of peer likeability (reversed peer dislike) to obtain an estimate of the residual for each child. We multiplied some residual values by  $-1$  so that values were lower when children overestimated their peer acceptance and higher when children underestimated their peer acceptance. Moderate values reflected little discrepancy between children's self-perceptions of their acceptance and their actual acceptance by classmates. Because these scores were low for overestimation, moderate for agreement, and high for underestimation, we also squared the residual to examine whether depressive symptoms had a curvilinear association with this measure. Regressing depressive symptoms on the squared discrepancy score determined whether children who were more accurate in their perceptions of their acceptance had lower levels of depressive symptoms than underestimators and overestimators (i.e., an inverted-U shaped association).

Results showed that there was a significant linear association between depressive symptoms and discrepancy score,  $\beta = .49, p < .001, F(1, 332) = 104.3$ . This showed that children who were relatively more likely to underestimate their acceptance also had more depressive symptoms. In addition, when the squared discrepancy score was added to the model, this linear association remained and there was a significant curvilinear association between depressive symptoms and discrepancy score,  $\beta = .17, p < .01, F(2, 331) = 59.3$ ; depressive symptoms were relatively low and similar for overestimators and children with relatively accurate perceptions of their peer acceptance (average CDI scores of about 5 to 8, depending on the discrepancy cut-off selected), but for children with a moderate or high level of underestimation of acceptance, the regression line curved sharply upward indicating higher levels of depressive symptoms (average CDI score of 15 to 16, depending on the discrepancy cut-off selected). These associations held and were slightly weaker ( $\beta = .43$  and  $.12$ , respectively) after adjusting for children's aggressive, withdrawn, and prosocial behaviors, and child sex.

To further examine this association, we also followed procedures of Graham et al. (2003). Four groups of children were formed based on classmate reports of likeability and self-perceived social acceptance. Children were classified as low in both if they scored in the lowest 25th percentile on each measure (below 2.8515 on peer likeability and below 2.4999 on perceived social acceptance,  $n = 33, 10\%$ ). Children were classified as low on one or the other if only one score fell below the 25th percentile (low peer likeability, high perceptions,  $n = 50, 15\%$ ; high peer

likeability, low perceptions,  $n = 37$ , 11%). All other children ( $n = 214$ , 64%) were classified as high in both peer likeability and self-perceived social acceptance. The depressive symptoms of these four groups were compared with analysis of variance and posthoc pairwise comparisons.

On average, there was a significant difference in depressive symptoms between the four groups,  $F(3, 330) = 38.6$ ,  $p < .001$ . Self-perceptions of peer acceptance differentiated children with higher or lower levels of depressive symptoms to a greater extent than peer likeability. Posthoc pairwise comparisons revealed that each of the two groups with the highest levels of depressive symptoms had low self-perceptions of their acceptance and did not differ in depressive symptoms from each other; high peer likeability  $M = 15.4$ ,  $SD = 7.4$ ; low peer likeability  $M = 16.6$ ,  $SD = 9.0$ . The other two groups with higher self-perceptions of acceptance and either high peer likeability or low peer likeability had lower mean levels of depressive symptoms of 6.7 ( $SD = 5.7$ ) and 7.9 ( $SD = 5.9$ ), respectively, and did not differ.

## DISCUSSION

The primary aim of the current study was to test an extended model of children's behaviors and depressive symptoms situated in the peer experiences of children ages 9 to 13 years. In this model, children's social behaviors with peers (physical aggression, relational aggression, withdrawal, and prosocial behavior), peer problems in the form of dislike by peers, and self-perceptions of social acceptance by peers were expected to be parts of a correlational model predicting depressive symptoms. We expected that children's perceptions of acceptance would mediate the association between peer dislike and depressive symptomatology. We also expected that children's behaviors would meaningfully account for the existence of peer dislike among children, and sex differences in directional paths were expected. Finally, children who underestimated their actual peer acceptance were expected to have more depressive symptoms relative to other children.

### SELF-PERCEPTIONS OF SOCIAL ACCEPTANCE AS A MEDIATOR OF THE PEER DISLIKE-DEPRESSION LINK

Overall, the best fitting model in the current study supports the role of children's perceptions of their peer acceptance as a direct correlate of depressive symptoms. Among children age 9 to 13 years, perception of social acceptance by peers played a mediating role in the link between peer dislike and depressive symptoms. In other words, children who are more disliked by peers also have more negative perceptions of their so-

cial acceptance. In turn, these negative perceptions of acceptance are associated with having relatively more depressive symptoms. This was found for both girls and boys.

Children's self-perceptions in the peer domain met all the criteria of a full mediator of the association between children's dislike by peers and depressive symptoms (Holmbeck, 1997; Shrout & Bolger, 2002). Hence, a child's interpretation of his/her peer social environment seems pivotal in the occurrence of depressive symptoms in the face of problem peer relations. These results build on past studies, which have included reports of the mediating effect of perceptions of social support or negative perceptions of relationships for explaining the link between environmental stress and depression (Cole et al., 1996; Harter, Waters, & Whitesell, 1998; Rudolph et al., 1997; Tram & Cole, 2000).

The finding of a mediational role of children's perceptions supports a key tenet of Sociometer theory (Baumeister & Leary, 1995; Leary et al., 1999). In this theory, it has been proposed that individuals without a sense of belonging are likely to have more negative functioning in the form of low self-esteem and depressive symptoms. Our finding of a mediational role of children's self-perceptions of social acceptance by peers supports the view that *perceptions* of one's own lack of acceptance, rather than reports of actual dislike by classmates, is the direct mechanism linked to depressive affect. These results were confirmed by analyses of the consistency between children's perceptions and their actual classmate-reported acceptance. In these analyses, children's self-perceptions, rather than actual dislike, seemed most directly associated with depressive symptoms.

These model pathways were supported. Yet, further analyses with regression modeling to identify children who overestimated or underestimated their social acceptance by peers revealed that it was the 70 children (21%) with accurate perceptions of their failure with peers or who underestimated their acceptance by peers who were most at risk for elevated depressive symptoms. Further, the average depressive symptom scores in these two groups of children were quite high (scores of about 15 to 16), but the scores did not quite reach the level of clinical depression (score > 19; Kovacs, 1981). On average, the depressive symptom level of children who had accurate perceptions of their success with peers or who overestimated their success had depressive symptoms scores about two-thirds (10 points) lower.

Although it could be argued that only knowing self-perceptions of peer acceptance might be enough to identify children at high risk of depressive symptoms during the transition to adolescence, knowing both children's actual likeability within the peer group and their perceptions of their acceptance might differentiate groups of children who would

benefit from different types of interventions. For example, all interventions might include components that help children to interpret their acceptance and rejection experiences, and attempt to reduce maladaptive behaviors that children may engage in to increase perceptions of or actual acceptance (e.g., gang involvement, early involvement in dating and sexual behavior; see Leary et al., 1999). However, children who are not highly liked by others may need assistance with social skills training and might benefit from group interactions with prosocial and socially competent peers. In contrast, children who are liked but underestimate their acceptance may need individual assistance to recognize the strengths they have and to adjust their own personal goals and expectations to place more weight on their successes rather than focusing on their intermittent failures.

### CHILDREN'S SOCIAL BEHAVIORS WITH PEERS, PEER DISLIKE AND SOCIAL COGNITIONS

We also investigated the role of children's own behaviors in their peer relationships and self-perceived peer acceptance. In the current study, all social behaviors measured were associated with peer dislike. After estimating a number of models to account for possible suppression effects due to the simultaneous inclusion of physical and relational aggression, children's physically and relationally aggressive, and their withdrawn behaviors were linked with more dislike by their peers. After accounting for the covariation between negative and positive behaviors, children who were more prosocial were also more liked by their peers. These findings are similar to other studies with this age group (Crick, 1997; Jackson & Tisak, 2001; Zimmer-Gembeck et al., 2005). For example Jackson and Tisak (2001) found that children who were prosocial avoided experiences of rejection by peers. Clearly, children's own behaviors predict whether their classmates will like or dislike them and covary with stressful peer experiences.

Although not anticipated, findings also showed that children's behaviors of withdrawal and prosocial behavior had direct associations with children's perceptions of their social acceptance by peers. This is congruent with some past research that has found a direct link between children's withdrawn behavior and beliefs about social acceptance (Rubin & Stewart, 1996; Rubin et al., 1995). It seems that withdrawn children are relatively more aware of their lower social acceptance or perceive that they are not highly liked, while prosocial children are aware of their more positive peer status when compared to other children. Even at this time of life, withdrawal may reflect a history of rejection (or perceived rejection) experiences and may reflect "maladaptive attempts" to reduce

negative social interactions (Leary et al., 1999, p. 299). The importance of withdrawn behavior in this model suggests that it is critical to consider individual differences in withdrawal, as well as children's perceptions of social acceptance, and their actual status with peers when tailoring the type of mental health intervention provided to children at high risk for depression during the transition to adolescence.

#### PARTICIPANT SEX AS A MODERATOR

Consistent with other evidence in this age period (see Nolen-Hoeksema, 2001; Nolen-Hoeksema & Girgus, 1994, for reviews), we found no sex difference in level of depressive symptoms in this study. Taking sex comparisons to another level, we also examined whether participants' biological sex served to moderate directional links in the hypothesized model. In contrast to our hypotheses, no significant moderating effects of children's sex were found. In other words, the directional links in the models were not significantly different for boys and girls. In the current study, for example, associations between peer dislike, perceptions of social acceptance and depressive symptoms were similar for girls and boys. Similarly, although levels of physical aggression differed for boys and girls, the association of this and other behaviors (e.g., relational aggression) and peer dislike did not significantly differ for boys and girls. Taken together, the findings suggest that the peer processes accounting for the emergence of depressive symptoms and peer dislike may not differ substantially for boys and girls, at least for children between ages 9 and 13 and when peer dislike is the operationalization of peer relationship problems. These findings are not inconsistent with previous research, as others have reported the patterns of vulnerability for girls of this age are similar to those of boys (Gore, Aseltine, & Colten, 1993; Hussong, 2000).

The focus of the current study was on a particular type of peer stressor—being relatively more disliked by peers. Other forms of interpersonal stress may still exhibit sex differences. For example, given differences in the peer relations of girls and boys (Crick & Zahn-Waxler, 2003; Maccoby, 1990; Rose & Rudolph, 2006) and children's perceptions of differences (Markovits, Benenson, & Dolenszky, 2001) it may be that difficulties within particular friendship domains, such as the close dyad for girls and the friendship group for boys, show more sex differentiated associations with mental health and well-being.

### LIMITATIONS OF THE STUDY, FUTURE DIRECTIONS, AND CONCLUSION

Cross-sectional data were relied upon in the current study. However, past theory and research assisted our development of a model that included directional pathways. Further research is needed to confirm directional model paths and, particularly, to determine whether reciprocal relationships between model constructs exist. For example, in a recent 3-year longitudinal study of children about age 12, there was evidence for reciprocal effects with withdrawal (measured as social disengagement) having an influence on later relational self-views and children withdrawing from peers as a consequence of their relatively more negative relational self views (Caldwell, Rudolph, Troop-Gordon, & Kim, 2004). Similarly, depressed children can prompt negative interactions from peers (see Rudolph & Clark, 2001), and, as described in sociometer theory, reduced self-esteem and depressive affect may prompt changes in social behaviors to improve acceptance by others (Leary & Downs, 1995). Others have found bidirectional associations between children's behaviors and peer standing, with problem behaviors linked to declining peer standing and relatively lower peer standing linked to escalating problem behaviors over three years (Zimmer-Gembeck et al., 2005).

Data were gathered via both peer- and self-report to improve data quality and to reduce the possibility of shared method variance. Peer dislike was measured using a rating procedure in which all children rated how much they liked each of their classmates. These ratings provided information about the dislike for each child by all classmates. Depression symptoms and perceived social acceptance were based on self-report. Given these different reporters of information, the strength of mediation may have been overestimated because of the common method variance between the mediator and the outcome. Future research that includes multiple sources of information for all model components will assist in determining how much shared method variance might have influenced results.

An aim of this study was to examine those relatively high in aggression, withdrawal, and prosocial behavior compared to all other children, and to compare the levels of these behaviors in girls versus boys. Hence, children nominated three classmates, rather than three girls or boys, high in aggression, withdrawal, and prosocial behavior. Asking children to nominate classmates with these behaviors within gender would have reduced the gender difference in level, and such a gender-specific measure may have produced different model parameter estimates. For example, it might be that children dislike those who engage in nonnormative levels of behaviors for their gender, and direct associa-

tions between behaviors and other constructs would have been stronger if gender-specific assessment techniques were used. Regardless of these limitations, this study had two strengths in the area of children's behaviors. First, children's behaviors were assessed with peer nominations from classmates rather than using self-reports. Second, the combination of physical aggression, relational aggression, withdrawn behaviour, and prosocial behavior is applicable to both boys and girls' peer dislike (Bjorkqvist, Lagerspetz, & Kaukiainen, 1992; Crick & Grotpeter, 1995) and has not often been included in studies of peer relationship problems, social cognition, and depressive symptoms.

In general, the findings in the current study support the importance of late childhood and early adolescent relationships with peers for understanding children's depressive affect, especially children's own withdrawn behaviors and their self-perceptions of acceptance within the peer group. Findings showed that there are correlates of these processes that can be the targets of interventions for children. For example, assessing discrepancies between actual peer stresses or experiences and self-perceptions of stress may assist in identifying children for particular types of interventions. Since depressive symptoms can escalate around early adolescence, particularly for females (Nolen-Hoeksema & Girgus, 1994), interventions should continue to focus on peer relationships at school, but could also identify children's actual belonging within the peer group, and children's perceptions of their success and failure within their relationships at school. Identifying individual differences in actual and self-perceived peer dislike and acceptance could help to direct the most effective intervention strategies toward the children who are most likely to benefit.

## REFERENCES

- Alloy, L. B. (2001). The developmental origins of cognitive vulnerability to depression: Negative interpersonal context leads to personal vulnerability. *Cognitive Therapy and Research, 25*, 349-351.
- Alloy, L. B., Abramson, L. Y., & Francis, E. L. (1999). Do negative cognitive styles confer vulnerability to depression? *Current Directions in Psychological Science, 8*, 128-132.
- Altmann, E. O., & Gotlib, I. H. (1988). The social behavior of depressed children: An observational study. *Journal of Abnormal Child Psychology, 16*, 29-44.
- Asher, S. R., & Coie, J. D. (1990). *Peer rejection in childhood*. New York: Cambridge University Press.
- Bagwell, C. L., Schmidt, M. E., Newcomb, A. F., & Bukowski, W. M. (2001). Friendship and peer rejection as predictors of adult adjustment. *New Directions for Child and Adolescent Development, 91*, 25-49.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as fundamental human motivation. *Psychological Bulletin, 117*, 497-529.

- Beck, A. T. (1976). *Cognitive theory and the emotional disorders*. New York: International Universities Press.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness-of-fit in the analysis of covariance structures. *Psychological Bulletin*, *88*, 588-606.
- Bjorkqvist, K. (1994). Sex differences in physical, verbal, and indirect aggression: A review of recent research. *Sex Roles*, *30*, 177-188.
- Bjorkqvist, K., Lagerspetz, K. M. J., & Kaukiainen, A. (1992). The development of direct and indirect aggressive strategies in males and females. In K. Bjorkqvist & P. Niemela (Eds.), *Of mice and women: Aspects of female aggression*. San Diego, CA: Academic Press.
- Boivin, M., Hymel, S., & Bukowski, W. M. (1995). The roles of social withdrawal, peer rejection, and victimization by peers in predicting loneliness and depressed mood in childhood. *Development and Psychopathology*, *7*, 765-785.
- Boivin, M., Poulin, F., & Vitaro, F. (1994). Depressed mood and peer rejection in childhood. *Development and Psychopathology*, *6*, 483-498.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136-162). Newbury Park, CA: Sage.
- Caldwell, M. S., Rudolph, K. D., Troop-Gordon, W., & Kim, D. (2004). Reciprocal influences among relational self-views, social disengagement, and peer stress during early adolescence. *Child Development*, *75*, 1140-1154.
- Cillessen, A. H. N., & Bukowski, W. M. (Eds.). (2000). *New directions for child and adolescent development: Recent advances in the measurement of acceptance and rejection in the peer system*, *88*. San Francisco, CA: Jossey-Bass.
- Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Developmental Psychology*, *18*, 557-570.
- Coie, J. D., Dodge, K. A., & Kupersmidt, J. B. (1990). Peer group behavior and social status. In S. R. Asher & J. D. Coie (Eds.), *Peer rejection in childhood. Cambridge studies in social and emotional development* (pp. 17-59). New York: Cambridge University Press.
- Cole, D. A. (1991). Change in self-perceived competence as a function of peer and teacher evaluation. *Developmental Psychology*, *27*, 682-688.
- Cole, D. A., Martin, J. M., Peeke, L. G., Serocynski, A. D., & Hoffman, K. (1998). Are cognitive errors of underestimation predictive or reflective of depressive symptoms in children: A longitudinal study. *Journal of Abnormal Psychology*, *107*, 481-496.
- Cole, D. A., Martin, J. M., & Powers, B. (1997). A competency-based model of child depression: A longitudinal study of peer, parent, teacher, and self-evaluations. *Journal of Child Psychology & Psychiatry & Allied Disciplines*, *38*, 505-514.
- Cole, D. A., Martin, J. M., Powers, B., & Truglio, R. (1996). Modelling causal relations between academic and social competence and depression: A multitrait-multimethod longitudinal study of children. *Journal of Abnormal Psychology*, *105*, 258-270.
- Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology*, *112*, 558-577.
- Crick, N. R. (1996). The role of overt aggression, relational aggression, and prosocial behavior in the prediction of children's future social adjustment. *Child Development*, *67*, 2317-2327.
- Crick, N. R. (1997). Engagement in gender normative versus nonnormative forms of aggression: Links to social-psychological adjustment. *Developmental Psychology*, *33*, 610-617.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, *66*, 710-722.

- Crick, N. R., & Nelson, D. A. (2002). Relational and physical victimization within friendships: Nobody told me there'd be friends like these. *Journal of Abnormal Child Psychology*, *30*, 599–607.
- Crick, N., & Zahn-Waxler, C. (2003). The development of psychopathology in females and males: Current progress and future challenges. *Development and Psychopathology*, *15*, 719–742.
- Faust, J., Baum, C. G., & Forehand, R. (1985). An examination of the association between social relations and depression in early adolescence. *Journal of Applied Developmental Psychology*, *6*, 291–297.
- Foster, S. L. (1989). Examining the impact of social behavior on peer status. In B. H. Schneider, G. Attili, J. Nadel, & R. P. Weissberg. (Eds.), *Social competence in developmental perspective* (pp. 199–201). Boston: Kluwer Academic Publishers.
- French, D. C., Conrad, J., & Turner, T. M. (1995). Adjustment of antisocial and nonantisocial rejected adolescents. *Development and Psychopathology*, *7*, 857–874.
- Geiger, T. A., Zimmer-Gembeck, M. J., & Crick, N. R. (2004). The science of relational aggression: Can we guide intervention? In M. M. Moretti, C. Odgers, & M. Jackson (Eds.), *Girls and aggression: Contributing factors and intervention strategies. Perspectives in Law and Psychology Series* (pp. 27–40). New York: Kluwer.
- Gore, S., Aseltine, R. H., & Colten, M. E. (1993). Gender, social-relational involvement, and depression. *Journal of Research on Adolescence*, *3*, 101–125.
- Graham, S., Bellmore, A., & Juvonen, J. (2003). Peer victimization in middle school: When self- and peer views diverge. *Journal of Applied School Psychology*, *19*, 117–137.
- Graham, S., & Juvonen, J. (1998). Self-blame and peer vicimization in middle school: An attributional analysis. *Developmental Psychology*, *34*, 587–538.
- Hall, R. J., Snell, A. F., & Foust, M. S. (1999). Item parceling strategies in SEM: Investigation the subtle effects of unmodeled secondary constructs. *Organizational Research Methods*, *2*, 233–256.
- Harter, S. (1985). *The self-perception profile for children: Revision of the perceived competence scale for children*. Denver, CO: University of Denver.
- Harter, S. (1999). *The construction of the self: A developmental perspective*. New York: Guilford Press.
- Harter, S., Waters, P., & Whitesell, N. R. (1998). Relational self-worth: Differences in perceived worth as a person across interpersonal contexts among adolescents. *Child Development*, *69*, 756–766.
- Harter, S., & Whitesell, N. R. (1996). Multiple pathways to self-reported depression and psychological adjustment among adolescents. *Development and Psychopathology*, *8*, 761–777.
- Hoffman, K. B., Cole, D. A., Martin, J. M., Tram, J., & Seroczynski, A. D. (2000). Are the discrepancies between self- and others' appraisals of competence predictive or reflective of depressive symptoms in children and adolescents: A longitudinal study. Part II. *Journal of Abnormal Psychology*, *109*, 651–662.
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and paediatric psychology literatures. *Journal of Consulting and Clinical Psychology*, *65*, 599–610.
- Hussong, A. M. (2000). Perceived peer context and adolescent adjustment. *Journal of Research on Adolescence*, *10*, 391–415.
- Hymel, S., Rubin, K. H., Rowden, L., & LeMare, L. (1990). Children's peer relationships: Longitudinal predictions of internalizing and externalizing problems for middle to late childhood. *Child Development*, *61*, 2004–2021.
- Jaccard, J., & Wan, C. K. (1996). *LISREL approaches to interaction effects in multiple regression*. Newbury Park, CA: Sage.

- Jackson, M., & Tisak, M. S. (2001). Is prosocial behavior a good thing? Developmental changes in children's evaluations of helping, sharing, cooperating and comforting. *British Journal of Developmental Psychology, 19*, 349-367.
- Kaplan, D. (2000). *Structural equation modeling: Foundations and extensions*. Thousand Oaks, CA: Sage.
- Kovacs, M. (1981). Rating scales to assess depression in school-aged children. *Acta Psychiatrica, 46*, 305-315.
- Ladd, G. W., & Troop-Gordon, W. (2003). The role of chronic peer difficulties in the development of children's psychological adjustment problems. *Child Development, 74*, 1344-1367.
- Landis, R. S., Beal, D. J., & Tesluk, P. E. (2000). A comparison of approaches to forming composite measures in structural equation models. *Organizational Research Methods, 3*, 186-207.
- Leary, M. R. (1990). Responses to social exclusion: Social anxiety, jealousy, loneliness, depression, and low self-esteem. *Journal of Social and Clinical Psychology, 9*, 221-229.
- Leary, M. R., & Downs, D. L. (1995). Interpersonal functions of the self-esteem motive: The self-esteem system as a sociometer. In M. Kernis (Ed.), *Efficacy, agency, and self-esteem* (pp. 123-144). New York: Plenum.
- Leary, M. R., Schreindorfer, L. S., & Haupt, A. L. (1999). The role of low self-esteem in emotional and behavioral problems: Why is low self-esteem dysfunctional? *Journal of Social and Clinical Psychology, 14*, 297-314.
- Little, T. D., Cunningham, W. A., Shahar, G., & Widaman, K. F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling, 9*, 151-173.
- Lochman, J. E., & Wayland, K. K. (1994). Aggression, social acceptance, and race as predictors of negative adolescent outcomes. *Journal of the American Academy of Child and Adolescent Psychiatry, 33*, 1026-1035.
- Maccoby, E. E. (1990). Gender and relationships: A developmental account. *American Psychologist, 45*, 513-520.
- Markovits, H., Benenson, J., & Dolenszky, E. (2001). Evidence that children and adolescents have internal models of peer interactions that are gender differentiated. *Child Development, 72*, 879-886.
- Martin, J. M., Cole, D. A., Clausen, A., Logan, J., & Strosher, H. L. W. (2003). Moderators of the relation between popularity and depressive symptoms in children: Processing strength and friendship value. *Journal of Abnormal Child Psychology, 31*, 471-483.
- McDonald, R. P., & Ho, M. H. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods, 7*, 64-82.
- Nolen-Hoeksema, S. (2001). Gender differences in depression. *Current Directions in Psychological Science, 10*, 173-176.
- Nolen-Hoeksema, S., & Girgus, J. S. (1994). The emergence of gender differences in depression during adolescence. *Psychological Bulletin, 115*, 424-443.
- Oldenburg, C. M., & Kerns, K. A. (1997). Associations between peer relationships and depressive symptoms: Testing moderator effects of gender and age. *Journal of Early Adolescence, 17*, 319-337.
- Panak, W. F., & Garber, J. (1992). Role of aggression, rejection, and attributions in the prediction of depression in children. *Development and Psychopathology, 4*, 145-165.
- Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin, 102*, 357-389.
- Parker, J. G., Rubin, K. H., Price, J. M., & DeRosier, M. E. (1995). Peer relationships, child development, and adjustment: A developmental psychopathology perspective. In D.

- Cicchetti & D. J. Cohen (Eds.), *Developmental psychopathology: Risk, disorder, and adaptation* (Vol. 2; pp. 96–161). New York: John Wiley and Sons.
- Pomerantz, E. M., & Rudolph, K. D. (2003). What ensues from emotional distress? Implication for competence estimation. *Child Development, 74*, 329–345.
- Rogosch, F. A., & Newcomb, A. F. (1989). Children's perceptions of peer reputations and their social reputations among peers. *Child Development, 60*, 597–610.
- Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin, 132*, 98–131.
- Rubin, K. H., Chen, X., & Hymel, S. (1993). Socioemotional characteristics of withdrawn and aggressive children. *Merrill-Palmer Quarterly, 39*, 518–534.
- Rubin, K. H., Chen, X., McDougall, P., Bowker, A., & McKinnon, J. (1995). The Waterloo Longitudinal Project: Predicting internalizing and externalizing problems in adolescence. *Development and Psychopathology, 7*, 751–764.
- Rubin, K. H., & Stewart, S. L. (1996). Social withdrawal. In E. J. Mash & R. A. Barkley (Eds.), *Child psychopathology* (pp. 277–307). New York: Guilford Press.
- Rudolph, K. D. (2002). Gender differences in emotional responses to interpersonal stress during adolescence. *Journal of Adolescent Health, 30*, 3–13.
- Rudolph, K. D., & Asher, S. R. (2000). Adaptation and maladaptation in the peer system: Developmental processes and outcomes. In A. J. Sameroff & M. Lewis (Eds.), *Handbook of developmental psychopathology* (2nd ed., pp. 157–175). Dordrecht, Netherlands: Kluwer.
- Rudolph, K. D., & Clark, A. G. (2001). Conceptions of relationships in children with depressive and aggressive symptoms: Social-cognitive distortion or reality? *Journal of Abnormal Child Psychology, 29*, 41–56.
- Rudolph, K. D., Hammen, C., & Burge, D. (1997). A cognitive-interpersonal approach to depressive symptoms in preadolescent children. *Journal of Abnormal Child Psychology, 25*, 33–45.
- Rutter, M., Dunn, J., Plomin, R., Simonoff, E., Pickles, A., Maughan, B., Ormel, J., Meyer, J., & Eaves, L. (1997). Integrating nature and nurture: Implications of person-environment correlations and interactions for developmental psychopathology. *Development and Psychopathology, 9*, 335–364.
- Sameroff, A. J. (1987). Environmental context of child development. *Annual Progress in Child Psychiatry & Child Development, 113–129*.
- SmallWaters Corporation. (1999). *AMOS 4.0 user's guide*. Chicago, IL: SmallWaters Corporation.
- Shrout, P. E., & Bolger, N. (2002). Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychological Methods, 7*, 422–445.
- Tram, J. M., & Cole, D. A. (2000). Self-perceived competence and the relation between life events and depressive symptoms in adolescence: Mediator or moderator? *Journal of Abnormal Psychology, 109*, 753–760.
- Vernberg, E. M. (1990). Psychological adjustment and experiences with peers during early adolescence: Reciprocal, incidental, or unidirectional relationships? *Journal of Abnormal Child Psychology, 18*, 187–198.
- Younger, A. J., Schneider, B. H., Wadeson, R., Guiguis, M., & Bergeron, N. (2000). A behavior-based peer-nomination measure of social withdrawal in children. *Social Development, 9*, 544–564.
- Zimmer-Gembeck, M. J., Geiger, T. A., & Crick, N. R. (2005). Relational and physical aggression, prosocial behavior, and peer relations: Gender moderation and bidirectional associations. *Journal of Early Adolescence, 25*, 421–452.