Reciprocating Risks of Peer Problems and Aggression for Children’s Internalizing Problems

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Three complementary models of how peer relationship problems (exclusion and victimization) and aggressive behaviors relate to prospective levels of internalizing problems are examined. The additive risks model proposes that peer problems and aggression cumulatively increase risks for internalizing problems. The reciprocal risks model hypothesizes that peer problems and aggression transact over time and mediate the effects of each other on prospective internalizing problems. Last, the internalizing risks model proposes that, in addition to aggressive behaviors, prior internalizing problems also provoke peer problems that, in turn, further elevate risks for prospective internalizing problems. Data came from a sample of 453 low-income, ethnically diverse children in kindergarten to Grade 3 who were assessed 3 times over 1 school term (in January, March and June). Findings supported the internalizing risks model. Four key pathways were found to increase risks for internalizing problems by the end of the school year; 2 of these routes were rooted in aggressive behaviors, and 3 paths operated indirectly via levels of peer problems in the spring. Children who were initially aggressive became excluded by peers by the spring, whereas children who initially showed more symptoms of depression and anxiety became victimized by peers by the spring. In turn, both peer exclusion and victimization increased prospective levels of internalizing problems by the end of the school year.

Keywords: peer exclusion, peer victimization, aggression, internalizing problems, middle childhood

Middle childhood marks a transitional point where the quality of peer relationships and the reputation that children develop within the peer group become increasingly salient for their psychosocial adjustment, such as their ability to regulate feelings of anger, sadness, and anxiety (Rubin, Bukowski, Parker, & Bowker, 2008). Sadly, some children form poor quality peer relationships and develop a negative reputation within the peer group. Being disliked, excluded, or victimized by the peer group tends to be more stable over time in late childhood than in early to middle childhood (Leadbeater & Hoglund, 2009; Pettit, Clawson, Dodge, & Bates, 1996). Aggressive behaviors also tend to be highly stable across childhood (NICHD Early Child Care Research Network, 2004) and are often related to adversities in peer relationships (Ladd, 2006; Leadbeater & Hoglund, 2009; Reijntjes et al., 2011; Van Lier & Koot, 2010).

On the other hand, internalizing problems are less stable across childhood (Sterba, Prinstein, & Cox, 2007; Van Lier & Koot, 2010). Nonetheless, during middle childhood about 13%–21% of children consistently show levels of internalizing symptomology that warrant clinical attention (Leadbeater & Hoglund, 2009; Sterba et al., 2007). As ongoing internalizing problems appear to be related to adversities in children’s peer relationships and their own aggressiveness (Gazelle & Ladd, 2003; Leadbeater & Hoglund, 2009; Reijntjes, Kamphuis, Prinzie, & Telch, 2010; Van Lier & Koot, 2010), research identifying the directional pathways by which peer problems and aggression may contribute to ongoing internalizing problems is needed.

The purpose of the current study is to investigate three complementary models of how peer relationship problems (exclusion and victimization) and aggression relate to prospective levels of internalizing problems, beyond individual stability in these constructs over time and their concurrent associations (see Figure 1): (a) The additive risks model tests whether peer problems and aggression contribute additively to prospective internalizing problems; (b) the reciprocal risks model tests whether peer problems and aggression transact over time and mediate the effects of each other on prospective internalizing problems; and (c) the internalizing risks model assesses whether, in addition to aggression, internalizing problems initially elicit peer problems that, over time, further contribute to ongoing internalizing problems. Gender and age-related differences in these associations are assessed. Theoretical and empirical support for these three primary models is reviewed next.
Psychopathology and Developmental Theories

Developmental psychopathology is an integrative discipline that uses a developmental framework to better understand the pathways that may contribute to typical or pathological adjustment across the lifespan (Cicchetti, 2006). Attention to developmental pathways that emerge in early and middle childhood is critical for understanding the etiology of various psychopathologies that may operate across childhood. Developmental systems theory further argues that developmental change is the product of multiple interacting sources and emphasizes the contributions of environmental, genetic, and epigenetic factors to developmental phenomena and the reciprocity of these factors with developmental processes over time (Sameroff, 2000). Key to the current study is the focus of this theory on the reciprocal relations between environmental and developmental processes and on the concepts of equifinality and multifinality that are central for conceptualizing how environmental and developmental processes may additively or reciprocally contribute to maladjustment (Sameroff, 2000). Equifinality specifies that a common developmental outcome may result from different precipitating factors. In contrast, multifinality specifies that diverse developmental outcomes may evolve from any one precipitating factor, resulting in multiple and potentially cascading pathways toward maladjustment.

Applying the equifinality principle, the additive risks model proposes that children’s prior relationship problems with peers and vulnerability to aggression are precipitating factors that incrementally contribute to prospective internalizing problems (Ladd, 2006). As such, this model specifies that either peer problems or aggression could lead to internalizing problems, but the combination of both likely yields higher levels of internalizing problems than either in isolation. Consistent with the multifinality principle, the reciprocal risks model maintains that adverse peer experiences and aggressive behaviors reciprocally affect each other and, over time, mediate the effects of each other on prospective internalizing problems (Leadbeater & Hoglund, 2009; Van Lier & Koot, 2010). Thus, this model proposes that there are multiple outcomes in the pathways toward internalizing problems that may begin from any one point (i.e., peer problems or aggression), with both paths leading toward internalizing problems. Also consistent with the multifinality principle, the internalizing risks model proposes that children’s initial vulnerability to sadness and anxiety, as well as to aggression, sets the stage for being excluded or victimized by peers, which, over time, further contributes to ongoing internalizing problems (Leadbeater & Hoglund, 2009). Consequently, ongoing internalizing problems may result from early vulnerability to maladjustment and the risks that this initial vulnerability creates for subsequent peer problems.

While longitudinal research testing these theoretical models generally converges in indicating that peer adversities and aggression relate to prospective levels of internalizing problems (Ladd, 2006; Leadbeater & Hoglund, 2009; Van Lier & Koot, 2010), findings from these studies support different theoretical models and lead to different explanations of the pathways through which vulnerabilities to peer adversities and aggression may flow over into internalizing problems. Both the reciprocal and internalizing risks models are poised to address the cascading or mediation paths by which children experience elevated internalizing problems. Cascade models illustrate how adjustment in one domain (e.g., aggression) can spill over across time to affect adjustment in a related domain (e.g., peer problems) and, in turn, further radiate toward additional developmental domains (e.g., internalizing problems; Masten et al., 2005).

Hypothesized Associations Between Peer Problems, Aggression, and Internalizing Problems

The question of whether children’s peer relationship problems, their use of aggression, and levels of internalizing problems are related has been addressed by both cross-sectional and longitudinal research. Cross-sectional research supports theory that peer adversities and maladjustment are related concurrently but not necessarily over time. Alternatively, longitudinal research, whether in the short- or long-term, can systematically test theoretical models of how peer problems and aggression are related to prospective internalizing problems, while accounting for individual stability in these constructs over time and their within-time associations.

Additive Risks Model

The additive risks model proposes that adverse peer experiences and vulnerability to aggression represent incremental risks for children’s abilities to manage feelings of sadness, worthlessness, and anxiety. Longitudinal research has identified two forms of peer difficulties that are particularly problematic for children’s ability to manage emotional distress during middle childhood: exclusion and victimization (Gazelle & Ladd, 2003; Ladd, 2006; Leadbeater & Hoglund, 2009; Reijntjes et al., 2010; Rudolph, Troop-Gordon, Hessel, & Schmidt, 2011; Van Lier & Koot, 2010). Peer exclusion is a group-based reputational construct that captures whether the peer group considers a particular child to be a desirable playmate and reflects the isolation of children by the peer group often
through indirect actions, such as refraining from playing with a specific child (Gazelle & Ladd, 2003). Exclusion does not necessarily reflect purposely malicious acts. Indeed, exclusion can be completely unintentional; only when probed do classmates recognize that a particular child is neglected or excluded by the peer group. Peer victimization, on the other hand, reflects experiences of repetitive, intentionally malicious acts of aggression by peers in which there is a presumed social or physical power imbalance between the aggressor and victim (Olweus, 1995). Victimization can reflect more of a dyadic than a group-level phenomenon.

Several subtypes of victimization have been examined, including relational (e.g., rumor spreading), physical (e.g., hitting), and verbal (e.g., threats; Espelage & Swearer, 2003). Like physical and verbal victimization, relational victimization tends to be enacted more directly than indirectly in early to middle childhood (e.g., being told that you cannot play in a specific group; Crick, Casas, & Mosher, 1997).

Research has also identified aggressive behaviors as a risk for internalizing problems in middle childhood (Crick, Ostrov, & Werner, 2006; Leadbeater & Hoglund, 2009; Murray-Close, Ostrov, & Crick, 2007; Van Lier & Koot, 2010). Aggression that is interpersonal in nature is characterized by intentionally harmful acts directed at another child and may take the form of several subtypes, including relational, physical, and verbal (Espelage & Swearer, 2003; Olweus, 1995). Although aggressive children typically express anger, these children also often display co-occurring symptoms of depression and anxiety (Egger & Angold, 2006). Indeed, a meta-analytic review of 148 studies on aggression that included relational, physical, and verbal forms among children and adolescents indicated that aggression, and relational aggression in particular, was moderately correlated with internalizing problems (Card, Stucky, Sawalani, & Little, 2008).

Research from Ladd (2006) supports the proposition that peer problems and vulnerability to aggression represent additive risks for internalizing problems. Using an autoregressive panel design with a sample of primarily middle-income Caucasian children who were followed from kindergarten to Grade 6, Ladd (2006) found that early peer rejection and physical aggression additively contributed to subsequent levels of externalizing problems across successive waves of data. Early peer rejection and anxious/fearful behaviors contributed additively to lagged levels of internalizing problems. However, the additive effects of peer problems and aggression on internalizing problems were not assessed in this study, leaving it uncertain whether peer problems and aggression represent additive precipitating risks for internalizing problems.

**Reciprocal Risks Model**

Aggressive children represent about 40% to 50% of children who are disliked and excluded by peers (Rubin et al., 2008). Peer victimization is also commonly associated with aggressive behaviors (Reijntjes et al., 2011). While the direction by which exclusion and victimization relate to aggression is unclear (Reijntjes et al., 2011), peer problems and aggression may have reciprocally enhancing effects on each other that, over time, further elevate risks for later internalizing problems (Ladd & Troop-Gordon, 2003; Leadbeater & Hoglund, 2009; Van Lier & Koot, 2010). Further, as some research suggests, peer adversities and aggression may mediate the effects of each other on subsequent internalizing problems (Morrow, Hubbard, McAuliffe, Rubin, & Dearing, 2006; Pedersen, Vitaro, Barker, & Borge, 2007).

Children who are often excluded or victimized by peers may come to perceive all interactions with peers as negative or hostile and consequently engage in reactive aggression as a response to either perceived or real antagonistic behaviors from peers (Crick, Grotpeter, & Bigbee, 2002; Dodge et al., 2003; Hoglund & Leadbeater, 2007). In turn, aggressive children may internalize these pervasive failures and volatility in their peer relationships, elevating their vulnerability to depression and anxiety (Ellis & Zarbatany, 2007; Pedersen et al., 2007). On the other hand, the peer group tends to dislike children who are aggressive because they are viewed as deviant and a threat to the group’s cohesiveness (Bukowski & Sippola, 2001; Rubin et al., 2008). In turn, being alienated or victimized by peers may inflate children’s feelings of sadness and anxiety if they are cognizant of their poor peer status (Ladd & Troop-Gordon, 2003; Rudolph & Clark, 2001).

In support of a reciprocal risks model, with a sample of predominately middle-income Caucasian children, Leadbeater and Hoglund (2009) found that physical aggression at the start of Grade 1 increased risks for peer victimization by Grade 2 that, in turn, contributed to the maintenance of aggression by Grade 3. Physical aggression in Grade 2 also added directly to internalizing problems by Grade 3. However, victimization added only modestly to internalizing problems and did not mediate the effects of aggression on internalizing problems. As an extension of this, with a sample of low- to middle-income, ethnically diverse children, Van Lier and Koot (2010) found that externalizing problems in kindergarten contributed negatively to lagged levels of social preference that, in turn, mediated the effects of early externalizing problems on internalizing problems by Grade 4. Together, these findings suggest that aggression may be a precipitating risk for both peer adversities and internalizing problems in middle childhood.

**Internalizing Risks Model**

While most research has assessed peer problems as a driving force behind maladjustment, children’s problems with peers may also be propelled by their initial vulnerability to internalizing symptomology (Reijntjes et al., 2010). Depressed, socially anxious, timid, and withdrawn children represent about 10% to 20% of disliked and excluded children (Parkhurst & Asher, 1992). Children who cry easily, are often melancholy, or are overly anxious may provoke negative reactions from peers because these children are not fun social partners and are perceived as too sensitive to play with (Bukowski & Sippola, 2001; Rubin et al., 2008). The frail demeanor of these children also runs contrary to age-specific norms and expectations for social interactions and group involvement, which may subject them to ongoing peer problems.

Leadbeater and Hoglund (2009) found that levels of internalizing problems in Grade 2 increased risks for peer victimization by Grade 3, lending some support to the internalizing risks model. However, research from Van Lier and Koot (2010) indicated no support for internalizing problems as a precipitating risk for peer social preference or victimization. Differences in study design and the yearly (Leadbeater & Hoglund, 2009) and longer (Van Lier & Koot, 2010) spacing between assessments may have contributed to these different findings and to the limited relations found. The
current study uses a cross-lagged panel design with assessments conducted multiple times over one school term to investigate these transactions within a more restricted time frame that may better capture fluctuations in peer relations and psychopathology. A cohort sequential design is also used to assess age-related differences in these cross-time associations.

**Moderators of the Relations Between Peer Problems, Aggression, and Internalizing Problems**

**Gender Differences**

While gender differences in rates of peer exclusion and physical victimization and aggression often favor boys, findings for gender differences in relational forms of victimization and aggression are mixed (Card et al., 2008; Rose & Rudolph, 2006). Gender differences in internalizing problems are also not typically found for children under age 13 (Costello, Erkanli, & Angold, 2006). Nonetheless, precipitating risks for internalizing problems may differ by gender due to vulnerability to interpersonal stressors (Rose & Rudolph, 2006). Girls are more likely to become distressed by interpersonal stressors compared to boys (Crick et al., 2002, 2006; Murray-Close et al., 2007; Rudolph et al., 2011; Rudolph, Ladd, & Dinella, 2007). As a consequence, when girls experience peer exclusion or victimization their heightened concerns over social evaluation and need for approval may be associated with greater risks for internalizing problems (Rose & Rudolph, 2006). Alternatively, boys’ greater use of aggression overall may heighten their risks for peer problems and, in turn, emotional distress, as they are less likely than girls to enlist social support in response to peer stressors (Rose & Rudolph, 2006).

**Age-Related Differences**

With age, peer group membership is increasingly set around core beliefs, attitudes, and behaviors that comprise the basis for exclusion from the peer group and that set the stage for victimization (Rubin et al., 2008). As peer group membership tends to become more selective and homogeneous as children age, children in the midst of middle childhood (about ages 6 to 10) may be more censured for engaging in undesirable behaviors, such as aggression, that compromise the group’s cohesiveness than children at the entry to middle childhood (about ages 4 to 5; Bukowski & Sippola, 2001). Consequently, children in the midst of middle childhood who are aggressive may be more excluded or victimized for their behaviors than children transitioning into middle childhood. When these older children suffer exclusion or victimization, they may also be more cognizant of their poor social status than younger children (Selman, 2003) and, in turn, become more distressed and anxious about their negative treatment by peers.

**The Current Study**

In sum, the current study examines the contributions of peer exclusion and victimization and aggression to prospective levels of internalizing problems by assessing three complementary models: the additive risks model, the reciprocal risks model, and the internalizing risks model. These three models test the following research questions, in order:

1. Do peer problems and aggression contribute additively to prospective levels of internalizing problems, after accounting for individual stability in these constructs and their within-time covariation?

2. Do peer problems and aggression transact over time to mediate the risks of each other on prospective internalizing problems, beyond their individual stability and within-time covariation?

3. In addition to the transactions between peer problems and aggression, do prior levels of internalizing problems also increase risks for peer problems that, in turn, further elevate internalizing problems?

We also test whether gender and grade (kindergarten to Grade 3) moderate these associations.

**Method**

**Participants**

To contribute to research on peer relations in childhood the current study tests models of peer relations using a cohort sequential research design with a sample of low-income, ethnically diverse children at the entry to (~4–5 years of age) and in the midst of (~6–9 years of age) middle childhood. Participants included 461 children in kindergarten to Grade 3 (mean age = 6.87 years, SD = 1.18; range = 4.25 to 9.42) who were recruited from 63 classrooms in 10 low-income, ethnically diverse elementary schools in Western Canada. According to school district records, all participating schools were in the top 25th quartile of high needs, ethnically diverse schools.

Participating children were equally represented by gender (51% girls) and grade (27.3% kindergarten, 29.5% Grade 1, 21.5% Grade 2, and 21.7% Grade 3). Parents reported that children were ethnically diverse: 50.5% Caucasian, 12.5% Aboriginal, 10.3% Black/African Canadian, 8.8% Southeast/East Asian, 6.6% South/West Asian, 6.3% Latin American, and 5.0% mixed ethnicities. In addition, 35.9% of children were first- or second-generation Canadians, 58.4% of families spoke a language other than English in the home “once in a while” to “all the time,” 31% of children lived in a single-parent household, 21.5% of mothers and 25.4% of fathers did not graduate from high school, and 40.2% of mothers and 14.4% of fathers were not employed.

**Procedures**

Consent packages (in the predominate languages spoken in the schools: English, Spanish, Somali, or Tagalog) were sent home to all parents of children in kindergarten to Grade 3 in the participating schools to inform them of the study and to seek active consent for their child to participate. Parents were asked to return the consent form regardless of whether they granted consent. At each wave, consent was sought for children new to the school and for children who had not previously returned their consent form. Overall, 60% of parent consent forms were returned; of these returned forms, the majority of parents granted consent (range = 77%–80% across waves). Of all eligible children, ~43% (range =
41.5%–43.8% across waves) had parental consent to participate. Children were also asked to assent to data collection at each wave.

Data were collected on three occasions, with each collection period lasting approximately 1 month across the 10 schools and with 8–10 weeks between each collection period. Baseline data were collected in January 2010 (W1) from 417 children. Follow-up data were gathered in March 2010 (W2) from 450 children (new entrants = 44 children; attrition = 11 children) and in June 2010 (W3) from 438 children (attrition = 12 children). Of the total 461 children who participated in the study, 373 (80.9%) had data at all three waves, 66 (14.3%) had data at two waves, and 22 (4.8%) had data at one wave only. Missing data are a reflection of nonassent at one wave (n = 1, 0.2%), attrition (n = 23, 5.0%), and new entrant status (n = 44, 9.6%).

Following research on minimum classroom participation rates for reliable peer nomination data (Marks, Babcock, Cillessen, & Crick, 2012; Prinstein, 2007), we required that classrooms have a minimum 25% participation rate to be included in the analyses. A total of three classrooms (n = 8 children) were excluded as they did not reach this minimum participation rate. Thus, the final sample in the current study included 453 children in 60 classrooms.

Data were collected on two separate occasions at each wave. Children reported on their experiences of peer victimization in class groups of five to 20 children during a 40-min class block. All of the questions were read out loud by a research assistant. A second research assistant circulated to ensure children understood the instructions and to monitor their placement of responses. Children reported on their internalizing problems and completed a 30-min individual interview that was completed during one class block. To assist children in their recall of classmates, research assistants reviewed a class roster of all classmates with the children.

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Measures

Peer exclusion. Using an adapted version of the Revised Class Play (Masten et al., 1985), peer nominations were used to assess peer exclusion from one item: “a kid who no one wants to play with.” This item captured the peer group’s implicit marginalization of particular children but not necessarily intentional or explicitly hurtful behaviors (Gazelle & Ladd, 2003). Thus, exclusion is a measurement of whether a child is deemed a desirable playmate. A standardized exclusion score was calculated for each participating child by totaling the number of nominations received and then dividing the total nominations received by the number of participating children in the class. These scores were then standardized to a z-score distribution within each class (Coie, Dodge, & Coppotelli, 1982).

Peer victimization. Experiences of intentional, repeated, hurtful behaviors enacted by another peer were assessed via self-reports. Children reported how often in the past month they experienced three subtypes of peer victimization on the Social Experiences Questionnaire (Crick & Grotpeter, 1996): relational (five items; e.g., “say they won’t like you unless you do what they want”), physical (four items; e.g., “kick hurt you or pull your hair”), and verbal (one item; “yell at you or call you mean names”). Items were rated on a 3-point scale (0 = never, 1 = sometimes, 2 = all the time) that was depicted visually using three different sized bubbles. Items were averaged within subscale. The internal consistencies were moderate across waves and grades: relational, α = .60–.75 (W1), .65–.78 (W2), .68–.86 (W3); and physical, α = .66–.72 (W1), .67–.77 (W2), .75–.77 (W3). The three subscales were intercorrelated within each wave: rs = .50–.60, p < .01 (W1); rs = .50–.64, p < .01 (W2); rs = .57–.65, p < .01 (W3).

Peer aggression. Peer nominations were also used to assess peer aggression using an adapted version of the Revised Class Play (Masten et al., 1985). Four items were used to assess three subtypes of aggression (Crick & Grotpeter, 1995; Crick et al., 2006): relational (two items; “a kid who tells lies about other kids,” “a kid who leaves other kids out during an activity or play time”), physical (one item; “a kid who hits, kicks, or shoves other kids”), and verbal (one item; “a kid who yells at other kids”). Scores were calculated by totaling the number of nominations, dividing this by the total number of participants in the class, and then standardizing to a z-score distribution within each class (Coie et al., 1982). Internal consistencies were moderate across waves and grades: α = .50–.55, p < .01 (W1); rs = .30–.47, p < .01 (W2); rs = .30–.47, p < .01 (W3).

Internalizing problems. Children reported how frequently they had experienced symptoms of depression and anxiety during the past 4 weeks using the Behaviour Assessment System for Children II (Reynolds & Kamphaus, 2004): depression (13 items; e.g., “I feel sad,” “nothing is fun anymore”) and anxiety (12 items; e.g., “I worry about what is going to happen,” “I am afraid of a lot of things”). Symptoms were rated on a 3-point scale (0 = never, 1 = sometimes, 2 = all the time) that was depicted visually with different sized bubbles. Internal consistencies were high across waves and grades: depression, α = .81–.85 (W1), .82–.90 (W2), .79–.90 (W3); and anxiety, α = .82–.83 (W1), .80–.92 (W2), .86–.91 (W3). The subscales were correlated at each wave (rs = .73–.81, p < .01).

Data Analytic Strategy

Analyses are presented in two main sections. In the preliminary analysis section, latent measurement models for victimization, aggression, and internalizing problems and the invariance of these factor structures across gender and grade at Wave I and also across waves is established first. Second, the psychometric data for the criterion constructs and gender and grade differences in mean levels of each subscale are examined. Third, zero-order correla-
tions among the manifest and latent constructs are presented. In the primary analysis section, a series of autoregressive, cross-time structural models assessing the concurrent and prospective associations between peer problems, aggression, and internalizing problems are examined. These models are tested with exclusion and victimization in separate models first and then with exclusion and victimization simultaneously to assess their unique associations with internalizing problems. Each construct is regressed on gender and age at each wave. Last, multiple-group models testing gender and grade differences in the best fitting models are examined. In the multiple-group gender models, the regressions on gender are removed to assess gender differences in the path coefficients.

We are particularly interested in the cascading or mediation paths by which children experience elevated internalizing problems by the end of the school year (Masten et al., 2005). Both the reciprocal and internalizing risks models are poised to illustrate these indirect, cascading paths. Following MacKinnon, Lockwood, Hoffman, West, and Sheets (2002), the confidence intervals around the indirect paths from W1 peer problems and maladjustment toward W3 internalizing problems are computed via the Sobel test: the product of the paths from the independent variable (e.g., W1 aggression) to the mediator (e.g., W2 exclusion) and from the mediator to the dependent variable (W3 internalizing problems), divided by the square root of the sum of the two direct paths multiplied by the standard error of the other direct path.

We use confirmatory factor analysis with Mplus 7.0 (Muthén & Muthén, 2011) to assess our measurement and structural models. Full information maximum-likelihood estimation is used to account for the modest amount of missing data. Model fit precision is examined using the chi-square statistic ($\chi^2$), comparative fit index (CFI), root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR). The $\chi^2$ test assesses the discrepancy of fit between the observed and hypothesized models; a nonsignificant $\chi^2$ value indicates a good fit to the data but is overly sensitive to sample size and model complexity. The CFI estimate compares the specified model with a model in which all variables are assumed to be uncorrelated; values .95 or greater specify an excellent fit to the data, and values of .90–.94 indicate an adequate fit. The RMSEA index adjusts for model complexity and favors the most parsimonious model. RMSEA and SRMR values of .05 or less indicate excellent fit to the data, and values of .06–.08 indicate adequate model fit (Kline, 2011). Model comparisons are calculated using a chi-square difference test ($\Delta\chi^2$) to compare nested models (e.g., additive vs. reciprocal) and multiple-group models with increasing constraints. Significant $\Delta\chi^2$ tests indicate support for the more complex nested model or the less constrained multiple-group model.

Results

Preliminary Data Analysis

Measurement models. Latent measurement models of victimization, aggression, and internalizing problems and the invariance of these models across gender and grade at Wave 1 were established first. Models with the factor loadings constrained to be equal across gender or grade were compared to models with these equalities relaxed. These analyses indicated that the factor structure of each construct at Wave 1 was invariant by gender and grade: victimization, gender, $\Delta\chi^2(2) = 3.84, p = .15$, and grade, $\Delta\chi^2(6) = 8.45, p = .21$; aggression, gender, $\Delta\chi^2(2) = 3.08, p = .21$, and grade, $\Delta\chi^2(6) = 8.00, p = .24$; and internalizing problems, gender, $\Delta\chi^2(1) = 0.12, p = .73$, and grade, $\Delta\chi^2(3) = 6.81, p = .08$.

Next, the invariance of the victimization, aggression, and internalizing problems measurement models across the three waves of data was assessed in three consecutive steps (Widaman, Ferrer, & Conger, 2010). First, a configural invariance model where the factor loadings, intercepts, and variances of the indicators were free to vary across waves was tested. Second, a metric invariance model where the factor loadings and intercepts were constrained to be equal across waves was tested. Peer victimization ($\chi^2[34, 453] = 120.82, p < .01, CFI = .92, RMSEA = .08$) and aggression ($\chi^2[34, 453] = 102.76, p < .01, CFI = .92, RMSEA = .07$) showed scalar invariance over time, whereas internalizing problems showed metric invariance over time ($\chi^2[11, 453] = 90.41, p < .01, CFI = .93, RMSEA = .13$).

Psychometric data. Average levels of the constructs were low at each wave (see Table 1), with modest gender and grade differences (see Table 2). On average, peers rated boys as significantly more excluded and aggressive at each wave (except for relational aggression at W2) than girls. Girls reported more relational victimization at W2 and W3 and more anxiety at W3. Children in kindergarten reported more relational victimization and depressive symptoms than children in Grades 2 and 3 at W1 and more relational victimization than children in Grade 1 at W3. Children in Grade 2 reported more verbal victimization than children in Grade 1 at W3.

Zero-order correlations. The zero-order correlations between the manifest (exclusion) and latent (victimization, aggression and internalizing problems) constructs were examined next. All correlations were in the expected directions (see Table 3). Peer exclusion, victimization, and internalizing problems showed moderate stability across waves, while aggression showed high stability across waves. Peer exclusion was moderately correlated with aggression within and across waves but was only weakly associated with victimization and internalizing problems at a few time points. Peer victimization was weakly correlated with aggression (except for three nonsignificant correlations) and moderately correlated with internalizing problems within and across waves. Aggression at each wave was also weakly correlated with internalizing at Wave 2.

Primary Data Analysis: Testing the Hypothesized Models

Next, a series of autoregressive, cross-lagged structural models were tested to assess the directional, cascading associations between peer problems, aggression, and internalizing problems (see Figure 1). A baseline model with the autoregressive paths for each construct (e.g., W2 exclusion regressed on W1 exclusion) and the within-time covariances between the constructs (e.g., W1 exclusion with W1 internalizing) was tested first as the reference model by which to compare the primary models. The additive risks model
added paths from peer problems and aggression to lagged internalizing problems (e.g., W2 internalizing regressed on W1 exclusion) to assess the hypothesis that peer problems and aggression represent unique, additive risks for prospective internalizing problems. The reciprocal risks model added bidirectional paths between peer problems and aggression (e.g., W2 aggression regressed on W1 exclusion, W2 exclusion regressed on W1 aggression) to test the hypothesis that peer problems and aggression reciprocally increase risks for each other and, in turn, mediate the effects of each other on prospective internalizing problems. Last, the internalizing risks model added paths from internalizing problems to future peer problems (e.g., W2 exclusion regressed on W1 internalizing) to test the proposition that internalizing problems initially provoke problems with peers that, over time, contribute to ongoing internalizing problems. Each subsequent model retained the significant and nonsignificant paths tested in the prior model. Each set of models was tested with exclusion and victimization separately and then with these entered simultaneously.

**Peer exclusion models.** Each of the four models testing the concurrent and prospective associations between peer exclusion, aggression, and internalizing problems fit the data adequately (see Table 4). Consistent with the zero-order correlations, the baseline model showed high stability in the autoregressive paths for aggression and moderate stability over time for exclusion and internalizing problems (see Figure 2). Peer exclusion and aggression were moderately correlated at each wave and exclusion and internalizing problems were modestly correlated at the start of the school term. The additive risks model provided a modestly better fit to the data than the baseline model. The paths from W1 aggression to W2 internalizing (β = .12, SE = 0.06, p < .05) and from W2 exclusion to W3 internalizing (β = .10, SE = 0.05, p < .05) were significant. Next, the reciprocal risks model was a significantly better fit to the data than the additive risks model. Aggression at Waves 1 and 2 was a significant risk for subsequent peer exclusion (βs = .34 and .70, SEs = .05 and .06, p < .01, respectively), but not the reverse. Last, the internalizing risks model fit the data significantly better than the previous models. Internalizing problems at W2 contributed to W3 exclusion (see Figure 3). Each of the paths from the prior models retained their level of significance. This model explained 44% of the variance in internalizing problems at Wave 3. As illustrated in Figure 3, there were two indirect routes to elevated internalizing problems by the end of the school year and both operated via exclusion in the spring. Aggression at W1 increased risks for exclusion by W2 that, in turn, elevated levels of internalizing problems by W3 (indirect effect: β = .04, SE = 0.02, p < .05). Second, stability in exclusion from W1 to W2 tended to elevate internalizing problems by W3 (indirect effect: β = .02, SE = 0.01, p = .07).

**Peer victimization models.** As shown in Table 4, the four models testing the concurrent and prospective associations between peer victimization, aggression, and internalizing problems fit the data adequately. Stability in the autoregressive paths for peer victimization was moderate (see Figure 4). Victimization was weakly correlated with aggression at Wave 1 and moderately correlated with internalizing problems at each wave. The additive risks model fit the data significantly better than the baseline model. Peer victimization at W1 contributed modestly to internalizing problems at W2 (β = .13, SE = 0.06, p = .06). Victimization at W2 added significantly to internalizing problems at W3 (β = .17, SE = 0.06, p < .01). The reciprocal risks model did not fit the data better than the additive risks model, but the internalizing risks model fit the data significantly better than each of the previous models. Internalizing problems at W1 contributed to victimization at W2 (see Figure 5). The paths in the previous models each retained their level of significance; in addition, aggression at W1 contributed modestly to victimization at W2 and significantly to internalizing problems at W2. This model explained 45% of the variance in internalizing problems at Wave 3. Consistent with the peer exclusion model, there were two indirect routes to elevated internalizing problems by the end of the term, and both operated via peer victimization in the spring (see Figure 5). First, internalizing problems at W1 elevated levels of victimization by W2 that,

### Table 1

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<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>Range</th>
<th>α</th>
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<td>−0.95–2.85</td>
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<td>Wave 3</td>
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<td>.36–54</td>
<td>0.00–2.00</td>
<td>.79–.91</td>
</tr>
</tbody>
</table>

Note. The mean, standard deviation and Cronbach’s alpha values indicate the range across subscales (for peer victimization, aggression, and internalizing) and across grades. PN = peer nominations; CR = child report.
in turn, elevated internalizing problems by W3 (indirect effect: β = .04, SE = .02, p < .05). Second, stability in peer victimization from W1 to W2 elevated internalizing problems for W3 (indirect effect: β = .07, SE = .03, p < .01).

**Peer problems models.** Next, a set of models with peer exclusion and victimization entered simultaneously was examined to assess whether these represented independent risks for internalizing problems. As with the separate models, the internalizing risks model fit the data best (see Table 4). Peer exclusion and victimization were significantly correlated at Wave 1 only (β = .12, SE = .05, p < .01). All other path estimates were consistent with those presented previously for peer exclusion (see Figures 2 and 3) and victimization (see Figures 4 and 5), indicating that exclusion and victimization represent unique, additive risks for internalizing problems. This model explained 46% of the variance in internalizing problems at Wave 3.

**Demographic covariates.** Estimates for gender and age from the internalizing risks models were modest. Boys were more excluded (β = -.20, SE = .05, p < .01) and aggressive (β = -.28, SE = .05, p < .01) at W1 than girls. Younger children showed more internalizing problems at W3 than older children (β = -.09, SE = .04, p < .05). No other differences were significant.

**Multiple-group models.** Last, multiple-group models testing gender and grade differences in the internalizing risks models were examined. The within-time, autoregressive, and cross-time paths were constrained to be equal across gender or grade first. The fit of these models was then compared to the fit of models where the estimates for the within-time, autoregressive, and the cross-time paths were sequentially allowed to vary by gender or grade. No gender differences were found, indicating that the models fit equally well for girls and boys.

Multiple-group models indicated significant grade differences for both the exclusion and victimization internalizing risks models in the autoregressive paths, Δχ²(18) = 84.27 and 116.28, p < .01, respectively, and cross-lagged paths, Δχ²(30) = 48.91, p < .05 and 52.22, p < .01. Inspection of the path estimates for each grade indicated that the estimates for children in kindergarten diverged from those for children in Grades 1 to 3 who were similar to each other. Thus, differences in the autoregressive and cross-lagged paths, assessed simultaneously, were retested comparing children in kindergarten to children in Grades 1 to 3. These differences...
Peer victimization models

Note. Best fitting models are shown in bold. The baseline model includes the autoregressive paths and within-time correlations only.

Peer problems models

a The peer problems models include both peer exclusion and victimization entered simultaneously.

Table 3
Zero-Order Correlations Between Peer Exclusion, Peer Victimization, Aggression, and Internalizing Problems

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<td>.34**</td>
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<td>.17**</td>
<td>.93**</td>
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<td>.45**</td>
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<td>.07</td>
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<td>.46**</td>
<td>.40**</td>
<td>.05</td>
<td>.06</td>
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<td>.07</td>
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<td>.37**</td>
<td>.52**</td>
<td>.34**</td>
<td>.14*</td>
<td>.18**</td>
<td>.15**</td>
<td>.54**</td>
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<tr>
<td>12. Wave 3</td>
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<td>.10†</td>
<td>.11†</td>
<td>.26**</td>
<td>.45**</td>
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<td>.04</td>
<td>.08</td>
<td>.04</td>
<td>.48**</td>
<td>.62**</td>
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</tbody>
</table>

Note. Peer victimization, aggression, and internalizing are latent constructs. Peer exclusion is a manifest variable. Stability coefficients are shown in bold. 

$p < .01. † p < .05. ** p < .01.

were significant for both the exclusion and victimization models, $\Delta \chi^2(16) = 60.90$ and $71.37$, $p < .01$, respectively. Stability in the autoregressive paths from W1 to W2 was lower for children in kindergarten relative to children in Grades 1 to 3 (see Figures 6 and 7). Aggression was a greater risk for later exclusion, and aggression at W1 and victimization at W2 were greater risks for later internalizing problems for children in kindergarten relative to children in Grades 1 to 3. Alternatively, exclusion at W2 was a greater risk for later internalizing problems and, reciprocally, internalizing problems at W2 were a greater risk for later exclusion for children in Grades 1 to 3 relative to kindergarten children. Internalizing problems at W1 increased risks for victimization at W2 equally for children in kindergarten and in Grades 1 to 3. In the exclusion model, the indirect paths from W1 aggression and ex-

Table 4
Model Fit Indices of the Hypothesized Associations Between Peer Exclusion, Peer Victimization, Aggression, and Internalizing Problems

<table>
<thead>
<tr>
<th>Model</th>
<th>$\chi^2$(df)</th>
<th>CFI</th>
<th>RMSEA (90% CI)</th>
<th>SRMR</th>
<th>Model comparisons: $\Delta \chi^2 (\Delta df)$</th>
</tr>
</thead>
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<td>Peer exclusion models</td>
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</tr>
<tr>
<td>1. Baseline</td>
<td>471.96 (153), $p &lt; .01$</td>
<td>.912</td>
<td>.068 (.061,.075)</td>
<td>.062</td>
<td>Baseline: $\Delta \chi^2(4) = 8.22, p = .08$</td>
</tr>
<tr>
<td>2. Additive risks</td>
<td>463.74 (149), $p &lt; .01$</td>
<td>.913</td>
<td>.068 (.061,.075)</td>
<td>.059</td>
<td>Baseline: $\Delta \chi^2(8) = 57.04, p &lt; .01$</td>
</tr>
<tr>
<td>3. Reciprocal risks</td>
<td>414.92 (145), $p &lt; .01$</td>
<td>.925</td>
<td>.064 (.057,.071)</td>
<td>.039</td>
<td>Additive: $\Delta \chi^2(4) = 48.82, p &lt; .01$</td>
</tr>
<tr>
<td>4. Internalizing risks</td>
<td>408.35 (143), $p &lt; .01$</td>
<td>.926</td>
<td>.064 (.057,.071)</td>
<td>.038</td>
<td>Baseline: $\Delta \chi^2(10) = 63.61, p &lt; .01$</td>
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<td>Additive: $\Delta \chi^2(6) = 55.39, p &lt; .01$</td>
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<td>Reciprocal: $\Delta \chi^2(2) = 6.57, p &lt; .05$</td>
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<td>.056 (.051,.061)</td>
<td>.055</td>
<td>Baseline: $\Delta \chi^2(4) = 17.16, p &lt; .01$</td>
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<td>.921</td>
<td>.056 (.050,.061)</td>
<td>.049</td>
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<td>3. Reciprocal risks</td>
<td>678.71 (281), $p &lt; .01$</td>
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<td>.056 (.051,.061)</td>
<td>.046</td>
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<tr>
<td>4. Internalizing risks</td>
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<td>.923</td>
<td>.055 (.050,.061)</td>
<td>.042</td>
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<td>Reciprocal: $\Delta \chi^2(2) = 11.63, p &lt; .01$</td>
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<td>Peer problems modelsa</td>
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<tr>
<td>1. Baseline</td>
<td>842.56 (353), $p &lt; .01$</td>
<td>.909</td>
<td>.055 (.051,.060)</td>
<td>.063</td>
<td>Baseline: $\Delta \chi^2(6) = 22.83, p &lt; .01$</td>
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<td>2. Additive risks</td>
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<td>.912</td>
<td>.055 (.050,.060)</td>
<td>.059</td>
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<tr>
<td>3. Reciprocal risks</td>
<td>765.14 (339), $p &lt; .01$</td>
<td>.920</td>
<td>.053 (.048,.058)</td>
<td>.045</td>
<td>Additive: $\Delta \chi^2(8) = 54.59, p &lt; .01$</td>
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<tr>
<td>4. Internalizing risks</td>
<td>748.32 (335), $p &lt; .01$</td>
<td>.923</td>
<td>.052 (.047,.057)</td>
<td>.041</td>
<td>Baseline: $\Delta \chi^2(12) = 71.41, p &lt; .01$</td>
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<td>Additive: $\Delta \chi^2(4) = 16.82, p &lt; .01$</td>
</tr>
</tbody>
</table>

Note. Best fitting models are shown in bold. The baseline model includes the autoregressive paths and within-time correlations only.

a The peer problems models include both peer exclusion and victimization entered simultaneously.
conclusion to W3 internalizing via W2 exclusion were significant for children in Grades 1 to 3 (indirect effects: $\beta = .06, SE = .02, p < .01$), but none of the indirect paths were significant for kindergarten children. Alternatively, in the victimization model the indirect paths from W1 victimization and internalizing to W3 internalizing via W2 victimization approached significance for kindergarten children (indirect effects: $\beta = .10, SE = .06, p = .08$) but were not significant for children in Grades 1 to 3.

**Discussion**

Relationship problems with peers and individual vulnerability to aggression present significant challenges for children’s ability to manage feelings of sadness and anxiety during middle childhood. Part of this risk may be due to the cycling between peer adversities and aggression. While aggressive behaviors may be one source of peer problems, children who cry easily and who are visibly dependent, anxious, or fearful may also provoke problems with peers. These were the primary hypotheses driving the current study that were tested with a sample of low-income, ethnically diverse children in kindergarten to Grade 3. Four key pathways were found to increase children’s risks for internalizing problems by the end of the school year, with some age-related differences in these paths. In support of the multifinality principle, two of these paths were rooted in aggressive behaviors and three paths operated indirectly via levels of peer problems in the spring. These indirect models provide support for cascading sources of influence on internalizing problems during middle childhood that can occur over a short-term time frame. The following discussion centers on these pathways toward elevated internalizing problems.
Lier & Koot, 2010). Unstandardized/standardized estimates presented.†

Individual Vulnerability to Aggression

As others have found (Leadbeater & Hoglund, 2009; Morrow et al., 2006; Van Lier & Koot, 2010), children who were aggressive showed both a direct and an indirect risk for elevated levels of prospective internalizing problems. Children who had a reputation as aggressive at the start of the term showed a direct risk for elevated internalizing problems by the spring, possibly because they hold distorted cognitions about social interactions in general and negative views of the self that fuel their feelings of sadness, worthlessness, and anxiety (Crick et al., 2002; Dodge et al., 2003; Ladd & Troop-Gordon, 2003). Aggressive children with a more astute understanding of social interactions may also be sensitive to social conventions that disapprove of their own aggressive behaviors that they have difficulty ceasing and, as a result, begin to internalize their distress (Hoglund & Leadbeater, 2008).

Consistent with other research (Morrow et al., 2006; Van Lier & Koot, 2010), children who were rated as aggressive by their classmates at the start of the term also had an increased risk for internalizing problems by the end of the school year due to their likelihood of being excluded by peers. In support of the multifinality principle and cascade models (Masten et al., 2005), aggression appears to be a precipitating behavior that flows into the peer domain and that eventually cascades toward ongoing internalizing problems. Displays of aggression directed at peers limit children’s opportunities to interact with the peer group, particularly prosocial peers, because these children are seen as difficult playmates who create conflicts, insult others, and dismiss others’ ideas for group play. Once children are disregarded by a majority of the peer group, peers in general may come to disregard and exclude them more often due to the stigma of being an undesirable playmate, elevating their internalizing symptoms (Ladd & Troop-Gordon, 2003; Pedersen et al., 2007). Aggressive children also have difficulty forming and maintaining high-quality friendships that could limit risks for peer exclusion. In turn, such friendlessness may lead to feelings of loneliness and sadness (Ellis & Zarbatany, 2007; Van Lier & Koot, 2010).

Interpersonal Vulnerability to Peer Victimization

The third main pathway through which children experienced elevated internalizing problems by the end of the school year was in their initial and ongoing experiences of peer victimization. Chronic victimization may lead children to hold overly negative self-views and distorted expectations about future peer interactions, contributing to the maintenance of internalizing symptomology beyond any stable intrapersonal disposition toward depression and anxiety (Hoglund & Leadbeater, 2007; Ladd & Troop-Gordon, 2003; Rudolph & Clark, 2001). Over time, such negative views may accentuate the costs of victimization because these children ruminate repetitively over their poor peer treatment, further elevating their emotional distress (McLaughlin, Hatzenbuehler, & Hilt, 2009). Persistently victimized children may also feel inept in their strategies to cope with their negative treatment by peers or feel that they have no control over the abuse because they have few social supports available to aid in their ability to stop the abuse (Hunter, Durkin, Heim, Howe, & Bergin, 2010; Singh & Bussey, 2011).

Internalizing Problems as a Precipitating Risk

The fourth key pathway by which children experienced elevated internalizing problems by the end of the school year was rooted in their initial disposition toward feelings of sadness, worthlessness, and anxiety. When children appeared overly melancholy or anxious at the start of the school term, they were more likely to become a target for peer victimization by the spring and, in turn, experience elevated symptoms of depression and anxiety by the end of the school term. This illustrates the cyclical risk between victimization and internalizing problems that children can experience. When children cry easily, are overly gloomy, or are visibly anxious, it may make them easy targets for peer taunts, rumors, and physical attacks because they are less assertive in their attempts to confront their attackers and to elicit support from other children to stop the peer abuse. Peers may also blame these
children for inciting the victimization (Thornberg & Knutsen, 2011) and fail to offer their support to stop the peer abuse, adding to children’s feelings of hopelessness and to this vicious, ongoing cycling.

In further support of the multifinality principle, levels of internalizing problems in the spring also elevated risks for peer exclusion by the end of the school year. While aggressive behaviors appear to be a consistent risk for being dismissed as a playmate by classmates, our findings converge with other evidence in indicating that the peer group also dislikes playing with children who appear overly sad, gloomy, or anxious (Morrow et al., 2006; Pedersen et al., 2007; Van Lier & Koot, 2010). These children may come to be disliked playmates because they show little joy in their interactions with peers or because they are unassertive in their bids to join peer activities, and these attempts are consequently ignored or rebuffed. Overall, vulnerability to sadness and anxiety appears to be a risk for multiple peer problems, as perceived by both classmates and the children themselves.

Gender-Linked Vulnerability to Peer Problems, Aggression, and Internalizing Problems

Despite mean level gender differences in peer problems and aggression found here and elsewhere (Card et al., 2008; Van Lier & Koot, 2010), the pattern of cross-time associations was similar for girls and boys, converging with past studies (McLaughlin et al., 2009; Van Lier & Koot, 2010). These findings indicate that aggressive behaviors toward peers place both girls and boys at risk for both peer and internalizing problems. Reciprocally, internalizing problems can also elevate risks for peer problems for both girls and boys. While others found that teacher-rated physical aggression increased boys’ but not girls’ risks for internalizing problems (Leadbeater & Hoglund, 2009), our assessments of victimization and aggression also included relational and verbal forms that girls tend to experience and enact more often than physical forms (Murray-Close et al., 2007). By assessing peer victimization and aggression as latent constructs we found that these problems yield similar interpersonal and intrapersonal costs for girls and boys. Studies investigating the associations among subtypes of peer victimization and aggression and internalizing problems may find that these relations diverge for girls and boys.

Age-Related Vulnerability to Peer Problems, Aggression, and Internalizing Problems

We also found meaningful age-related differences in the stability and cross-time paths among peer problems, aggression, and internalizing problems. Stability in each construct between the start of the school term and the spring was lower for children in kindergarten relative to children in Grades 1 to 3, suggesting that peer problems and internalizing problems are more transient in kindergarten than in the higher grades. Aggression at the start of the school term was a greater risk for later exclusion and internalizing problems for kindergarten children relative to children in Grades 1 to 3. Starting in kindergarten, classroom regulations often center on social disapproval of aggressive behaviors. Kindergarten children’s strict adherence to these rules may be particularly likely to heighten their censorship of other children who use aggression and contribute to the peer group’s general avoidance of aggressive children. Kindergarten children may also be overly troubled by their inability to regulate their own aggressive behaviors in the context of these classroom regulations, contributing to feelings of sadness and anxiety. Victimization at both the start of the school term and in the spring was also a greater risk for later internalizing problems for children in kindergarten relative to children in Grades 1 to 3. Younger children likely have a smaller repertoire of strategies to effectively resolve peer conflicts than older children. Thus, the peer group may be less equipped to intervene in kindergarten, contributing to kindergarten children’s increased feelings of hopelessness and anxiousness.

Alternatively, children in Grades 1 to 3 who were overly sad and anxious were at greater risk for being excluded than kindergarten children, possibly because atypical behavior becomes more apparent to the peer group as children move into the higher elementary grades and peers in general begin to avoid children who appear overly sad or anxious more often. It may also be that the greater stability in internalizing problems for children in Grades 1 to 3 elevated their risks for exclusion due to the duration of time the peer group was exposed to their visibly despondent or anxious behaviors. Reciprocally, exclusion also elevated risks for later internalizing problems for children in Grades 1 to 3. These age-related differences may be due to advances in children’s abilities to understand and appreciate others’ thoughts, intentions, and emotions as they progress through the early elementary years (Selman, 2003). By the time children transition into Grade 2 or 3, their advanced social–cognitive skills may enable them to consider the intentions of peers, recognize subtle peer rebuffs, and be cognizant of their poor peer status (Hoglund et al., 2008).

Concluding Thoughts and Future Directions

Our findings stress the salience of aggression as a precipitating risk for peer exclusion and, in turn, internalizing problems. Internalizing problems also transacted over time with peer victimization to further elevate risks for ongoing emotional distress. In support of the multifinality principle, both forms of peer problems mediated the costs of individual vulnerability to maladjustment for ongoing internalizing symptoms. This illustrates the multiple, cascading pathways toward internalizing problems that low-income, ethnically diverse children can experience. Nonetheless, the reliance on peer nominations for peer exclusion and aggression and on self-reports for peer victimization and internalizing problems may have artificially inflated the reciprocal associations found between these same-reporter constructs. Studies using multiple reporters or peer observations may find associations that diverge from those reported here. Still, sociometric nominations represent a significant strength of the current study; peer-nominated exclusion and aggression were both related to self-rated internalizing problems over time, strengthening confidence that our findings were not simply a result of reporter bias.

Our modest child consent rates may have led to an underestimation of our constructs. Almost 40% of parents did not return their consent forms. Extensive efforts were made to inform parents of the study. However, as the teachers relayed, many families were too disorganized to complete the forms, and some families, particularly immigrant and refugee families, were generally distrustful of research. Thus, the current findings may be limited in their capacity to generalize to low-income children from particularly
disorganized or immigrant and refugee families. In addition, the low consent rates may have impacted the reliability or validity of the constructs assessed. Nonetheless, findings from Marks et al. (2012) and Prinstein (2007) provide some evidence that the consent and classroom participation rates in the current study can still yield reliable and valid assessments of children’s reputation and behaviors among peers.

We did not assess our criterion constructs over a full school year. Children’s reputation among peers was likely established earlier in the school year but may have been renegotiated following the winter break, particularly as new children transitioned into these classrooms. While other studies have identified some reciprocal associations between peer problems and aggression over the course of a full year or more, they have not identified these reciprocal relations with internalizing problems (Leadbeater & Hoglund, 2009; Van Lier & Koot, 2010). The current study illustrates that peer problems transact with internalizing symptoms over a shorter time frame among low-income, ethnically diverse children and show some age-related differences in middle childhood. These findings showcase the need for longitudinal assessments to address theories of how peer problems and internalizing problems change over time and to assess these reciprocal, cascading relations more frequently to better explain how peer adversities are linked with children’s psychopathology. While we found little evidence that peer problems precipitated aggression, it is possible that the high stability in aggression limited our ability to adequately test the reciprocal relations between peer problems and aggression over this short time frame. Nonetheless, studies across yearly time frames have also found high stability in aggression and limited effects of peer problems on aggression (Leadbeater & Hoglund, 2009). Studies that model aggression as manifest subtypes rather than as a latent construct or that assess the reactive and proactive functions of aggression may find that these transact with peer problems.

Our findings draw further attention to aggressive behaviors as a precipitating risk that can spill over toward the peer and emotional domains for low-income, ethnically diverse children (Van Lier & Koot, 2010), with meaningful age-related differences in these paths. Future studies investigating other important processes not assessed here, such as emotion dysregulation (McLaughlin et al., 2009), coping strategies (Hunter et al., 2010; Singh & Bussey, 2011), or social–cognitive competence (Hoglund et al., 2008) may further specify proximal pathways by which peer adversities and aggression reciprocally cascade toward internalizing problems in the short and long term. Programs that target children’s ability to regulate their feelings of anger in the early elementary grades may prove an efficacious way to reduce risks for peer adversities and internalizing symptomology during middle childhood.

References


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