CHILDHOOD AGGRESSION, DEPRESSIVE SYMPTOMS, AND THE EXPERIENCE OF PEER REJECTION

by

Michael T. Morrow

A thesis submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Master of Arts in Psychology

Spring 2006

CHILDHOOD AGGRESSION, DEPRESSIVE SYMPTOMS, AND

THE EXPERIENCE OF PEER REJECTION

by

Michael T. Morrow

Approved: _____
Julie A. Hubbard, Ph.D.
Professor in charge of thesis

Approved: _____
Thomas M. DiLorenzo, Ph.D.
Chair of the Department of Psychology

Approved: _____
Thomas M. Apple, Ph.D.
Dean of the College of Arts and Sciences

Approved: _____
Conrado M. Gempesaw II, Ph.D.
Vice Provost for Academic and International Programs

ACKNOWLEDGMENTS

I wish to thank all of the individuals who guided and assisted me throughout this project: Julie Hubbard, Stephen Armelli, Ronnie Rubin, Meghan McAuliffe, Meghann Kelly, and an outstanding team of undergraduate research assistants. I must also thank my family (Bob, Cindy, and Melissa) for their ceaseless support and understanding. In addition, I must thank my partner and friend, Louise Pacewicz, for her infinite patience and compassion. Of note, this study was partially funded by the American Psychological Association's 2005 Nancy B. Forest and Michael Honaker Master's Scholarship for Research in Psychology.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

The goal of the current study was to investigate whether the overall experience of peer rejection, as assessed through measures of peer rejection and peer victimization, mediated the relation between children's aggressive behaviors and depressive symptoms. Participants were 448 fourth- and fifth-grade children (252 girls and 196 boys). Data on aggression and peer rejection were collected through teacher and peer report, whereas data on peer victimization and depressive symptoms were collected through self, teacher, and peer report. Through testing two competing structural models, results revealed that peer rejection and peer victimization jointly mediated the relation between aggression and depressive symptoms, although this mediation was only partial. Suggestions for other variables that contribute to this relation are provided, and implications for intervention are discussed.

Chapter 1

INTRODUCTION

Aggressive behaviors and depressive symptoms frequently co-occur in children. This robust relation has been documented with community and clinical samples through diverse assessment methods and measures (Angold & Costello, 1993; Cole & Carpentieri, 1990; McConaughy & Skiba, 1993). Research with community samples of elementary school children has demonstrated moderate correlations across multiple measures of aggression and depressive symptoms (Messer & Gross, 1994; Panak & Garber, 1992). Additionally, clinical studies of children and adolescents have reported higher-than-chance comorbidity rates for depressive disorders and behavioral disorders characterized by aggression (Angold & Costello, 1993).

Although these studies have demonstrated the co-occurrence of aggression and depressive symptoms, they do not explain the temporal nature of the association. Among studies using a prospective design, a majority report that aggressive behaviors predicted or predated depressive symptoms (e.g., Block & Gjerde, 1990; Capaldi, 1991; Hops, Lewinsohn, Andrews, & Roberts, 1990; Rhode, Lewinsohn, & Seeley, 1991). For instance, Capaldi (1991) assessed an at-risk community sample of boys and noted that conduct disorder at sixth grade predicted eighth-grade depression; however, sixth-grade depression did not predict eighth-grade conduct disorder. Nevertheless,

researchers have yet to clearly delineate the mechanisms that mediate the pathway from aggression to depressive symptoms.

Patterson and Capaldi's (1990) failure model provides a useful framework for conceptualizing the relation between these constructs. According to this model, children's aggressive behaviors predict pervasive failures across social and academic domains. Over time, children internalize these negative experiences, which increases their vulnerability to depressive symptoms. Within this broad model, they specify a mediational pathway in which children's aggressive behaviors predict rejection from peers, which in turn predicts depressive symptoms. In support of this hypothesized sequence, a plethora of studies have demonstrated the stable connection between aggression and peer rejection (e.g., Coie, Dodge, & Coppotelli, 1982; Coie, Dodge, & Kupersmidt, 1990; Dodge, 1983; Hymel, Rubin, Rowden, & LeMare, 1990). In addition, research has found that children high in peer rejection are at risk for depressive symptoms (Little & Garber, 1995; Nolan, Flynn, & Garber, 2003; Patterson & Stoolmiller, 1991; Vosk, Forehand, Parker, & Rickard, 1982). However, few studies have actually assessed whether peer rejection mediates the relation between aggression and depressive symptoms.

To our knowledge, only three studies have directly addressed this question. In the first study, Messer and Gross (1994) tested separate concurrent models for boys and girls (aged 8-13 years). Within these models, they included latent variables for aggression and depressive symptoms (derived from teacher, self, and peer report) and

an observed variable for peer rejection (based on peer report). Results indicated that peer rejection partially mediated the relation between aggression and depressive symptoms for both boys and girls.

In the second study, Panak and Garber (1992) conducted a one-year longitudinal investigation with late elementary-school students. They measured peer-reported rejection, self-reported depressive symptoms, and an aggregate of teacher- and peer-reported aggression. They found that changes in peer rejection partially mediated the effect of changes in aggression on depressive symptoms. However, Kiesner (2002) challenged this finding on the grounds that the mediated effect of changes in aggression on depressive symptoms through changes in peer rejection was minimal and that the authors failed to test the significance of this effect.

Following Panak and Garber (1992), Kiesner (2002) conducted a two-year longitudinal study with Italian middle-school students. He assessed self-reported depressive symptoms, teacher-reported aggressive behavior, and peer-reported rejection at two time points. In contrast to the previous two studies, Kiesner failed to find any evidence that peer rejection mediated the relation between earlier aggression and later depressive symptoms. Given the equivocal findings reviewed above, the mediating role of peer rejection in the pathway from aggression to depressive symptoms is unclear. Thus, the first goal of the current study was to further examine the mediating role of peer rejection in the relation between aggression and depressive symptoms.

The second goal was to conceptualize and measure peer rejection more broadly than has been done in the past. Specifically, in previous studies, peer rejection has been assessed entirely as the degree to which peers dislike a child. Although these evaluations are an important component of the experience of peer rejection, we and others (e.g., Sandtrom and Zakriski, 2004) theorize that the experience of peer rejection includes not only negative peer evaluations, but also the victimizing behaviors that peers use to convey dislike to the child. Thus, in the current study, we measure not only the degree to which peers dislike a child (labeled other-perceived peer rejection) but also peer victimization. This conceptualization and measurement of the experience of peer rejection results in a more complex model than those proposed in previous studies, in which aggression simply predicted other-perceived peer rejection, which in turn predicted depression. In our proposed model, depicted in Figure 1, aggressive behaviors elicit other-perceived peer rejection, which peers express through victimizing aggressive children.

Consequently, these children internalize their experience of victimization, which leads them to develop depressive symptoms. Accordingly, the overarching aim of the current study was to evaluate whether the experience of peer rejection, as assessed by the two constructs of other-perceived peer rejection and peer victimization, either fully or partially mediated the relation between aggression and depressive symptoms.

Modest support has been found for the hypothesized pathway from other-

perceived peer rejection to peer victimization. Several studies have observed moderate concurrent relations between these constructs across the late elementary school years (Khatri, Kupersmidt, & Patterson, 2000; Perry, Kusel, & Perry, 1988). Research also indicates that peer victimized children are at risk for current and future depressive symptoms. For instance, Hawker & Boulton (2003) conducted a meta-analysis of cross-sectional research that revealed a robust relation between peer victimization and depressive symptoms, controlling for shared method variance. In addition, support has been found for a longitudinal relation from earlier peer victimization to later depressive symptoms (Boivin, Hymel, & Bukowski, 1995; Olweus, 1993). In a long-term study of Scandanavian males, Olweus (1993) found that childhood reports of peer victimization predicted depression in adolescence. As proposed in our model, this research collectively suggests that peer victimization might play a substantial role in pathway from the experience of peer rejection to depressive symptoms.

The current investigation has several major strengths. First, the sample size is large (n = 448), ensuring adequate power to detect reliable effects within the hypothesized model. Second, data for all constructs were collected from multiple sources. This approach allowed us to specify latent factors, which reduces measurement error and reveals more robust variables. Third, we adopted a broader conceptualization of children's experience of peer rejection compared to many previous studies. Fourth, through testing and comparing our proposed full-mediation model to a competing partial-mediation model, we were able to assess the combined

contribution of other-perceived peer rejection and peer victimization in the relation between children's aggressive behaviors and depressive symptoms.

Chapter 2

METHOD

Overview of Data Collection

Participants were 555 boys and girls from 37 fourth- and fifth-grade public school classrooms within one school district in the Mid-Atlantic region. Children completed self-report measures of peer victimization and depressive symptoms. They also completed peer-report measures of aggression, other-perceived peer rejection, peer victimization, and depressive symptoms. Additionally, teachers completed measures of aggression, other-perceived peer rejection, peer victimization, and depressive symptoms for each participating child in their classroom. Of note, no self-report measure of aggression was included because elementary-school-aged children are not yet able to validly report on their externalizing behaviors.

Participants

Parental consent forms were distributed to 901 children, and 581 children (64%) returned their forms with parental permission. During the data collection, 19 children declined to participate and 7 were absent. Consequently, data were collected from three sources (self, teacher, and peer) for 555 children.

To ensure participants' comfort throughout the data collection, we provided them with explicit instructions to skip any items that they did not wish to answer.

Furthermore, a skip option was included as a response choice for each item across all measures. Because of these steps, 107 children were missing more than 50% of data for at least one measure. Data for these children were excluded from further analyses, which produced a final sample of 448 children. We conducted a missing data analysis in which we compared the final sample to the group of children removed due to missing data. Results revealed that these groups did not significantly differ on any of the measures.

In the final sample, 56% of the participants were female (n = 252), and 44% were male (n = 196). The average age of the sample was 10.13 years (range of 9.27 to 13.10). 50% of the children were Caucasian, 41% were African American, 6% were of mixed race, 2% were Asian, 1% was Native American, and 1 child was a Pacific Islander. 20% of the sample reported their ethnicity as Hispanic, and 80% reported their ethnicity as Not Hispanic.

A fourth- and fifth-grade sample was selected for this study for two reasons. First, research indicates that both aggression and depression are becoming stable by this age (Cole, Peeke, Martin, Truglio, & Seroczynski, 1998; Schaeffer, Petras, Ialongo, Poduska, & Kellam, 2003). Second, both aggressive and depressogenic behaviors are becoming less acceptable to peers and so more related to peer rejection by this age (Coie, Dodge, Terry, & Wright, 1991; Dodge, Coie, Pettit, & Price 1990; Peterson, Mullins, & Ridley-Johnson, 1985).

Procedures

The principal investigator or a graduate level research assistant administered the self- and peer-report measures to the participating children in each classroom. Two to five undergraduate research assistants either circulated within the classrooms to answer children's questions or read measures aloud to small groups of children identified by their teachers as having reading difficulties. Together, these measures took approximately one hour to complete. Teachers were asked to complete a packet of measures for each participating child in their classroom. Each teacher packet required approximately 15 minutes to complete. Teachers were compensated $5 per packet.

Measures

Self-Report Measures

The children completed two self-report measures. The first measure was Neary and Joseph's (1994) six-item self-report measure of peer victimization. Children's scores were averaged for the six items, which provided the variable PV SELF. This measure was scaled so that higher scores indicate increasing levels of peer victimization. This scale has evidenced high levels of internal consistency, as well as concurrent, convergent, and predictive validity (Grills & Ollendick, 2002; Neary & Joseph, 1994). In our project, we obtained a Cronbach's alpha of .75 for this measure.

The second measure was Kovac's (1985) 10-item short version of the Children's Depression Inventory (CDI-S). The CDI-S has demonstrated acceptable

test-retest reliability (Smucker, Craighead, Craighead, & Green, 1986). Additionally, it has been highly correlated with the full inventory (Kovacs, 1992), which has been validated through extensive psychometric studies (e.g., Carey, Faulstich, Gresham, Ruggiero, & Enyart, 1987; Mattison, Handford, Kales, Goodman, & McLaughlin, 1990). Before obtaining participants' overall score for this measure, we removed one item that asks children to rate their popularity with peers. We expected this item to overlap with our measure of other-perceived peer rejection, and overlapping items reduce the uniqueness of measures and distort relations among constructs. Consequently, the variable DEP SELF was calculated for each child as the average of the nine remaining items. For this variable, higher scores reflect elevated levels of depressive symptomatology. The internal consistency was .84 for this measure in our study.

Peer-Report Measures

Participating children also completed 17 unlimited peer nomination items. Two items provided peer-report data on social preference. One item asked participants to nominate classmates whom they liked; the other item asked them to nominate classmates whom they disliked. The number of liking and disliking nominations received by each child were tallied and standardized within classroom. Social preference scores were calculated as the standardized difference between liking and disliking scores. The variable PR PEER was obtained for each child by reversing their social preference scores to provide a continuous measure of other-perceived peer

rejection. These nominations for social preference are well-validated through use in many previous studies (e.g., Coie & Dodge, 1983; Crick & Grotpeter, 1995; Dodge, 1980; Parker & Asher, 1993; Perry, Perry, & Rasmussen, 1986).

Nine newly-developed items provided peer-report data on aggression. Existing peer-report measures of aggression typically include fewer items. However, because aggression was a primary construct in our model, we developed additional items to provide a comprehensive assessment of aggressive behaviors. The variable AG PEER was calculated for each child as the average number of nominations that they received across the nine items, standardized within classroom. Higher scores reflect increasing levels of aggressive behavior.

Three items from a scale developed by Ladd and Kochenderfer-Ladd (2002) provided peer-report data on peer victimization. This scale has evidenced moderate temporal stability (across second, third, and fourth grade), as well as convergent and predictive validity by late elementary school (Ladd & Kochenderfer-Ladd, 2002). For this study, we were most interested in assessing overt victimizing behaviors that are easily recognized by targets. Accordingly, we eliminated one item from the original scale that assesses indirect victimization (who do other kids gossip about or say mean things behind their backs). The variable PV PEER was calculated as the average number of nominations received by each child across the three items, standardized within classroom. Higher scores indicate increasing levels of peer victimization.

Three items from Lefkowitz and Tesiny's (1980) Peer Nomination Index of

Depression (PNID) provided peer-report data on depressive symptoms. The PNID includes 13 depression items and has demonstrated high levels of internal consistency, as well as convergent and construct validity (Cole & Carpentieri, 1990; Lefkowitz & Tesiny, 1985). We abbreviated this measure by examining data from a previous study in our laboratory (Dearing & Hubbard, 2005) in which data for the entire PNID measure were collected from a fourth- and fifth-grade sample. Within this study, the children also completed the full version of the CDI (Kovacs, 1982), and teachers completed the Teacher Rating Inventory of Depression (TRID), described below. Using this data, we calculated the correlations between children's ratings for the individual PNID items and their overall scores on the CDI and TRID. We selected the three PNID items that demonstrated the greatest convergence with the other two scales. The variable DP PEER was calculated for each child as the average number of nominations that each child received across the three items, standardized within classroom. Higher scores indicate elevated depressive symptomatology.

In contrast to procedures that limit the number of nominations children make for each item, we allowed children to nominate an unlimited number of classmates. In comparison to limited procedures, the unlimited approach has been found to produce more reliable measurement of children's social preference and behaviors (Terry, 2000). Additionally, limited procedures require a classroom participation rate of 70% in order to collect valid sociometric data, whereas the unlimited procedure only requires a 40% participation rate (Crick & Ladd, 1989; Terry, 1999). In our project, an

average of 61% of children participated in the peer data collection across classrooms (range of 40% to 88%).

Teacher-Report Measures

Teachers completed five measures for each participating child in their classroom. The first measure was Dodge and Coie's (1987) widely-used six-item measure of aggression. This scale has demonstrated high levels of internal consistency, as well as convergence with behavioral observations (Dodge & Coie, 1987). For this project, the internal consistency of this measure was .93.

The second measure was Brown and colleagues' (Brown, Atkins, Osborne, & Milnamow, 1996) 16-item measure of aggression.This scale has demonstrated high levels of internal consistency, as well as predictive validity (Brown et al., 1996). In this study, we obtained a Cronbach's alpha of .97 for this measure. We decided to assess aggression with two measures to provide a thorough assessment of a primary construct in our model. The variable AG TCHR was obtained for each child by combining their average scores across both measures of aggression; higher scores represent increasing levels of aggressive behavior. The internal consistency for the combined measure was .97.

The third measure was the three-item Social Competence subscale of Harter's Teacher Rating Scale of Child's Actual Behavior (Harter, 1982). Each item was reverse-scored to provide teacher data on other-perceived peer rejection. The variable PR TCHR was obtained for each child by averaging their reverse scores for the three

items. Higher scores indicate increasing levels of other-perceived peer rejection. The teacher version of the Harter has shown good test-retest reliability over a 6-month period (Cole, Martin, Powers, & Truglio 1996; Harter, 1985). In our project, the internal consistency for this measure was .96.

The fourth measure provided teacher data on peer victimization and was adapted from two scales. The first scale was designed by Ladd and Kochenderfer-Ladd (2002) and has demonstrated high levels of internal consistency, moderate temporal stability (across second, third, and fourth grade), and modest convergence with peer-report measures of victimization. The second scale was developed by Perry and colleagues (1988) through adapting a validated peer measure for teacher-report. To our knowledge, the teacher-report scale has yet to be validated. To create our measure, we selected and merged specific items across the two scales to create a short seven-item measure that represented a range of children's peer victimization experiences. Participants' scores were averaged across the seven items, which provided the variable PV TCHR. For this measure, higher scores reflect increasing levels of peer victimization. For this scale, the Cronbach's alpha was .92.

The fifth measure included seven items from Cole's (1995) Teacher Rating Index of Depression (TRID). The TRID includes 13 depression items adapted from the PNID. This measure has evidenced adequate internal consistency, as well as convergent and discriminant validity (Cole, 1995; Cole et al., 1996). We chose to shorten this measure by examining data from the previous study from our laboratory

(Dearing & Hubbard, 2005) described above. We obtained correlations for participant's ratings for each TRID item and their overall score on the CDI and PNID. For our measure, we included the seven TRID items that demonstrated the strongest convergence with the other scales. The variable DP TCHR was obtained for each child by averaging their scores across the seven items. Higher scores indicate elevated levels of depressive symptomatology. The Cronbach's alpha for this measure was .84 in this study.

Chapter 3

RESULTS

Descriptive Statistics and Correlations

To reiterate, four target constructs were assessed in the current study (aggression, other-perceived peer rejection, peer victimization, and depressive symptoms). Peer victimization and depressive symptoms were each measured using self-, teacher-, and peer-report scales, whereas aggression and other-perceived peer rejection were assessed through teacher- and peer-report measures. Descriptive statistics for each scale are provided in Table 1.

Table 1. Descriptive Statistics

Variable	*M*	*SD*	Min.	Max.	Skewness
AG TCHR	1.74	.83	1.00	4.41	1.23
AG PEER	-.06	.82	-1.11	3.90	1.80
PR TCHR	1.98	.81	1.00	4.00	.61
PR PEER	.08	.92	-2.53	1.78	-.58
PV SELF	2.05	.76	1.00	4.00	.51
PV TCHR	1.52	.61	1.00	3.71	1.08
PV PEER	-.06	.94	-1.86	4.25	1.82
DP SELF	1.28	.35	1.00	3.00	1.69
DP TCHR	1.64	.60	1.00	3.71	.95
DP PEER	-.10	.90	-1.49	4.30	1.90

Statistics for the self- and teacher-report measures reflect raw scores averaged across the items of each scale. Statistics for the peer-report measures have been standardized within classroom, as described above. As can be seen in Table 1, skewness statistics were calculated for each observed variable, which were evaluated using a cutoff of +/-0.5 (Glass & Hopkins, 1996). Skewed variables were corrected using log transformations (Tabachnik & Fidell, 2001), which produced the final variables used in all subsequent analyses. Table 2 includes bivariate correlations between all of the final variables.

Table 2. Correlations Between Final Observed Variables

	b.	c.	d.	e.	f.	g.	h.	i.	j.
a. AG TCHR	.69**	.26**	.36**	.13**	.56**	.25**	.16**	.55**	.24**
b. AG PEER		.21**	.38**	.06	.35**	.27**	.11*	.30**	.16**
c. PR TCHR			.46**	.19**	.38**	.42**	.21**	.48**	.28**
d. PR PEER				.30**	.37**	.48**	.25**	.39**	.29**
e. PV SELF					.25**	.21**	.36**	.19**	.14**
f. PV TCHR						.40**	.21**	.49**	.20**
g. PV PEER							.20**	.28**	.38**
h. DP SELF								.28**	.19**
i. DP TCHR									.31**
j. DP PEER									

Note. * $p < .05$, ** $p < .01$

As expected, all of the correlations between variables assessing the same construct were significant. In addition, all correlations between variables from the same source were significant.

Overview of Model Testing

Model testing proceeded in two stages following the approach outlined by Anderson and Gerbing (1987). First, we performed a confirmatory factor analysis (CFA) to evaluate a measurement model of the hypothesized constructs and validate the use of observed measures within subsequent structural models. Second, we tested our proposed full-mediation model and compared it to a competing partial-mediation model that included a direct effect from aggression to depressive symptoms. These models allowed us to test whether the relation between aggression and depressive symptoms was either partially or fully mediated by other-perceived peer rejection and peer victimization.

To evaluate the fit of each model, we examined four indices. Two indices provided significance tests of goodness-of-fit. The χ^2 statistic tests the null hypothesis that a model fits the data exactly, whereas the Root Mean Square Error of Approximation (RMSEA) statistic tests the null hypothesis that a model fits the data approximately. In addition, we evaluated two comparative fit indices. The Normed Fit Index (NFI) and the Comparative Fit Index (CFI) measure the fit of a model relative to the fit baseline models that specify independence among constructs. Of note, the χ^2 statistic is highly sensitive to large sample sizes and has often been criticized as an

unrealistic indicator (e.g., Kaplan, 2000). Due to the large number of participants in our sample (n = 448), we primarily focused on the RMSEA, NFI, and CFI to evaluate the fit of our models.

Stage 1: Confirmatory Factor Analysis

A CFA using maximum likelihood estimation was conducted to ensure that each observed measure loaded onto its specified factor. Figure 2 displays this model, which includes four factors (aggression, other-perceived peer rejection, peer victimization, and depressive symptoms) that were allowed to correlate with one another. Error terms for same-source variables were allowed to correlate across factors. When specified a priori, this strategy is considered an effective way to account for shared method variance across same-source measures (e.g., Marsh & Grayson, 1995).

Results indicated that the CFA model demonstrated acceptable fit (χ^2 (16) = 39.93, $p < .05$; RMSEA = .06, $p = .26$; NFI = .97; CFI = .98). Table 3 displays the factor loadings for each latent construct as well as the correlations between constructs.

Table 3. Factor Loadings and Correlations for the CFA Model

			Std.	Unstd.	*p*
AG TCHR	←	Aggression	.89	.16	< .001
AG PEER	←	Aggression	.75	.04	< .001
PR TCHR	←	Other-Perceived Peer Rejection	.64	.12	< .001
PR PEER	←	Other-Perceived Peer Rejection	.72	.04	< .001
PV SELF	←	Peer Victimization	.36	.06	< .001
PV TCHR	←	Peer Victimization	.63	.10	< .001

Table 3. cont.

			Std.	Unstd.	*p*
PV PEER	←	Peer Victimization	.65	.04	< .001
DP SELF	←	Depressive Symptoms	.39	.04	< .001
DP TCHR	←	Depressive Symptoms	.66	.10	< .001
DP PEER	←	Depressive Symptoms	.49	.03	< .001
Aggression	↔	Other-Perceived Peer Rejection		.56	< .001
Aggression	↔	Peer Victimization		.52	< .001
Aggression	↔	Depressive Symptoms		.57	< .001
Other-Perceived Peer Rejection	↔	Peer Victimization		.91	< .001
Other-Perceived Peer Rejection	↔	Depressive Symptoms		.83	< .001
Peer Victimization	↔	Depressive Symptoms		.71	< .001

As can be seen, all loadings were significant and in the expected direction. Additionally, all standardized loadings exceeded .3, which is a commonly used cutoff for determining whether a variable adequately loads onto its specified factor. Furthermore, none of the modification indices or parameter change values indicated that the observed variables loaded onto other factors.

The correlations between the four latent factors were all significant and in the expected direction. Of note, the correlation between other-perceived peer rejection and peer victimization was extremely high (r = .91), which might suggest that the scales used to measure these constructs overlap substantially. However, we believe that these factors represent unique constructs for four reasons. First, the items that we used to assess other-perceived peer rejection and peer victimization show strong differential face validity. Second, the correlations across the observed measures of these

constructs were weak to moderate (range of r = .19 to .48). Third, as described above, modification indices and parameter change values did not suggest that any of these scales loaded onto the opposite factor. Fourth, research has consistently found moderate correlations between measures of other-perceived peer rejection and peer victimization that are very similar to the measures used in this study (Khatri et al., 2000; Perry, et al., 1988).

Stage 2: Structural Equation Modeling

Full-Mediation Model

Figure 3 depicts our hypothesized full-mediation model. As in the measurement model, same-source error terms were allowed to correlate across constructs. This model demonstrated adequate fit (χ^2 (19) = 53.07, p < .05; RMSEA = .06, p = .13; NFI = .96; CFI = .98). Additionally, the three regression coefficients were significant and in the expected direction (Table 4). Furthermore, modification indices and parameter change values did not suggest that meaningful paths had been omitted from the model.

Table 4. Regression Coefficients for the Full-Mediation Model

			Std.	Unstd.	*p*
Other-Perceived Peer Rejection	←	Aggression	.57	.65	< .001
Peer Victimization	←	Other-Perceived Peer Rejection	.99	.83	< .001
Depressive Symptoms	←	Peer Victimization	.82	.62	< .001

Partial-Mediation Model

Although the proposed model fit the data well, we compared it to a competing model (Figure 4) which included the same mediated effects as the proposed model, as well as a direct path from aggression to depressive symptoms. The inclusion of this direct effect allowed us to evaluate whether other-perceived peer rejection and peer victimization together either fully or partially mediated the relation between aggression and depressive symptoms. Results indicated that the partial-mediation model also fit the data well (χ^2 (18) = 44.83, $p < .05$; RMSEA = .06, $p = .25$; NFI = .97; CFI = .98). Table 5 displays the regression coefficients for this model, which were all significant ($p < .004$). Furthermore, the inclusion of the direct path from aggression to depressive symptoms significantly improved model fit relative to the full-mediation model ($\Delta\chi^2(1) = 9.90$, $p = .002$).

Table 5. Regression Coefficients for the Partial-Mediation Model

			Std.	Unstd.	*p*
Other-Perceived Peer Rejection	←	Aggression	.55	.14	< .001
Peer Victimization	←	Other-Perceived Peer Rejection	.97	.82	< .001
Depressive Symptoms	←	Peer Victimization	.67	.49	< .001
Depressive Symptoms	←	Aggression	.22	.16	< .004

To test the significance of the mediated effect of aggression on depressive symptoms through other-perceived peer rejection and peer victimization, we used a resampling method known as bootstrapping. When using the AMOS 5.0 statistical software program, this approach is necessary to evaluate the combined significance of two mediators in the relation between a predictor and outcome variable. In this approach, an empirical sampling distribution is obtained for a mediated effect by generating a large number of random samples from a dataset. This procedure yields confidence intervals and provides a significance test for the mediated effect. MacKinnon, Lockwood, and Williams (2004) have found that the bias-corrected bootstrap method, which accounts for parameter bias in the central tendency, produces the most accurate confidence intervals and has greater statistical power than a majority of other resampling procedures. Using AMOS 5.0, we generated 1000 random samples based on our data to construct a 95% standardized confidence interval for the mediated effect of aggression on depressive symptoms through the two intervening variables. Results indicated that this indirect effect was indeed significant (lower bound = .16; upper bound = .25; $p < .001$)[1].

These results indicate that other-perceived peer rejection and peer victimization play a joint mediational role in the relation between aggression and depressive symptoms. Because the direct effect from aggression to depressive symptoms was significant in the partial-mediation model, this provides the best theoretically-guided representation of our data. Furthermore, the R^2 value in this

model for depressive symptoms was .65, which indicates that aggression, other-perceived peer rejection, and peer victimization accounted for 65% of the total variance in depressive symptoms.

NOTE

[1] We used a second approach to confirm the significance of the mediated effect of other-perceived peer rejection and peer victimization in the relation between aggression and depressive symptoms. Kris Preacher (personal communication, November 20, 2005) provided us with an adaptation of Sobel's formula (Sobel, 1982) that provides a significance test of mediated effects including two mediating variables in the relation between the predictor and outcome variable:

$$z = \frac{\hat{a}\hat{b}\hat{c}}{\sqrt{\hat{b}^2\hat{c}^2\sigma_a^2 + \hat{a}^2\hat{c}^2\sigma_b^2 + \hat{a}^2\hat{b}^2\sigma_c^2 + \hat{c}^2\sigma_a^2\sigma_b^2 + \hat{b}^2\sigma_a^2\sigma_c^2 + \hat{a}^2\sigma_b^2\sigma_c^2}}$$

Results confirmed that other-perceived peer rejection and peer victimization significantly mediated the relation between aggression and peer victimization (z = 4.38, $p < .00001$).

Chapter 4

DISCUSSION

The primary objective of the current study was to determine whether the experience of peer rejection mediated the relation between children's aggressive behaviors and depressive symptoms. In contrast to many previous studies, we adopted a more comprehensive conceptualization of peer rejection and assessed this experience through measures of both other-perceived peer rejection and peer victimization. Additionally, we assessed each target construct through multiple measures from at least two different sources, which allowed us to specify more robust variables within our models. Overall, our findings indicate that other-perceived peer rejection and peer victimization jointly mediate the relation between aggression and depressive behaviors, although this mediation was only partial.

These findings provide support for the theoretical pathway depicted in the failure model, in which children's aggression elicits peer rejection, which makes them vulnerable to depressive symptoms. Specifically, our results suggest that peers form negative evaluations of aggressive children, which they express toward these children through victimizing behaviors. Together, these negative responses from peers place aggressive children at risk for developing depressive symptoms. However, other-perceived peer rejection and peer victimization only partially accounted for the

relation between aggression and depressive symptoms. Accordingly, other mechanisms might be implicated in the experience of peer rejection and contribute to the relation between children's aggressive behaviors and depressive symptoms.

For example, peers might be highly reluctant to victimize extremely aggressive children out of concern for their own safety. Accordingly, they may employ more subtle behaviors to express their negative feelings toward these children, such as forming superficial affiliations with them or refusing to form friendships with them altogether. Parker and Asher (1993) found that not having a friend and low friendship quality predicted peer rejection; these variables also predicted feelings of loneliness, after controlling for the effect of peer rejection. Thus, children's negative friendship experiences might place them at risk for developing internalizing problems such as depression. The strongest support for this hypothesis was evidenced in a recent study by Nangle, Erdley, Newman, Mason, and Carpenter (2003). The authors tested a structural model in which poor friendship quantity/quality mediated the relation between peer-perceived rejection and loneliness, which in turn predicted depressive symptoms. These studies suggest that children's friendship experiences represent another critical component in the overall experience of peer rejection. However, it is unclear whether these experiences specifically contribute to aggressive children's vulnerability to depression.

Nevertheless, even if children are victimized by peers and lack close friendships with them, not all of these children will recognize that they are disliked

and internalize their experience of peer rejection. Sandstrom and Zakriski (2004) postulate that children's subjective interpretations of their own peer group status represents another factor implicated in the broad experience of peer rejection that places them at risk for internalizing problems. Several studies have supported this theory by demonstrating that self-perceived peer rejection mediates the relation between peer-perceived rejection and depressive symptoms (Cole, Martin, & Powers, 1997; Panak & Garber, 1992). Unfortunately, to our knowledge, no study has measured all of the components of peer rejection discussed above (other-perceived peer rejection, peer victimization, lack of friendships, and self-perceived peer rejection) and tested them as mediators in the relation between aggression and depressive symptoms. Future researchers should consider assessing each of these components separately and testing a model which links these processes sequentially.

It is important to note that mechanisms outside of the peer context might also contribute to the connection between aggression and depressive symptoms. The experience of rejection in relationships with parents, siblings, and teachers may also play an important role in the path between these constructs. In fact, within the failure model, Patterson and Capaldi (1990) specify an additional pathway in which parental rejection leads to depressive symptoms. The overall experience of rejection across different social relationships might additively contribute to children's likelihood of developing negative self-perceptions and eventual internalizing problems. Research is needed to evaluate this hypothesis.

Failures in nonsocial domains might also make aggressive children susceptible to internalizing problems. For example, aggressive children tend to perform poorly academically. This might be due to their lack of attention to academic tasks and their frequent removal from the classroom for disruptive behavior. If aggressive children internalize their academic failures, these self-perceptions might also contribute to the development of depressive symptoms. Research by Cole and colleagues (1997) indicates that children's poor academic performance predicts depressive symptoms and that this relation is mediated by self-perceived academic competence. Nevertheless, future studies are necessary to examine whether actual and self-perceived academic performance mediate the specific relation between children's aggression and depressive symptoms.

The current study provides several important implications for intervention. Given the high level of co-occurrence between aggression and depressive symptoms in children, intervention packages should be developed that integrate treatment strategies for both of these problems. Such packages could include training in emotion regulation targeting children's feelings of anger as well as sadness. A behavioral activation approach could also be employed that encourages children to engage in enjoyable, prosocial activities likely to bring them positive emotional experiences and also prevent them from engaging in antisocial behaviors. Cognitive strategies that challenge the hostile biases associated with aggression as well as the depressogenic attributions linked to internalizing problems might also be beneficial. In addition,

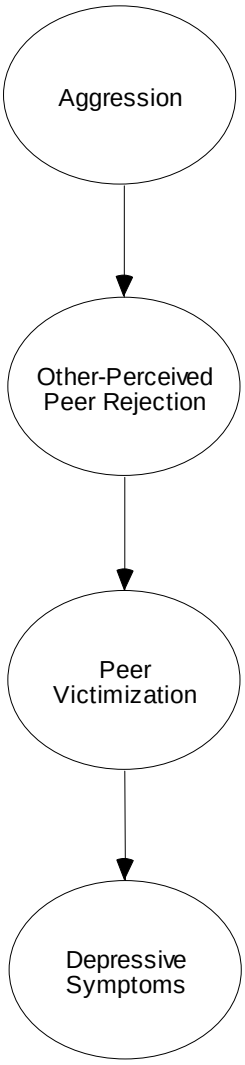
specific components should be included to address children's experience of peer rejection. By improving their peer group status and decreasing the extent to which they are victimized by peers, children may become less vulnerable to developing internalizing problems. For instance, teaching children social skills and coping strategies to deal with peer victimization might attenuate the impact of peer rejection on their emotional adjustment.

In evaluating the results of the current investigation, two major limitations of this study must be considered. First, these results emerged from a fourth- and fifth-grade sample and should not be generalized beyond this age group. Research has found that aggressive behaviors decline steadily throughout childhood (Stanger, Achenbach, & Verlhurst, 1997). Thus, other incompetent social behaviors may become more likely than aggression to elicit peer rejection and contribute to depressive symptoms in older children. Additionally, in adolescence, children become less concerned with peer group acceptance and place more emphasis on developing and maintaining intimate relationships (Boivin & Hymel, 1997). Accordingly, by late childhood, negative peer group evaluations may no longer represent a potent risk factor for depressive symptoms. Furthermore, depressive symptoms are likely more common and more stable in later childhood and adolescent samples. For these reasons, the pattern of findings obtained here might look different, if older children were studied.

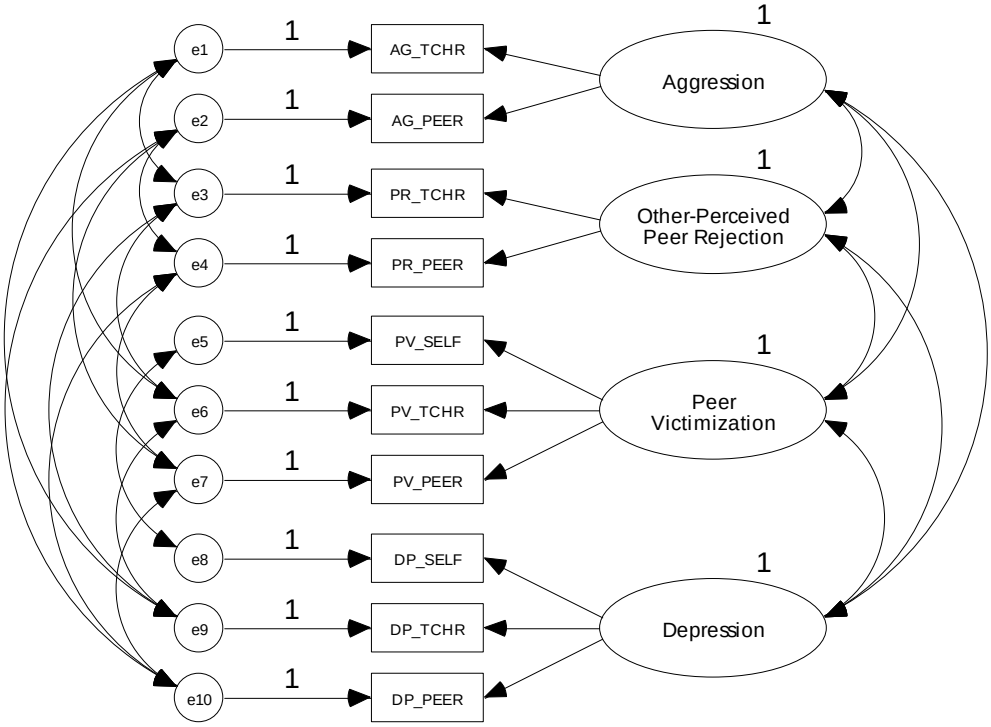
Second, we collected only concurrent data in this study, which precluded us from drawing conclusions about the temporal relations among our target constructs. The theories and empirical findings that we drew on suggest that aggressive behavior precedes depressive symptoms; however, it is also possible that depressive symptoms precipitate aggression, and such a distinction is not testable with the current data set. Moreover, with concurrent data, it is not possible to demonstrate that our mediational model represents a sequential process in which aggressive behavior leads to other-perceived peer rejection which in turn leads to peer victimization and eventual depressive symptoms. Future researchers should consider collecting longitudinal data to address these issues more completely.

In summary, our findings suggest that other-perceived peer rejection and peer victimization partially mediate the relation between aggression and depressive symptoms. This study represents one of the first attempts to conceptualize children's overall experience of peer rejection in terms of being disliked and victimized by peers. However, as discussed above, many other components might contribute to the broad experience of peer rejection. Additionally, mechanisms outside of the peer context might also place aggressive children at risk for developing internalizing problems. Finally, given the limitations of this study, considerably more work remains to be done to fully understand the pathway between children's aggressive behaviors and depressive symptoms.

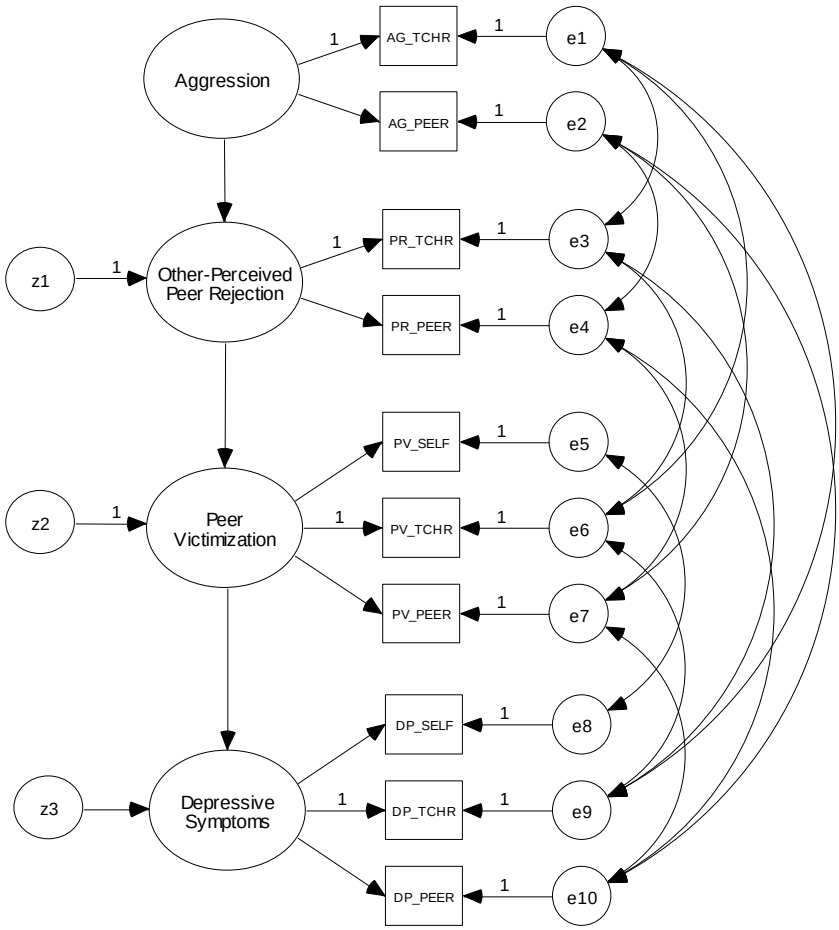
APPENDIX A


Aggression
Other-Perceived Peer Rejection
Peer Victimization
Depressive Symptoms

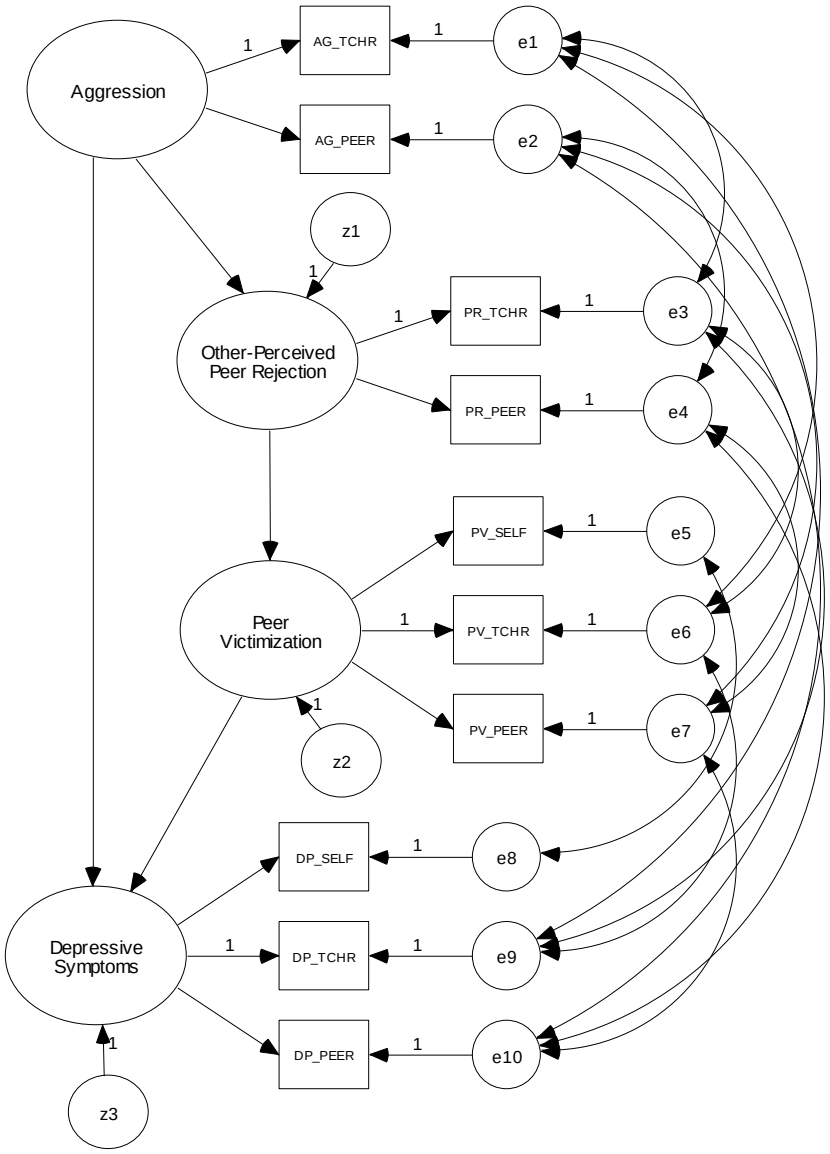
APPENDIX B


e1
e2
e3
e4
e5
e6
e7
e8
e9
e10
1
AG_TCHR
AG_PEER
PR_TCHR
PR_PEER
PV_SELF
PV_TCHR
PV_PEER
DP_SELF
DP_TCHR
DP_PEER
Aggression
Other-Perceived Peer Rejection
Peer Victimization
Depression

APPENDIX C


Aggression
Other-Perceived Peer Rejection
Peer Victimization
Depressive Symptoms
z1
z2
z3
AG_TCHR
AG_PEER
PR_TCHR
PR_PEER
PV_SELF
PV_TCHR
PV_PEER
DP_SELF
DP_TCHR
DP_PEER
e1
e2
e3
e4
e5
e6
e7
e8
e9
e10
1

APPENDIX D


Aggression
AG_TCHR
AG_PEER
e1
e2
z1
Other-Perceived Peer Rejection
PR_TCHR
PR_PEER
e3
e4
Peer Victimization
PV_SELF
PV_TCHR
PV_PEER
e5
e6
e7
z2
Depressive Symptoms
DP_SELF
DP_TCHR
DP_PEER
e8
e9
e10
z3
1

REFERENCES

Anderson, J. C., & Gerbing, D. W. (1987). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*, 411-423.

Angold, A., & Costello, E. J. (1993). Depressive comorbidity in children and adolescents: Empirical, theoretical, and methodological issues. *American Journal of Psychiatry, 150*, 1779-1791.

Block, J., & Gjerde, P. E. (1990). Depressive symptoms in late adolescence: A longitudinal perspective on personality antecedents. In J. E. Rolf & A. S. Masten (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 334-360). New York: Cambridge University Press.

Boivin, M., & Hymel, S. (1997). Peer experiences and social self-perceptions: A sequential model. *Developmental Psychology, 33*, 135-145.

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.

Brown, K., Atkins, M. S., Osborne, M. L., & Milnamow, M. (1996). A revised teacher rating scale for reactive and proactive aggression. *Journal of Abnormal Child Psychology, 24*, 473-480.

Capaldi, D. M. (1991). Co-occurrence of conduct problems and depressive symptoms in early adolescent boys: II. A 2-year follow-up at grade 8. *Development and Psychopathology, 4*, 125-144.

Carey, M. P., Faulstich, M. E., Gresham, F. M., Ruggiero, L., & Enyart, P. (1987). Children's Depression Inventory: Construct and discriminant validity across clinical and nonreferred (control) populations. *Journal of Consulting and Clinical Psychology, 55*, 755-761.

Coie, J. D., & Dodge, K. A. (1983). Continuities and changes in children's social status: A five-year longitudinal study. *Merrill Palmer Quarterly, 29*, 261-282.

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* (pp. 17-59). Cambridge, England: Cambridge University Press.

Coie, J. D., Dodge, K. A., Terry, R., & Wright, V. (1991). The role of aggression in peer relations: An analysis of aggression episodes in boys' play groups. *Child Development,62*, 812-826.

Cole, D. A. (1995). *Convergent and discriminant validity of teacher rating and peer nomination assessments of depression in children*. Unpublished manuscript.

Cole, D. A., & Carpentieri, S. (1990). Social status and the comorbidity of childhood depression and conduct disorder. *Journal of Consulting and Clinical Psychology, 58,* 748-757.

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 and Psychiatry and Allied Disciplines, 38*, 505-514.

Cole, D. A., Martin, J. M., Powers, B., & Truglio, R. (1996). Modeling 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., Peeke, L. G., Martin, J. M., Truglio, R., & Seroczynski, A. D. (1998). A longitudinal look at the relation between depression and anxiety in children and adolescents. *Journal of Consulting and Clinical Psychology, 66*, 451-460.

Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66*, 710-722.

Crick, N. R., & Ladd, G. W. (1989). Nominator attrition: Does it affect the accuracy of children's sociometric classifications? *Merrill-Palmer Quarterly, 35*, 197-207.

Dearing, K. F., & Hubbard, J. A. (2005). *Examining the role of emotion regulation in the relation between social and academic competence and depression in children*. Manuscript submitted for publication.

Dodge, K. A. (1980). Social cognition and children's aggressive behavior. *Child Development, 51*, 162-170.

Dodge, K. A. (1983). Behavioral antecedents of peer social status. *Child Development, 54*, 1386-1399.

Dodge, K. A., & Coie, J. D. (1987). Social-information-processing factors in reactive and proactive aggression in children's peer groups. *Journal of Personality and Social Psychology, 53*, 1146-1158.

Dodge, K. A., Coie, J. D., Pettit, G. S., & Price, J. M. (1990). Peer status and aggression in boys' groups: Developmental and contextual analyses. *Child Development, 61*, 1289-1309.

Glass, G. V., & Hopkins, K. D. (1996). *Statistical methods in education and psychology*. Boston: Allyn and Bacon.

Grills, A. E., & Ollendick, T. H. (2002). Peer victimization, global self-worth, and anxiety in middle school children. *Journal of Clinical Child and Adolescent Psychology, 31*, 59-68.

Harter, S. (1982). The Perceived Competence Scale for Children. *Child Development, 53*, 87-97.

Harter, S. (1985). *Self-Perception Profile for Children.* Denver, CO: University of

Denver.

Hawker, D. S., & Boulton, M. J. (2003). Twenty year's research on peer victimization and psychological maladjustment: A meta-analytic review of cross-sectional studies. In M. E. Hertzig & E. A. Farber (Eds.), *Annual Progress in Child Psychiatry and Child Development: 2000-2001* (pp. 505-534). New York: Brunner-Routledge.

Hops, H., Lewinsohn, P. M., Andrews, J. A., & Roberts, R. E. (1990). Psychosocial correlates of depressive symptomatology among high school students. *Journal of Clinical Child Psychology, 19*, 211-202.

Hymel, S., Rubin, H. H., Rowden, L., & LeMare, L. (1990). Children's peer relationships: Longitudinal prediction of internalizing and externalizing problems from middle to late childhood. *Child Development, 61*, 2004-2021.

Kaplan, D. (2000). *Structural equation modeling: Foundations and extensions*. London: Sage.

Khatri, P., Kupersmidt, J. B., & Patterson, C. (2000). Aggression and peer victimization as predictors of self-reported behavioral and emotional adjustment. *Aggressive Behavior,26*, 345-358.

Kiesner, J. (2002). Depressive symptoms in early adolescence: Their relation with classroom behavior and peer status. *Journal of Research on Adolescence, 12*, 463-478.

Kovacs, M. (1985). The Children's Depression Inventory. *Psychopharmacology*

Bulletin, 21, 995-998.

Kovacs, M. (1992). *Children's Depression Inventory (CDI) manual.* Los Angeles, Western Psychological Services/Multi-Health Services.

Ladd, G. W., & Kochenderfer-Ladd, B. (2002). Identifying victims of peer aggression from early to middle childhood: Analysis of cross-informant data for concordance, estimation of relational adjustment, prevalence of victimization, and characteristics of identified victims, *Psychological Assessment, 14*, 74-96.

Lefkowitz, M. M., & Tesiny, E. P. (1980). Assessment of childhood depression. *Journal of Consulting and Clinical Psychology, 48*, 43-50.

Lefkowitz, M. M., & Tesiny, E. P. (1985). Depression in children: Prevalence and correlates. *Journal of Consulting and Clinical Psychology, 53*, 647-656.

Little, S. A., & Garber, J. (1995). Aggression, depression, and stressful life events predicting peer rejection in children. *Development & Psychopathology, 7*, 845-856.

MacKinnon, D. P., Lockwood, C. M., & Williams, J. (2004). Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research, 39,* 99-128.

Marsh, H. W., & Grayson, D. (1995). Latent variable models of multitrait-multimethod data. In R. H. Hoyle (Ed.), *Structural equation modeling.* (pp. 177-198). Thousand Oaks, CA: Sage.

Mattison, R. E., Hanford, H. A., Kales, H. C., Goodman, A. L., & McLaughlin, R. E.

(1990). Four-year predictive value of the Children's Depression Inventory. *Psychological Assessment, 2*, 169-174.

McConaughy, S. H., & Skiba, R. J. (1993). Comorbidity of externalizing and internalizing problems. *School Psychology Review, 22*, 421-436.

Messer, S., & Gross, A. M. (1994). Childhood depression and aggression: A covariance structure analysis. *Behaviour Research & Therapy, 32*, 663-677.

Nangle, D. W., Erdley, C. A., Newman, J. E., Mason, C. A., & Carpenter, E. M. (2003). Popularity, friendship quantity, and friendship quality: Interactive influences on children's loneliness and depression. *Journal of Clinical Child and Adolescent Psychology, 32*, 546-555.

Neary, A., & Joseph, S. (1994). Peer victimization and its relationship to self-concept and depression among school-girls. *Personality and Individual Differences, 16*, 183-186.

Nolan, S. A., Flynn, C., & Garber, J. (2003). Prospective relations between rejection and depression in young adolescents. *Journal of Personality & Social Psychology, 85*, 745-755.

Olweus, D. (1993). Victimization by peers: Antecedents and long-term consequences. In K. H. Rubin & J. B. Asendorpf (Eds.), *Social withdrawal, inhibition, and shyness in childhood.* Hillsdale, NJ: Erlbaum.

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. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology, 29*, 611-621.

Patterson, G. R., & Capaldi, D. M. (1990). A mediational model for boys' depressed mood. In J. E. Rolf, A. S. Masten, D. Cicchetti, K. H. Nuechterlein, & S. Weintraub (Eds.), *Risk and protective factors in the development of psychopathology* (pp. 141-163). New York: Cambridge University Press.

Patterson, G. R., & Stoolmiller, M. (1991). Replications of a dual-failure model for boys' depressed mood. *Journal of Consulting and Clinical Psychology, 59,* 491-498.

Perry, D. G., Kusel, S. J., & Perry, L. C. (1988). Victims of peer aggression. *DevelopmentalPsychology, 24*, 807-814.

Perry, D. G., Perry, L. C., & Rasmussen, P. (1986). Cognitive social learning mediators of aggression. *Child Development, 57*, 700-711.

Peterson, L., Mullins, L. L., & Ridley-Johnson, R. (1985). Childhood depression: Peer reactions to depression and life stress. *Journal of Abnormal Child Psychology, 13*, 597-609.

Rhode, P., Lewinsohn, P. M., & Seeley, J. R. (1991). Comorbidity of unipolar depression: II. Comorbidity with other mental disorders in adolescents and adults. *Journal of Abnormal Psychology, 100*, 214-222.

Sandstrom, M. J., & Zakriski, A. L. (2004). Understanding the experience of peer rejection. In J. B. Kupersmidt & K. A. Dodge (Eds.), *Children's peer relations: From development to intervention* (pp. 101-118). Washington, DC: American Psychological Association

Schaeffer, C. M., Petras, H., Ialongo, N., Poduska, J., & Kellam, S. (2003). Modeling growth in boy's aggressive behavior across elementary school: Links to later criminal involvement, conduct disorder, and antisocial personality disorder. *Developmental Psychology, 39*, 1020-1035.

Smucker, M. R., Craighead, W. E., Craighead, L. W., & Green, B. J. (1986). Normative and reliability data for the Children's Depression Inventory. *Journal of Abnormal Child Psychology, 14*, 25-39.

Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhart (Ed.), *Sociological methodology* (pp. 290-312). San Francisco: Jossey-Bass.

Stanger, C., Achenbach, T. M., & Verlhurst, F. C. (1997). Accelerated longitudinal comparisons of aggressive versus delinquent syndromes. *Development and Psychopathology, 9*, 43-58.

Tabachnik, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn and Bacon.

Terry, R. (1999). *Measurement and scaling issues in sociometry: A latent trait approach.* Paper presented at the biennial meeting of the Society for Research

in Child Development,

Albuquerque, NM.

Terry, R. (2000). Recent advances in measurement theory and the use of sociometric techniques. In A. H. N. Cillessen & W. M. Bukowski (Eds.), *Recent advances in the measurement of acceptance and rejection in the peer system. New directions for child and adolescent development, No. 88* (pp. 27-53). San Francisco: Jossey Bass, Inc. Publishers.

Vosk, B., Forehand, R., Parker, J. B., & Rickard, K. (1982). A multimethod comparison of unpopular children. *Developmental Psychology, 18*, 571-575.