The Role of Chronic Peer Difficulties in the Development of Children’s Psychological Adjustment Problems

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A longitudinal investigation was conducted to explicate how the confluence of early behavioral dispositions, relational histories, and cognitive representations of the self and others contributes to internalizing problems, externalizing problems, and loneliness. One hundred and ninety three girls, and 206 boys were assessed annually from age 5 (kindergarten) to age 10 (Grade 4). Early aggressive behavior was related to Grade 4 maladjustment directly and indirectly through subsequent relational stressors. Significant associations emerged between chronic friendlessness and rejection and later adaptation not accounted for by concurrent relational difficulties. Self- and peer beliefs partially mediated the relation between peer difficulties and internalizing problems and loneliness. The results highlight the utility of child-by-environment models as a guide for the investigation of processes that antecede psychosocial maladjustment.

Historically, researchers have often attributed childhood maladjustment either to constitutional factors, such as the child’s risky behavioral dispositions, or to environmental influences, such as the child’s parent or peer relationships. However, the scientific utility of these main-effects models have been criticized on the grounds that they only partially account for the mechanisms that are responsible for the development of child health and dysfunction (see Coie et al., 1993). It has been proposed that child-by-environment models might provide a more complete representation of the forces that shape children’s adjustment (see Caspi, Elder, & Bem, 1987, 1988; Coie et al., 1993; Ladd, 1989, 1999, in press). In these models, it is assumed that forces within the child and within the child’s social-relational environment have independent or combined effects on adjustment (see Ladd, in press). Although the domain of parent–child relations has been a focal point for theorizing about the contributions of child and environmental factors to children’s adjustment (e.g., the interface between child behavior and parent–child attachment; see Lamb & Nash, 1989), these same considerations have come to the fore as researchers have contemplated the role of peers in children’s development (e.g., Berndt & Ladd, 1989; Harris, 1995).

Toward this end, four categories of frameworks have been formulated as a means of elucidating how characteristics of children and their peer relationships operate together to influence adjustment (Ladd, in press). In behavior-continuity models, it is hypothesized that children’s interpersonal experiences (e.g., in peer relationships) sustain their pre-existing characteristics (e.g., reinforce their behavioral styles) but do not alter their dispositions nor make a distinct contribution to their adjustment (cf. Caspi et al., 1987, 1988). Additive models imply that, separate from (i.e., partially overlapping or independent of) the contributions of children’s characteristics, the experiences they have in peer relationships may add to (i.e., increase or decrease) the probability of maladjustment (cf. Ladd & Burgess, 2001). The central premise of moderator models is that the extent to which children’s characteristics determine whether they become healthy or maladjusted is contingent on particular peer experiences. For example, a child’s characteristics might make him or her particularly susceptible to the effects of certain peer relationship experiences (cf. Gazelle & Ladd, 2003). Finally, the principal tenet...
of mediator models is that the effects of one factor (e.g., a behavioral style) on adjustment is transmitted through other, intervening factors, such as the experiences children have in peer relationships (cf. Ladd, Birch, & Buhs, 1999).

The aim of this investigation was to extend knowledge about the processes that link risky child behavior with later psychological maladjustment. Our principal hypothesis was that the association between risky child behavior and later psychological maladjustment is sequentially mediated through: (a) children’s exposure to chronic peer adversity and (b) the beliefs that children develop from participating in adverse peer relationships. This mediated model, depicted as a path diagram in Figure 1, was based on the following general premises, each of which is elaborated in subsequent paragraphs. First, children who are overtly aggressive or manifest anxious or fearful behavior (e.g., emotional vulnerability) in peer interactions have a greater likelihood of forming adverse peer relationships (e.g., see Coie & Kupersmidt, 1983; Ladd & Burgess, 1999; Morison & Masten, 1991; Renshaw & Brown, 1993). Second, from chronic relational adversity, children infer or construct negative beliefs about themselves (e.g., self-theory, such as perceived peer acceptance, self-worth; see Harter, 1986, 1998; Harter, Marold, & Whitesell, 1992) and their peers (e.g., peer theory, such as beliefs about peers’ social orientations; see Rabiner, Keane, & MacKinnon-Lewis, 1993). Thus, the development of negative self and peer beliefs is not caused by children’s behavior but rather by the experiences they are afforded or denied in peer relationships. Third, the effect that adverse peer experiences have on maladjustment may be transmitted through children’s self- and peer beliefs (Boivin & Begin, 1989; Harter et al., 1992; Rudolph, Hammen, & Burge, 1995). That is, children’s belief systems rather than the experiences that created these beliefs may become an enduring effective stimulus for maladjustment. For example, after negative belief systems are internalized, they are preserved (i.e., remain accessible long after the experiences that precipitated them), elicited by an ever-increasing array of social stimuli and, once activated, trigger maladaptive emotional states and behaviors (e.g., internalizing and externalizing problems).

Our proposed mediational model represents an advance over prior research in that the chronicity of multiple forms of peer adversity (i.e., peer rejection, peer victimization, and friendlessness) assessed longitudinally and two aspects of children’s perceptions (i.e., self- and peer beliefs) were examined in the same model as mediating processes between early behavioral risks (i.e., aggression, anxious behavior) and later psychological maladjustment (i.e., internalizing and externalizing problems). Furthermore, this model is novel in that it permits an examination of the relative importance of: (a) previously investigated as well as understudied forms of peer adversity; (b) chronic relationship adversity, as distinct from current relationship strains; and (c) children’s self-perceptions as well as their beliefs about peers as mediators of the effects of adverse peer relationships on psychological maladjustment. To illustrate, although peer rejection and victimization have been examined as mediators between risky behavior and maladjustment, the effects of chronic peer adversity have not been well researched, and the potential effects of chronic friendlessness have been ignored. Similarly, children’s self-perceptions have been investigated as mediating the link between peer rejection and dysfunction (e.g., Boivin & Begin, 1989). However, we know almost nothing about whether chronic participation in adverse peer relationships is associated with children’s generalized beliefs about peers, and whether negative peer beliefs heighten children’s risk for maladjustment.

Peer Adversity: Forms and Chronicity

Few have investigated the premise that the effects of risky behaviors on maladjustment are mediated through adverse peer relationships, although preliminary support for this premise has begun to accrue. Boivin, Hymel, and Bukowski (1995)

![Figure 1. Initial, hypothesized model of the relations among early behavioral dispositions, relationship histories, social beliefs, and emotional adjustment outcomes.](image-url)
reported that the association between children’s withdrawn behavior (assessed in Year 1) and two types of internalizing problems (assessed in Year 2) was mediated by adverse peer experiences (peer rejection, victimization) that were measured concurrently with social withdrawal in Year 1. Later, in a cross-sectional study, Boivin and Hymel (1997) found that the association between children’s behaviors (aggression, withdrawal) and feelings of loneliness were partially mediated by adverse peer experiences (rejection, victimization), but not by the number of children’s positive peer affiliations, an indicator of the extensiveness of their social networks. These investigators did not, however, assess the mediating role of dyadic friendships or friendlessness. Additionally, Ladd et al. (1999) obtained support for the premise that peer rejection mediates the effects of aggressive behavior on children’s scholastic maladjustment.

Because we are only beginning to understand how adverse peer relationships, in conjunction with children’s risky behaviors, affect their psychological adjustment, it is important to determine whether different forms of peer adversity, and the duration of children’s participation in adverse peer relationships (i.e., relationship histories), are related to the severity of their adjustment problems (see Kochenderfer-Ladd & Ladd, 2001). Evidence pertaining to these questions is scarce because the relative contributions of multiple forms of peer adversity, as mediators of children’s adjustment, have seldom been investigated (however, see Ladd et al., 1999). Because children routinely participate in more than one form of peer relationship (Ladd, Kochenderfer, & Coleman, 1997), it is essential for investigators to study how multiple forms of relationship adversity are associated with adjustment. Thus, in this study, we examined two previously investigated forms of relationship adversity that have been shown to predict dysfunction—peer rejection and peer victimization—along with a third form of relationship—friendlessness. Although children who lack close, dyadic ties with peers are likely to be deprived of emotional resources that are essential for healthy development, such as emotional support, instrumental aid, and companionship (Furman & Robbins, 1985; Ladd, Kochenderfer, & Coleman, 1996), friendlessness has not been investigated as a mediator, nor have its relative contributions been evaluated in conjunction with both peer rejection and victimization.

Furthermore, only a few researchers have examined whether children’s future adjustment varies as a function of the chronicity of their exposure to adverse peer relationships. Consistent with chronic stress models, DeRosier, Kupersmidt, and Patterson (1994) found that children who were rejected over a 2- to 3-year period, as compared with those rejected for 1 year or less, were at heightened risk on a composite index of maladjustment. Burks, Dodge, and Price (1995) also found that longer periods of rejection were associated with increased risk for internalizing problems, but their results were limited to boys. These investigators, however, did not examine chronic peer rejection as a mediator between children’s behavioral risk and later maladjustment. In contrast, Ladd and Burgess (2001) found that chronic more than acute peer rejection mediated the association between prior aggressive behavior and later maladjustment, including attention problems, poor classroom participation, and underachievement. The chronicity of children’s exposure to peer victimization, another relational stressor, has also been investigated and found to predict the severity of children’s maladjustment (e.g., Kochenderfer & Ladd, 1996; Kochenderfer-Ladd & Wardrop, 2001). Here again, however, the chronicity of children’s exposure to peer victimization has not been evaluated as a mediator between behavioral risks and later maladjustment.

Another shortcoming of past research is that no investigator has examined whether chronic peer relationship adversity is influential in shaping children’s adjustment beyond the more immediate strains or supports that they may be experiencing in their contemporary peer relationships. Furthermore, because evidence assembled on behavioral and relational risks in the peer context has been gathered largely with older samples (i.e., middle childhood or adolescence; e.g., see MacDougall, Hymel, Vaillancourt, & Mercer, 2001), there is a need to understand how these factors may influence children’s adjustment during earlier periods of development.

Accordingly, our aim was to address these limitations in a longitudinal study of children between the ages of 5 and 10. Our hypothesis was that the extent to which adverse peer relationships mediate the association between behavioral risks and maladjustment depends not only on the functional properties of particular peer relationships (e.g., peer group rejection vs. friendlessness), but also on the duration of children’s exposure to peer relationship adversity (i.e., their history of peer relationship adversity). In part, this logic originates within theories of psychological risk, stress, and support (Dohrenwend & Dohrenwend, 1981; Johnson, 1988; Mechanic, 1983), in which it is argued that the likelihood that children will become maladjusted
is increased by chronic relational stress. Thus, we expected that longer rather than shorter histories of relationship adversity, after controlling for contemporary relationship strains, would mediate the link between children’s behavior and later maladjustment.

Children’s Self- and Peer Beliefs

Our mediational model also incorporates the premise that a history of peer relationship adversity negatively affects the beliefs that children form about themselves and their peers. Historically, investigators have pointed to the parent–child relationship as the origin of children’s cognitive representations of the self, others, and relationships, emphasizing the influence of early-forming cognitive structures on future social experiences. Recent evidence, however, indicates that self-appraisals are influenced by experiences with peers (e.g., Boivin & Begin, 1989; Egan & Perry, 1998; Hymel, Rubin, Rowden, & LeMare, 1990; Keefe & Berndt, 1996), as well as caregivers (Harter, 1990; Peterson, Schulenberg, Abramovitz, Offer, & Jarcho, 1984; Rudolph et al., 1995), signifying the potential integration of diverse social experiences into children’s representations of the self and others. One consequence has been a greater appreciation of the transactional relation between social experiences and social perceptions (Parker et al., 1995) and an increased interest in how peer adversity, particularly prolonged peer adversity, shapes self- and peer beliefs (e.g., Harter et al., 1995).

Social-Self Acceptance

A principal element of latent knowledge structures is their coherence over time and relative resilience to incongruous information. Relational experiences, then, may have their greatest effect on emergent cognitive representations before canalization of belief systems occur (Parker et al., 1995). Such may be particularly likely during the early elementary school years when self-belief systems begin to take form and undergo rapid development. Notably, children’s self-knowledge evidences a distinct shift from early to middle childhood, during which self-appraisals become increasingly realistic, a sense of general self-worth and domain-specific evaluations emerge (Harter, 1990; Harter & Pike, 1984), and children’s feelings of self-acceptance become increasingly linked to others’ appraisals (Marsh, Craven, & Debus, 1998). During this period, major changes also occur in children’s peer environment including the formation of status hierarchies and an increasing emphasis on peer acceptance (Higgins & Parsons, 1983). As a result of the confluence of changing contextual factors and improved ability for advanced self-appraisals, middle childhood may be a period in which relational stressors have a particularly influential effect on children’s perceived social competence. Hence, it was expected that chronic peer adversity in the early elementary school years would predict the development of children’s perceived social acceptance.

Evaluations of competence in the social domain may, in turn, become integrated into one’s general sense of self-worth. Investigators have largely drawn from hierarchical models of self-concept development (e.g., Harter, 1990, 1998; Rosenberg, 1979) the notion that children’s global self-esteem is derived from feelings of competence, or lack of competence, in areas of personal importance (see Harter, 1998). Correlational evidence suggests that perceived social competence is significantly associated with global self-esteem in childhood (see Berndt & Burgy, 1996). Moreover, whereas academic abilities, athletic skill, and physical appearance are likely to be evaluated using objective measures (e.g., grades, mirrors) or direct feedback from others, children report relying almost exclusively on their interactions with agemates when assessing perceived social acceptance (Hymel, LeMare, Ditner, & Woody, 1999). Because perceived social acceptance may be a primary avenue through which the quality of social relationships affects general feelings of self-worth, investigators have combined these two measures to form a construct called social-self acceptance (see Rubin et al., 1995). Children with high social-self acceptance have a sense of being liked by peers and liking themselves in turn, and evidence indicates that this measure is sensitive to alterations in peer relationships (Rubin et al., 1995).

Peer Beliefs

Just as participation in peer relationships may directly affect children’s self-evaluations in the social domain (Cillessen & Bellmore, 1999), it is conceivable that peer relationship histories contribute to the formation of generalized beliefs about peers’ social orientations. From longer histories of adverse peer relations, children may conclude that peers are prone to hostile behavior and lack prosocial characteristics (e.g., “Peers cannot be fully trusted because they are likely to exclude others”). Con-
versely, from longer histories of rewarding peer relations, children may develop the belief that peers are helpful, friendly, and trustworthy. As with social self acceptance, the early elementary school years may be a formative period for the development of peer beliefs. Unlike kindergarten or preschool classrooms, elementary school classrooms are highly structured, often requiring children to interact with a wide range of classmates. As children accumulate increased experiences with other children in their schools, they may identify characteristics shared by, or typical of, their schoolmates, and formulate a set of peer beliefs.

Consistent with Rabiner and colleagues (e.g., MacKinnon-Lewis, Rabiner, & Starnes, 1999; Rabiner et al., 1993), peer beliefs were defined as the perception that schoolmates in general tend to be trustworthy and supportive rather than untrustworthy and belligerent toward others (i.e., prosocial vs. antisocial peer beliefs). Peer beliefs may generalize across interpersonal contexts (e.g., requesting help, negotiating conflicts, joining other’s play) and incorporate representations of peers’ behavior toward the self and others. Thus, the peer belief construct is not synonymous with hostile attribution biases (see Dodge, 1980) that are most often documented in ambiguous provocation situations, limited to one characteristic of peers’ behavior (i.e., hostility) and often specific to situations in which threat provocation is directed at the self (see Crick & Dodge, 1994; Dodge & Frame, 1982; Sancilio, Plumert, & Hartup, 1989).

Peer Relationship Histories and the Development of Self and Peer Beliefs

Peer group rejection. Peer rejection symbolizes the negative attitudes of an entire group toward an individual and may be a potent influence on children’s developing sense of self and peers. Mead (1934) and others (see Cillessen & Bellmore, 1999) have argued that a person’s self-perceptions are based on how they think others view them (i.e., the generalized other). For children, the classroom peer group may become a significant generalized other, and those who are rejected in this context may not be able to escape peers’ negative sentiments and behavior (see Buhs & Ladd, 2001) or the conclusion that they are unworthy of acceptance and inclusion. Indeed, evidence indicates that rejected children tend to have unfavorable views of themselves and their peer acceptance (e.g., Boivin & Begin, 1989; Hymel et al., 1990). Likewise, children who experience peer rejection may develop generalized beliefs about peers that are consistent with such treatment. Although this hypothesis has not been well researched, MacKinnon-Lewis et al. (1999) found that peer rejection predicted boys’ antisocial beliefs about familiar peers.

Peer victimization. Victims are children who are frequently aggressed on by peers (Perry, Kusel, & Perry, 1988), and prolonged peer victimization may increase children’s introspection regarding attributed or actual flaws (see Graham & Juvonen, 2001). Such rumination may lead to low self-esteem and negative self-beliefs (Kochenderfer-Ladd & Ladd, 2001; Mechanic, 1983). Chronic victimization may also cause children to develop the generalized belief that peers are hostile (see Kochenderfer-Ladd & Ladd, 2001).

Friendlessness. Evidence indicates that children with close friendships tend to see themselves positively (Keefe & Berndt, 1996; Savin-Williams & Berndt, 1990), and these findings are consistent with the premise that friends tend to affirm each other’s positive attributes and downplay their shortcomings (Buhrmester & Furman, 1986; Furman & Robbins, 1985). Chronically friendless children, in contrast, may be deprived of these resources and, thus, prone to develop negative self-perceptions. This form of adversity may also prevent children from participating in positive dyadic exchanges (e.g., exchange of emotional and instrumental resources) that promote the view that peers are generally supportive and trustworthy (i.e., have prosocial orientations).

Self and Peer Beliefs and Children’s Psychological Adjustment

Our mediational model is also based on the premise that, during early to middle childhood, children’s self and peer beliefs are mechanisms through which adverse relationship histories affect psychological adjustment. Beliefs are relatively stable and pervasive cognitions that are hypothesized to underlie consistencies in children’s cognitive, behavioral, and emotional reactions (Burks, Dodge, Price, & Laird, 1999; Burks, Laird, Dodge, Pettit, & Bates, 1999; Graham & Hudley, 1994). Negative beliefs may be directly linked to particular mood states and actions (e.g., depression; see Hammen, 1992), and frequent activation of such beliefs may antecede long-term emotional and conduct difficulties, including internalizing problems, externalizing problems, and loneliness in school.

Self-beliefs, peer beliefs, and internalizing problems. It has been postulated that variations in self-views antecede internalizing disorders such as depression
and anxiety (e.g., Abramson, Seligman, & Teasdale, 1978), and there is evidence of a link between internalizing problems and low self-worth in adults (Hammen & Zupan, 1984; Kuiper & MacDonald, 1982) and children (e.g., Asarnow & Bates, 1988; Cillessen & Bellmore, 1999; Rudolph, Hammel, & Burge, 1997). Similarly, anxious children report more negative self-referent thoughts and expectations than agemates (Laurent & Stark, 1993; Treadwell & Kendall, 1996), and anxiety disorders in adulthood tend to be preceded by a history of self-doubt (Clark & Beck, 1988).

Maladaptive peer beliefs have been implicated in the development of internalizing problems, but support for this link has been mixed. For example, depressed children appear to overattribute hostile intent to peers when provoked (Quiggle, Garber, Panak, & Dodge, 1992). However, Burks, Dodge, et al. (1999) found that the amount of hostile versus prosocial content in children’s peer beliefs was unrelated to internalizing problems, and they concluded that there is relative specificity in the link between beliefs and adjustment. Consonant with this qualification are findings indicating that persons with internalizing disorders often attribute negative events to internal rather than external causes (Bell-Dolan & Anderson, 1999).

Self-beliefs, peer beliefs, and loneliness. Although often correlated, loneliness was differentiated from the global index of internalizing problems because this construct refers to emotional distress specific to isolation in the school’s social context. Additionally, feelings of loneliness that are perceptible to the child precede more serious forms of internalizing difficulties observable to adults (Boivin et al., 1995). A sizable literature has accrued linking feelings of loneliness with negative self-perceptions (e.g., Hymel et al., 1990; Renshaw & Brown, 1993). Drawing on Higgins’s (1987) self-discrepancy theory, Kupersmidt, Buchele, Voegler, and Sedikides (1996) proposed that negative self-appraisals of one’s social competence contribute to emotional distress including feelings of loneliness. That loneliness may result, in part, from negative self-appraisals, however, does not preclude the possibility that negative perceptions of one’s peer group may also be associated with feelings of loneliness. On the contrary, negative peer beliefs may heighten a sense of alienation from the peer group and reduce one’s hope for forming positive relationships in the future, perceptions that are likely to increase feelings of loneliness. Therefore, it was predicted that both social-self acceptance and peer beliefs would be associated with loneliness.

Peer beliefs and externalizing problems. Beck and Freeman (1990) proposed that antisocial personality disorders stem from the belief that others are untrustworthy and hostile. Researchers have examined these links and reported that children with more accessible beliefs about peers’ antisocial traits are prone to externalizing problems (e.g., Burks, Dodge, et al., 1999; Burks, Laird, et al., 1999). In contrast, children’s self beliefs are less predictive of externalizing problems. Aggressive children, who are prone to externalizing problems, often feel positively about their relationships and competence (Boivin, Poulin, & Vitaro, 1994; Hymel et al., 1990; Parkhurst & Asher, 1992), underestimate their aggressiveness (Lochman & Dodge, 1998), and deny negative peer feedback (Zakriski & Coie, 1996).

Evaluation of Hypothesized and Alternative Models

The path models evaluated in this investigation contained the following constructs: early behavioral dispositions (kindergarten aggressive, anxious behavior); chronic peer relationship adversity (i.e., the number of years from first to third grades that children were classified as rejected, victimized, or friendless; current peer relationship strains (i.e., rejection, victimization, or friendlessness in Grade 4); and current (i.e., Grade 4) internalizing problems, loneliness in school, and externalizing problems.

The Hypothesized Model

Based on the foregoing hypotheses and rationales, general patterns of linkage were specified among the investigated variables (the initial model; see Figure 1), and exploratory path analyses and specification searches were used to identify a final model. The path diagram for the initial model was constructed as follows: First, early behavioral risks were linked with each form of chronic relationship adversity via direct paths. Next, paths representing hypothesized mediated links were added, including links from each form of chronic relational adversity to self- and peer beliefs, and then from self- or peer beliefs to internalizing or externalizing problems and loneliness. One set of paths represented the hypothesis that chronic relational strain antecedes low social-self acceptance that, in turn, leads to internalizing problems and loneliness. Another set represented the hypothesis that chronic relational strain precedes negative peer beliefs that, in turn, precipitate loneliness and externalizing symptoms. Finally, because relationship histories are likely to have some bearing
on the strains children experience in their current peer relationships, paths were added from each form of chronic adversity to its corresponding concurrent counterpart. So that the model would be consistent with past findings, paths were added from chronic rejection to concurrent victimization and friendlessness, and from chronic victimization to concurrent rejection.

We next examined, as an empirical question, the extent to which the paths identified in the final model (following the specification search) were different for boys versus girls. Based on past evidence (see MacDougall et al., 2001), it might be argued that peer rejection is a stronger mediator between aggression and maladjustment for boys. However, neither theory nor evidence suggests that chronic victimization or friendlessness is a stronger mediator for one gender. Furthermore, predictions based on past evidence are tenuous because investigators have rarely evaluated multiple forms of peer adversity within the same model.

Alternative Models

Additional models were estimated to evaluate the extent to which our data corroborated alternative hypotheses.

Contemporary relationship strains mediate the effects of behavior and chronic relationship adversity on later adjustment. This model was estimated as a test of the proposition that adversities in children’s current peer relationships principally mediated the association between risky behaviors, chronic peer relationship stressors, and adjustment problems. Evidence indicating that this model better fit our data than the hypothesized model would argue that past relationship strains are incidental to the emergence of disorder and that concurrent stressors are more directly associated with the development of psychological maladjustment.

Chronic relationship adversities principally mediate the effects of risky behaviors on later adjustment; beyond this, children’s self- and peer beliefs are consequential. The paths specified in two alternative models permitted a test of whether the link from risky behaviors to adjustment is mediated primarily through chronic relationship adversity rather than through both chronic relationship adversity and children’s self- and peer beliefs. Support for such a model would corroborate the view that chronic peer adversity affects adjustment directly rather than through the beliefs that children acquire from their experiences in adverse peer relationships.

Method

Participants

Data for this study came from a longitudinal investigation of 399 children (206 boys; 193 girls; M age = 5 years, 6 months) who were recruited from schools in rural and moderately urban U.S. cities. Written informed parental consent was obtained for all participants, and a 95% consent rate was achieved for children who were initially invited to participate in the longitudinal study. The sample included European American children (77.4%), African American children (17.3%), and children from Hispanic, mixed race, or other (5.3%) backgrounds. The sample also represented children from a wide range of socioeconomic backgrounds: 36.8% were lower to middle income ($0–20,000), 30.6% were middle income ($21,000–$40,000), and the remaining 32.6% were upper middle to high income (above $41,000). At the time of the fourth-grade assessment, 95.5% of the children were still active participants in the longitudinal study (n = 381; M age = 10.1). Data were also collected from children’s teachers (kindergarten: n = 34; fourth grade: n = 158) and their classmates.1

Measures

Child Behaviors

Teachers rated children’s aggressive and anxious and fearful behavior on corresponding subscales of the Child Behavior Scale (CBS; Ladd & Profilet, 1996). Both subscales have been shown to be reliable and valid with young children. The CBS Aggressive subscale contained seven items that referred to physical and verbal aggression (α = .91, M = 1.31, SD = .41), and the Anxious/Fearful subscale was composed of four items tapping anxious and distressed behaviors (α = .82, M = 1.40, SD = .46). All items were rated on a 3-point scale ranging from 1 (doesn’t apply) to 3 (certainly applies). Although other CBS subscales tap the extent to which children are withdrawn or isolated from their peer group (i.e., asocial, excluded by peers), anxious and fearful behaviors were assessed because they were most similar to characteristics associated with later internalizing problems.

1Complete data sets were obtained during kindergarten, but thereafter a small percentage of the data could not be collected for all children because of moves, repeated absences, and so on. For the computed variables, the percentage of children for whom data were obtained ranged from 83.5% to 93.5%. To maximize the data for analyses, correlation and covariance matrices were computed using a pairwise deletion procedure.
Peer Relationships

Acceptance. The extent to which children were accepted versus rejected by their classmates was assessed using a rating scale measure of peer acceptance (Cassidy & Asher, 1992; Parker & Asher, 1993). Children rated each classmate as to the extent to which they like to play with them at school. At younger ages (first through third graders), ratings were made on a 3-point scale (1 = not much, 2 = kind of, and 3 = a lot). In fourth grade, peer acceptance ratings were made on a 5-point scale ranging from 1 (not much) to 5 (a lot). These ratings were standardized and averaged within classrooms to create an acceptance score for each child.

Victimization. Peer victimization was assessed using a two-item peer nomination measure. One item asked children to nominate up to three classmates who were physically victimized (e.g., hit, pushed, kicked), and the other item asked children to nominate up to three classmates who were verbally victimized (e.g., have mean things said to them, called bad names). Scores from these two items were correlated at each time of measurement to estimate reliability, and results showed that these items became increasingly homogeneous over time (rs ranged from .29 in first grade to .75 in fourth grade). A composite victimization score was calculated by standardizing the nomination scores children received for each item within classrooms and then averaging the standardized scores.

Close friendship. A friendship nomination measure was used to assess whether the children were participants in a close friendship. Children were asked to nominate up to five classmates with whom they were best friends. They then nominated one of these best friends as a very best friend. Children were considered to be involved in a close friendship if the classmate a child indicated was his or her very best friend reciprocated with a best friend nomination (see Parker & Asher, 1993).

Chronicity scores. Three chronicity scores, representing the number of years between first and third grades that children were rejected, victimized, or friendless, were then calculated. Children were designated as rejected during a given school year if their standardized peer acceptance score was < −.70 SD below the mean. Cutoffs (+/ − 1.0 SD) are often used to identify subgroups, but criteria such as +/ − .50 SD are not uncommon. Because the former criterion identifies fairly extreme cases and would not identify children whose scores varied slightly from year to year, a moderately conservative criterion of +/ − .70 was used. A chronicity of rejection score was then calculated by summing the number of years between first and third grades that a child was categorized as rejected (M = .73, SD = 1.02). Similarly, children were categorized as victimized if their victimization score for that year was > .70 SD above the mean for their class, and chronicity of victimization scores were the total number of years between first and third grades that a child was categorized as highly victimized (M = .67, SD = .81). A chronicity of friendlessness score was computed by summing the number of times between first and third grades that a child did not participate in a reciprocated, close friendship (M = 1.87, SD = .89). Each of the three chronicity scores ranged from 0 to 3. An arcsine transform was used to correct chronicity scores for skewness.

Contemporary relationship strains. Separate peer relationship scores were computed from data collected when children were in the fourth grade; therefore, these scores were contemporaneous with assessments of children’s social beliefs and psychological adjustment. The same criteria as were used for the first- through third-grade data (e.g., a standardized peer acceptance rating < .70) were used to designate children as rejected, victimized, or friendless in fourth grade. Thus, like the categorical peer acceptance or rejection, and victimization scores that were calculated for earlier grades (e.g., accepted vs. rejected), the concurrent peer adversity scores were dichotomous.

Self- and Peer Beliefs

Social-self acceptance. Subscales from the Harter (1985) Self-Perception Profile for Children (SPPC) were used to measure children’s perceived social and self acceptance. Perceived social acceptance was measured with the Perceived Peer Acceptance subscale; children were asked to rate themselves on six items indicative of peer acceptance and participation in friendships (e.g., “Some kids are popular with other kids their age”). Perceptions of self-acceptance were measured with six items from the Self-Esteem subscale (i.e., “Some kids like the kind of person they are”). For items on both scales, children were asked to indicate which of two hypothetical peers they most resembled—one who was doing well in the relevant domain or one who was not. Following this choice, children were asked to rate whether their resemblance to the hypothetical peer was “really true for me” or “sort of true for me,” yielding item scores that ranged from 0 to 4 with higher scores representing greater peer or self-acceptance. Items scores for these two measures
were internally consistent ($\alpha = .74$ for perceived peer acceptance and $\alpha = .75$, for perceived self-acceptance) and, when summed, produced subscale scores that were moderately correlated ($r = .44$, $M = 3.14$, $SD = .61$) and internally consistent ($\alpha = .78$). Because children’s beliefs about their peer acceptance have been shown to be one of the strongest correlates of broader self-acceptance or – esteem (see Berndt & Burgy, 1996), scores from these measures were summed to form a composite termed perceived social-self acceptance. Thus, children who had high scores on this measure tended to have a sense of being accepted by peers and of accepting themselves as persons (i.e., being liked by peers and liking themselves as persons).

**Peer beliefs.** Children’s perceptions of their peers in general were assessed using a 15-item adapted version of the Peer Belief Inventory (PBI; Rabiner et al., 1993). The adapted PBI included the 10 original items developed by Rabiner et al. (1993; i.e., 5 items estimating the extent to which children view peers as prosocial, kind, and helpful to others; 5 items tapping the extent to which children perceive peers as being antisocial, hurtful, and bossy) and 5 items from a Peer Trust Questionnaire (PTQ) that was developed by the authors to index the extent to which children saw peers as trustworthy and honest (i.e., persons who could be trusted to keep secrets, return borrowed items, tell the truth, etc.; e.g., “Some kids keep the secrets that you tell them; others’ don’t. How much do the kids at your school keep secrets?”). Children used a 5-point scale to rate the extent to which each item was true of peers in their school. Scoring of the antisocial items was reversed so that higher scores on all items represented more positive beliefs. Scores for the peer beliefs measure were created by averaging children’s ratings across all items ($M = 3.25$, $SD = .59$, range $= 1.0$–$4.8$, $\alpha = .84$). High scores on this measure indicated that children construed peers as supportive, rewarding, and trustworthy, whereas low scores corresponded to the opposite perception (i.e., the view that peers are antisocial, hurtful, and untrustworthy).

**Psychological Adjustment**

*Internalizing and externalizing problems.* The extent to which children displayed symptoms of internalizing and externalizing problems was assessed using the Teacher Report Form (TRF; Achenbach, 1991). For each TRF item, children’s teachers rated them on a 3-point scale as to how often they displayed a particular symptom. Items from two subscales assessing internalizing difficulties were administered: a 9-item Withdrawn subscale and an 18-item Anxious/Depressed subscale (items referring to children’s peer relations were deleted). Separate Withdrawn and Anxious/Depressed scores were computed by averaging across items. These scores were moderately correlated ($r = .58$), and a composite internalizing score was derived by averaging the Withdrawn and Anxious/Depressed scores ($M = 1.17$, $SD = .24$, $\alpha = .90$).

Items from two subscales assessing externalizing difficulties were administered: a 9-item Delinquent Behavior subscale and a 25-item Aggressive Behavior subscale. One of the delinquency items regarding drug use was not rated by teachers and was not used in computing a delinquency score because it was not believed to be age appropriate. Separate externalizing scores were computed by averaging across items within each of the two subscales. The correlation between the two subscales was substantial ($r = .67$), and an externalizing composite was computed by averaging the scores from the two subscales ($M = 1.17$, $SD = .24$, $\alpha = .96$).

**Loneliness.** This construct was measured using four items from a revised version (see Ladd et al., 1996) of the Cassidy and Asher (1992) Loneliness and Social Satisfaction Questionnaire. Each of these four items addresses how often children feel lonely in school (e.g., “Do you feel sad and alone in school?”). Children rated each item on a 5-point scale, with larger scores representing higher levels of loneliness, and these ratings were averaged over the four items to create a composite loneliness-in-school score ($M = 1.79$, $SD = .96$, $\alpha = .84$).

**Procedure**

Sociometric measures (i.e., peer acceptance, victimization, and friendship measures) were administered each year between first and fourth grades to children and their classmates during the spring semester. Individual interviews were conducted when the children were in the first and second grades, and children were presented with photographs to assist with recognition of their classmates. After this, sociometric measures were administered in a group format using paper-and-pencil measures. This alteration reflects standard practice in research on children’s peer group acceptance. All children at each administration were extensively trained to use the rating scale for the peer acceptance measure. After completion of the sociometric measures, the children and their classmates were thanked and given a small gift (e.g., pencil, stickers) for their participation.
Children completed the SPPC, PBI, PTQ, and loneliness measures during the spring of their fourth-grade year in addition to other measures not used in this study. Children read each item and were instructed to mark each questionnaire appropriately. Participants were given a small gift for their assistance. Teachers completed the CBS during the spring of children’s kindergarten year and the TRF during the spring of children’s fourth-grade year. Teachers received a small cash honorarium for participating in the study.

**Results**

**Overview of Analysis**

Bivariate correlations were calculated to assess multicollinearity and to determine whether relations among the predictors, mediators, and criteria conformed to expectation. Path analyses were computed to evaluate the fit between our data and the initial model, followed by a specification search that was used to identify a final model that optimized parsimony and fit. In the final model, direct and mediated pathways were examined by decomposing total effects into direct (i.e., unmediated) and specific mediated pathways. A multisample path analysis was computed to assess the generalizability of the final model across gender. Alternative models were tested in an attempt to rule out competing explanations.

**Associations Among Measures of Children’s Behavior, Peer Relations, Beliefs, and Adjustment**

**Multicollinearity**

Low to moderate correlations were found among the predictors, including the peer adversity measures within and across grades, and among the criteria (see Table 1). Measures of self- and peer beliefs correlated significantly but not substantially. Thus, neither the predictors nor criteria were multicollinear, and measures appeared to tap different aspects of children’s behavior, peer relations, and psychological adjustment.

**Hypothesized Versus Observed Relations Among Predictors**

Consistent with expectation, aggressive kindergartners were more likely to develop chronic relationship difficulties between first and third grades (see Table 1). Early anxiety, in contrast, was not a substantial predictor of chronic or concurrent relationship problems. The chronic peer adversity measures correlated positively with each other and with the concurrent relationship measures, and were negatively correlated with the social-self acceptance index. Only chronic friendlessness and rejection correlated (negatively) with peer beliefs. Concurrent relationship strains and children’s beliefs were similarly correlated, except that the concurrent

<table>
<thead>
<tr>
<th>Variable</th>
<th>1</th>
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<th>3</th>
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<td>.28***</td>
<td>.20***</td>
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<td>.26***</td>
<td>.37***</td>
<td>.33***</td>
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<td>-.13*</td>
<td>-.19**</td>
<td>.45***</td>
<td>.13*</td>
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**Note.** KAGG = kindergarten aggression; KAF = kindergarten anxious or fearful behavior; CFRN = chronicity of friendlessness; CREJ = chronicity of rejection; CVIC = chronicity of victimization; 4thFRN = fourth-grade friendlessness; 4thREJ = fourth-grade peer rejection; 4thVIC = fourth-grade victimization; SELF = self-belief; PEER = peer belief; INT = internalizing problems; LONE = loneliness; EXT = externalizing problems.

*p < .05. **p < .01. ***p < .001.
victimization was more related to children’s self- and peer beliefs than was chronic victimization.

**Hypothesized Versus Observed Relations Between Predictors and Criteria**

As expected, aggression in kindergarten correlated positively with externalizing problems in fourth grade, whereas early anxiety correlated positively with later internalizing problems (see Table 1). Children prone toward chronic relational adversity tended to have greater internalizing problems, loneliness, and externalizing problems in fourth grade. Children prone toward current relational difficulties exhibited a similar pattern, although concurrent victimization and rejection were more associated with later psychological adjustment than was concurrent friendlessness. Self-beliefs correlated negatively with internalizing problems, peer beliefs correlated negatively with externalizing problems, and both types of beliefs correlated negatively with loneliness. Correlations between self-beliefs and externalizing problems, and between peer beliefs and internalizing problems were lower in magnitude.

**Evaluation of Initial and Final Models via Path Analysis**

**A Test of the Initial, Hypothesized Model**

Model fit was estimated with path analysis for observed variables (LISREL 8.30; Jöreskog & Sörbom, 1993). Correlations among variables (Table 1) were used instead of covariances for ease of interpretation (MacCallum & Austin, 2000), maximum likelihood estimation was used in calculating paths, and select error variances were allowed to covary.¹ Because pairwise deletion was used in computing the correlation matrix for these analyses, sample size was specified as the smallest number available for calculation of any of the bivariate correlations (n = 311), providing a conservative test of parameter estimates. Criteria and standards for model fit (see Hu & Bentler, 1998), included the non-normed fit index (NNFI ≥ .90; Bentler & Bonett, 1980), the standardized root mean square residual (SRMR ≤ .05; Bentler, 1995), and the root mean square error of approximation (RMSEA ≤ .05; Steiger & Lind, 1980). Also, two other common fit indices were calculated: goodness of fit (GFI ≥ .95) and adjusted goodness of fit (AGFI ≥ .90; Jöreskog & Sörbom, 1993).

Although many of the specified paths were significant in the initial model, the fit was less than adequate, \( \chi^2(45, N = 311) = 123.36, p < .01, \) GFI = .94, AGFI = .88, NNFI = .84, SRMR = .094, RMSEA = .075. A final model was identified via a specification search (see MacCallum, 1986) that was guided by conceptual and empirical considerations (e.g., modification indexes were used to add or delete paths sequentially that conformed to our premises or enhanced parsimony; see Saris & Stronkhorst, 1984). As MacCallum (1986) has argued, this approach constitutes an exploratory rather than a confirmatory strategy and thus yields results that should be validated in future research. Eight nonsignificant paths were deleted including: (a) paths from early anxious fearful behavior to the three forms of chronic relational adversity, (b) the path from chronic friendlessness to concurrent friendlessness, (c) paths from chronic rejection and chronic victimization to peer beliefs, (d) the path from chronic victimization to social-self acceptance, and (e) the path from peer beliefs to externalizing problems. Six paths were added: (a) a path from early aggressive behavior to peer beliefs, (b) paths from chronic rejection and chronic victimization to externalizing problems, (c) a direct path from chronic victimization to loneliness, (d) a path from concurrent peer victimization to self-beliefs and, (e) a path from chronic friendlessness to internalizing problems. This model fit the data well, \( \chi^2(47, N = 311) = 65.71, p < .05, \) GFI = .97, AGFI = .94, NNFI = .96, SRMR = .065, RMSEA = .036, and yielded the standardized path coefficients shown in Figure 2.

**Final Model: Direct and Indirect Links Between Early Behavior and Later Psychological Adjustment**

Both direct and indirect paths were found from early behavior to later psychological adjustment. Variances accounted for by these paths were 11% for internalizing problems, 36% for loneliness, and 34% for externalizing problems. Examination of these two dispositions showed that early anxious behavior was directly linked with later internalizing problems, but not associated with any form of chronic peer adversity. This latter finding made untenable the hypothesis that anxious behavior’s association with adjustment was mediated through peer adversity.
In contrast, early aggressiveness was directly linked with later externalizing problems, and it anteceded all three forms of chronic peer adversity. Aggression alone accounted for 4%, 14%, and 6% of the variance in chronic friendlessness, rejection, and victimization, respectively. In turn, there was a direct path from each index of children’s chronic relational difficulties to one feature of their psychological adjustment. That is, there was a positive and significant path from chronic friendlessness to internalizing problems, from chronic peer rejection to externalizing problems, and from chronic victimization to externalizing problems. The path from chronic victimization to children’s loneliness in school was also positive and significant.

To examine mediated paths from aggression to children’s psychological adjustment, the total effects for aggression were parsed into direct and indirect components. The total indirect effect can be calculated by summing the product of the standardized coefficients that constitute each indirect pathway (Bollen, 1989). In Table 2, the total indirect effect of aggression on each adjustment criterion is presented, along with the percentage of the total that was attributable to the component indirect paths. The total indirect effect of aggression was significant, and for internalizing problems and loneliness, indirect effects accounted for 100% of the total effect of aggression on these variables. Chronic friendlessness accounted for 60% of the indirect effect of aggression on internalizing problems, and a combination of chronic friendlessness, chronic rejection, and social-self acceptance accounted for the remaining 40%. Early aggression was linked with loneliness via indirect paths that traveled through each form of chronic relationship adversity. Chronic relationship adversity accounted for 75% of the total indirect effect on loneliness, whereas only 8.3% of this effect was attributable to the path through concurrent peer difficulties (i.e., fourth-grade victimization). The indirect links from early aggression to externalizing problems constituted 15% of aggression’s total effect and were attributable to paths traveling through chronic rejection and chronic victimization (see Table 2).

**Final Model: The Mediating Role of Self- and Peer Beliefs**

The final model also contained significant paths from chronic and current relationship adversity to children’s beliefs, and from beliefs to internalizing problems and loneliness. As can be seen in Figure 2, negative paths were found from chronic friendlessness to both self- and peer beliefs, and from current victimization to self-beliefs. These paths were
accompanied by a negative path from early aggressiveness to peer beliefs. In total, these paths accounted for 12% of the variance in self-beliefs and 5% of the variance in peer beliefs. Also significant were the negative paths from self-beliefs to internalizing problems and loneliness, and from peer beliefs to loneliness. The premise that self- and peer beliefs would mediate the link between chronic peer difficulties and later psychological adjustment was evaluated by examining total, direct, and indirect effects. These findings are presented in Table 3.

Internalizing problems. Chronic friendlessness was associated with internalizing problems through children’s self-beliefs ($\beta = .17$), which accounted for 10% of the total effect of friendlessness on internalizing problems. However, this indirect effect only approached statistical significance ($p = .09$). Similarly, chronic rejection was indirectly associated with internalizing problems, predominantly as a result of an indirect path through children’s self-beliefs, but the total effect of rejection on internalizing problems only approached significance ($p = .06$). The indirect path from chronic victimization through current victimization and self-beliefs to internalizing problems was not significant, but the indirect path from current victimization to self-beliefs to internalizing problems was significant ($\beta = .024, p < .05$).

Loneliness. As a whole, the indirect effects for loneliness were more robust. From chronic friendlessness, the total indirect effect was significant ($0.09, p < .01$), and approximately two thirds of this effect was through self-beliefs and one third was through peer beliefs. From chronic rejection, the total indirect effect on loneliness was significant ($0.08, p < .01$), and more than three fourths (75.9%) of this effect was attributable to the path that emanated from chronic rejection to children’s self-beliefs. The remaining 24.1% was due to paths that linked past rejection with concurrent victimization. Furthermore, chronic victimization had a significant indirect effect ($0.03, p < .01$) through concurrent peer victimization and self-beliefs, which accounted for 16.7% of the total effect of chronic victimization on children’s loneliness.

Final Model: Gender Differences
A multisample LISREL analysis was conducted to determine whether the final model (see Figure 2) held equally well for boys and girls. Separate covariance matrices were modeled simultaneously ($n = 162$ for boys; $n = 149$ for girls), and all parameter estimates and error covariances were constrained to be equal across the two groups. Fit indices suggested that the final model adequately fit the data for boys and girls, $\chi^2(135) = 154.61, p = ns$, NNFI = .96, RMSEA = .031.

Evaluation of Alternative Premises
A series of alternative models were specified and estimated to evaluate plausible, competing hypotheses.

Table 2
Total, Direct, and Indirect Effects From Aggression to Psychological Adjustment

<table>
<thead>
<tr>
<th>Effect</th>
<th>Internalizing problems</th>
<th>Loneliness</th>
<th>Externalizing problems</th>
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<tbody>
<tr>
<td></td>
<td>Effect estimate</td>
<td>Percent of indirect effect</td>
<td>Percent of total effect</td>
</tr>
<tr>
<td>Total</td>
<td>.05***</td>
<td>.12***</td>
<td>.54***</td>
</tr>
<tr>
<td>Direct</td>
<td>—</td>
<td>0.0</td>
<td>—</td>
</tr>
<tr>
<td>Indirect</td>
<td>.05***</td>
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<tr>
<td>AGG→CFRD</td>
<td>.03</td>
<td>60.0</td>
<td>60.0</td>
</tr>
<tr>
<td>AGG→CFRD→SELF</td>
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<td>20.0</td>
<td>20.0</td>
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<tr>
<td>AGG→CREJ→SELF</td>
<td>.01</td>
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<td>AGG→CFRD→PEER</td>
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<tr>
<td>AGG→CVIC</td>
<td>—</td>
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<tr>
<td>AGG→CVIC→4thVIC→SELF</td>
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<tr>
<td>AGG→PEER</td>
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<tr>
<td>AGG→CREJ</td>
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</table>

Note. CFRD = chronicity of friendlessness; CREJ = chronicity of rejection; 4thVIC = fourth-grade victimization; SELF = self-belief; PEER = peer belief. *** $p < .001$. ** $p < .01$.
Contemporary Relationship Strains Mediate the Effects of Behavior and Chronic Relationship Adversity on Later Adjustment

To test this alternative premise, we altered our original (initial) path diagram by deleting the paths from each form of chronic relationship adversity to self- and peer beliefs, and by adding paths from each form of current relationship strains to self- and peer beliefs. This alternative model did not fit the data, \( \chi^2(45, N = 311) = 112.73, p < .001 \), GFI = .95, AGFI = .89, NNFI = .86, SRMR = .089, RMSEA = .070; therefore, a specification search was used to identify a final model. Following the logic of this alternative model, paths leading from concurrent peer relationships were added first, and paths leading from past chronic peer difficulties were included only when necessary. The resulting final model fit the data adequately, \( \chi^2(48, N = 311) = 69.10, p < .05 \), GFI = .97, AGFI = .94, NNFI = .96, SRMR = .066, RMSEA = .038, and had a path structure that was similar to that shown in Figure 2, except that: (a) the path between chronic friendlessness and children’s self-beliefs was nonsignificant, but a significant path from concurrent rejection to self beliefs emerged; and (b) concurrent friendlessness, not chronic friendlessness, predicted peer beliefs. Although these exceptions provided some support for this model’s competing premise, a reasonable fit could not be achieved without incorporating paths from specific forms of chronic peer adversity to children’s beliefs and adjustment. That is, it was necessary to include paths from chronic rejection to externalizing problems, from chronic victimization to externalizing problems, from chronic rejection to self-beliefs, and from chronic friendlessness to internalizing problems.

### Chronic Relationship Adversities Principally Mediate the Association Between Risky Behaviors and Adjustment; The Effects of Chronic Adversity Are Not Mediated Through Children’s Self- and Peer Beliefs

Two competing premises that are consistent with this logic were evaluated in separate alternative models. The first was termed an incidental model because it was based on the premise that chronic relational adversity may contribute to children’s self- and peer beliefs, but that such perceptions have no bearing on psychological maladjustment. This model was estimated by altering our final model (see Figure 2) so that the paths from self-beliefs to
internalizing problems and loneliness were deleted, and the path from peer beliefs to loneliness was deleted. Results showed that the incidental model fit the data poorly, \( \chi^2(50, N = 311) = 185.09, p < .001, \) GFI = .92, AGFI = .85, NNFI = .73, SRMR = .100, RMSEA = .094, and was significantly worse than a model in which paths from self- and peer beliefs to internalizing problems and loneliness were included, \( \chi^2(df = 3) = 115.99, p < .001. \)

The second model, termed an additive model, was based on the premise that relational adversity and maladaptive self- and peer beliefs additively contribute to the emergence of psychological maladjustment. Accordingly, the paths from beliefs to adjustment, as shown in Figure 2, were retained, but the following aspects of the model were changed: (a) paths from chronic friendlessness to social-self acceptance and to peer beliefs were removed, and a path from chronic friendlessness to loneliness was added; (b) the path from chronic rejection to social-self acceptance was removed, and paths from chronic rejection to internalizing problems and to loneliness were added; and (c) the path from concurrent victimization to social-self acceptance was removed, and paths from concurrent victimization to internalizing problems and to loneliness were added. This model also fit the data poorly, \( \chi^2(45, N = 311) = 126.93, p < .001, \) GFI = .94, AGFI = .88, NNFI = .84, SRMR = .093, RMSEA = .077. Thus, these results suggest that, rather than an incidental or additive model, a mediational model (e.g., the final model in Figure 2) better accounted for the observed associations among relational adversity, self- and peer beliefs, and psychological adjustment.

**Discussion**

The contributions of an empirical investigation are, perhaps, best explicated when it is possible to evaluate the extent to which the results conform to (or fail to corroborate) differing theoretical premises. At issue for this investigation was the extent to which the results corroborated differential premises concerning the role of children’s dispositional and relational attributes as antecedents of psychological adjustment.

At the broadest level of analysis, the evidence yielded by this investigation lent support to propositions that are central to the following theoretical positions. First, evidence indicating that children’s early aggressiveness and anxious behaviors were directly linked to later maladjustment was consistent with child effects models, in which it is argued that children’s early-emerging behavioral dispositions directly contribute to later forms of maladjustment. Second, a basic tenet of environmental or socialization perspectives was substantiated by evidence indicating that children’s chronic peer relationship experiences, not just their dispositional characteristics, were significant antecedents of later maladjustment. However, in contrast to each of these main effects perspectives, we argue that the obtained patterns of linkage best fit a mediated child-by-environment model. This was evident in that differences in children’s peer relationship histories—an element of their rearing environment—were found to mediate the link between early child dispositions and later maladjustment.

When contrasted against extant evidence, the present findings are novel in that they extend what has been learned from past research, and theoretically significant in that they challenge existing ideas about the processes through which risky behaviors influence later adjustment. Four of this study’s contributions are particularly noteworthy: First, a central thesis of this investigation was that chronic peer relationship adversity increases children’s exposure to negative relational processes or learning experiences (e.g., sustained exclusion, abuse, lack of dyadic emotional support), and that the accumulation of such experiences is a more powerful risk factor (i.e., a form of dysfunctional socialization) than the strains present in their current peer relationships. Our findings supported this hypothesis and, more important, implied that this is uniquely the case for each of the investigated forms of relational adversity. That is, all three forms of relational adversity were uniquely and directly linked with one or more forms of psychological maladjustment. In previous research, only two forms of chronic relationship adversity have been investigated (peer rejection, victimization) and, more important, the predictive efficacy of these two forms of adversity typically have been evaluated separately, preventing an evaluation of their unique or independent associations with children’s psychological adjustment. Furthermore, because these longitudinal linkages were examined after accounting for children’s concurrent peer relationships, the results constitute a more stringent test of chronic stress models (see Dohrenwend & Dohrenwend, 1981; Johnson, 1988) as they apply to research on children’s relational risks (e.g., see DeRosier et al., 1994).

Second, although little is known about chronic friendlessness as an antecedent of children’s psychological adjustment problems, our findings revealed that this form of sustained relationship
adversity directly predicted later internalizing problems and that this association was partially mediated through children's self-beliefs. Prolonged friendlessness may directly affect internalizing problems by depriving children of close, dyadic interactions that provide resources (e.g., intimacy, support, companionship; Buhrmester & Furman, 1986; Ladd et al., 1996; Parker & Asher, 1993) essential to the prevention of inwardly expressed psychological dysfunctions (see Weiss, 1974). The latter, indirect linkage was consistent with a novel hypothesis: that friendlessness is a unique form relational adversity (relative to chronic peer rejection and victimization) that influences internalizing problems by altering children's beliefs about self. The significance of this finding was accentuated by the fact that these linkages were obtained after controlling for those attributable to chronic peer rejection and chronic peer victimization. One inference consistent with these findings is that friendlessness indirectly fosters internalizing problems because this kind of adversity interferes with the development of positive belief systems that mitigate against such difficulties. Having a friend, for example, confirms that one is accepted by another person, and when one's sense of worth to others is affirmed, it is also possible to infer that one has worth as a person. It may be difficult for children who consistently lack friends to draw such conclusions and, thus, prevent forms of self-disparagement that promote depressive affect, loneliness, or other internalizing symptoms.

Third, a relatively uninvestigated form of peer beliefs was examined in this study, and results indicate that chronic friendlessness was directly associated with the beliefs that children hold about their schoolmates. This finding was novel because thus far the form of peer beliefs investigated in this study has only been linked with peer rejection. Furthermore, our data are the first to show that negative assessments of peers' social orientations are related to loneliness. It may be that without experiencing the supports that are typically found in close friendships it may be difficult for children to form optimistic beliefs about the likelihood that peers in general are resources for these provisions. Furthermore, distrust and pessimism about peers' social inclinations may engender feelings of loneliness and social alienation.

Fourth, findings from this investigation were consistent with the hypothesis that different forms of chronic adversity may cause children to develop beliefs about the self and peers that make psychological maladjustment more likely. After accounting for all three forms of relationship adversity, partially mediated paths were found from chronic peer rejection and chronic friendlessness through children's self beliefs to internalizing problems, and from chronic friendlessness to loneliness through peer beliefs. A partially mediated link was also found for peer victimization, but unlike chronic rejection and chronic friendlessness, the link through self-beliefs to internalizing problems was stronger from current rather than chronic victimization (a finding that is consistent with recent evidence on transient vs. chronic victimization; e.g., Kochenderfer & Ladd, 1996; Kochenderfer-Ladd & Wardrop, 2001).

Behavioral Dispositions, Chronic Peer Relationship Adversity, and Later Psychological Adjustment

The substantial direct path found from kindergarten aggressiveness to Grade 4 externalizing problems was consistent with evidence linking early aggressive dispositions with later conduct problems (Cairns & Cairns, 1994; Caspi et al., 1987). However, this finding was not an exhaustive account of the means by which early aggressiveness was related to later adjustment problems. Rather, the present findings were consistent with the inference that aggressive children are likely to: (a) remain friendless, thereby increasing risk for later internalizing problems, and (b) experience persistent peer rejection and victimization, thereby increasing risk for later externalizing problems. The fact that aggressiveness was indirectly associated with internalizing and externalizing problems suggests that this disposition antecedes divergent pathways to dysfunction. Perhaps exposure to perseverant rejection and victimization causes some aggressive children to escalate their use of hostile and antagonistic behaviors. In contrast, aggressive children who remain friendless may become despondent and be at greater risk for mood disorders. For some children, early aggressiveness may antecede both internalizing and externalizing problems (i.e., comorbidity).

A single direct path was found from anxiousness to internalizing problems. Consistent with past findings (e.g., Boivin et al., 1995; Caspi et al., 1988), children with this propensity were more likely to exhibit later internalizing problems. However, in this study anxious behavior was not a significant antecedent of chronic peer relationship problems, nor was there evidence that its association with internalizing problems was mediated through children's self- or peer beliefs. Interpretation of these results is complicated by the fact that others who have
investigated these linkages have obtained anomalous findings, and evidence suggesting that anxious behavior does increase children’s risk for maladjustment indirectly through relational problems has been obtained primarily with samples of older children. For example, DeRosier et al. (1994) found that second through fourth graders who were initially shy or anxious and then exposed to chronic peer rejection were less likely to manifest anxious dispositions as they matured. Conversely, Boivin et al. (1995) found that concurrent peer rejection and victimization mediated the association between social withdrawal and internalizing problems. However, the Boivin et al. findings were obtained over a brief interval (1-year period) with an older sample (e.g., fourth and fifth graders) and were not based on an index of chronic relational adversity. Thus, several factors may account for the fact that mediated links between early anxious behavior and later adjustment were not present in our data. First, among younger as opposed to older children, anxious behavior may be more normative and less aversive to peers and therefore not as likely to precipitate dysfunctional relationships (see Ladd & Burgess, 1999; Younger, Gentile, & Burgess, 1993). Second, compared with aggressive behaviors, anxious and fearful behaviors may be less indicative of a stable interpersonal disposition during the early childhood years. Indeed, the stability coefficients obtained for our measures of aggressive and anxious behaviors were consistent with this interpretation (from kindergarten to fourth grade: \( r = .57 \) for aggressiveness; \( .26 \) for anxious and withdrawal).

**Social Beliefs: Mediators of the Link Between Chronic Relational Adversity and Psychological Adjustment?**

At the crux of this hypothesis were two related tenets. The first was that belief development has a basis in children’s relational experiences with peers (see Costanzo & Dix, 1983), and the second was that chronic relationship adversity causes children to develop self- and peer beliefs that engender psychological dysfunction. Although modest in magnitude, several findings from this investigation were consistent with these premises.

Particularly intriguing was the finding that, in both the hypothesized and alternative models, friendlessness (chronic or current friendlessness) was the only form of relational adversity that uniquely anteceded children’s generalized beliefs about peers’ social orientations. One explanation for this finding is that friends, more than other classmates or acquaintances, are more likely to exhibit or reciprocate many of the attributes included in the peer beliefs scale (e.g., trustworthiness, helpfulness, reliability, and honesty; see Newcomb & Bagwell, 1995). Thus, children who participate in close friendships (see Berndt & Hoyle, 1985; Ladd, 1990) may, on the basis of past or current experiences, come to believe that most agemates possess such traits. Conversely, children who lack friends may not have a contemporary or historical basis for this kind of generalization, that is, believing that peers, in general, possess supportive attributes.

In contrast, the path from friendlessness to social-self acceptance was significant in only one of the two models estimated. Given that stronger linkages were found for peer rejection in both models, it may be that peer group adversity during this developmental period has greater consequences for how children come to perceive themselves than does lack of participation in close friendships.

There was qualified support for the hypothesis that peer relationship adversity lowers children’s sense of social self-acceptance, which in turn increases the likelihood of psychological maladjustment. Corroboration of this premise was found for loneliness and, to a lesser extent, internalizing problems. For loneliness, chronic rejection and friendlessness as well as current victimization were indirectly linked with this criterion through children’s social beliefs. However, greater interpretive weight was placed on two indirect paths—those from chronic rejection and current victimization through social-self acceptance to loneliness—because these links were substantiated in both the final and alternative models.

In the first of these paths, longer histories of peer rejection antecedent lower perceived social-self acceptance. This finding was consistent with the tenet that chronic exposure to peers’ rejecting attitudes and behaviors causes children not only to recognize that they are disliked by agemates (see Buhs & Ladd, 2001; Coie, 1990) but also to see themselves as others see them (infer that the self is not acceptable or likable; see Boivin & Hymel, 1997). The logic of the latter interpretation rests on the assumption that children’s social-self acceptance is partly dependent on the information they receive about the self from agemates (cf. Cillessen & Bellmore, 1999; Mead, 1934). Additionally, chronic peer rejection was indirectly linked with loneliness. Although concurrent peer rejection and loneliness are known to be positively correlated (see Asher, Parkhurst, Hymel, & Williams, 1990), ostensibly because rejection deprives children of a necessary resource for healthy psychological adjustment (e.g., feelings of
relatedness or belongingness; see Asher et al., 1990; Weiss, 1974), the results of this investigation extended past evidence by implying that chronic more than contemporary peer rejection creates feelings of loneliness, in large part because it reduces children's sense of social-self acceptance. In this formulation, prolonged rejection causes children to see themselves as unlikeable and may heighten expectations for rejection in their current and impending relations with peers (see Downey, Lebolt, Rincon, & Freitas, 1998). Such a belief may be easily triggered within children's everyday peer interactions and once activated generate and maintain feelings of loneliness. This interpretation, if further substantiated, may help explain why past peer rejection may continue to influence children's psychological adjustment, long after actual rejection experiences have occurred.

Two similar indirect links were found from current victimization to loneliness and to internalizing problems through children's social-self acceptance. This finding supported a previously unsubstantiated premise: that current victimization influences internalizing problems and loneliness by altering children's sense of social-self acceptance. Conceptually, these results were consistent with Boivin and Hymel's (1997) argument that negative peer treatment is a particularly salient means by which children become aware of peers dislike toward them. Thus, from proximal victimization experiences, children may derive the knowledge that they are vulnerable to future peer harassment and deficient in attributes that classmates perceive as valuable. In this way, lowered self-perceptions arising from victimization experiences may lead to depression, anxiety within the classroom context, and feelings of isolation and loneliness. Thus, it may be through a reduced sense of social-self acceptance that victimization makes children vulnerable to internalizing problems and loneliness.

Children's peer beliefs did not mediate the link between adverse peer experiences and externalizing problems. Although children's early aggressive dispositions anteceded later antisocial, mistrustful beliefs about peers, these beliefs were not associated with later externalizing problems. Even though this finding is at odds with some theories of the etiology of externalizing problems (e.g., Beck & Freeman, 1990; Lochman & Lenhart, 1993), it is consistent with recent evidence on the link between aggression and peer cognitions in young children. Huesmann and Guerra (1997) reported that children's aggressiveness predicted beliefs about the legitimacy of aggression, but only for the older children in the sample were these beliefs linked with gains in aggression. Thus, our results converged with evidence suggesting that aggressiveness at early ages contributes to the formation of negative peer beliefs but failed to support the hypothesis that these beliefs antecede broader externalizing problems. Perhaps the antisocial peer beliefs that aggressive children tend to construct are not instrumental in the development of externalizing problems until later in their development.

Gender as a Potential Moderator

Although not a focal point of this investigation, gender was evaluated as a potential moderator of the paths specified in the final structural model. The results indicated that this model fit the data equally well for boys and girls. These findings were consistent with past studies of chronic peer rejection (i.e., DeRosier et al., 1994), suggesting that although boys and girls may differ in the mean level at which they display particular forms of maladjustment (e.g., boys more often manifest externalizing problems), the processes that antecede maladjustment are similar for both sexes. Data from this investigation suggest that this inference can be generalized to other forms of relational adversity, such as friendlessness and peer victimization.

Limitations

The fact that chronic relationship adversity was directly linked with maladjustment, even after accounting for current peer relationships and indirect links through children's social beliefs, could mean that other important mediating processes remain to be identified. Thus, an important task for researchers will be to identify additional mechanisms, both within the child and the child's environment, that may explicate the links between chronic relationship adversity and psychological maladjustment.

Although the strength of our findings was moderate, several factors should be considered when judging the magnitude of our results. First, a more complex web of risk factors and adjustment criteria were investigated than is typical of past research. When larger numbers of constructs are investigated in the same model, it is likely that relations between component variables will not be as strong as when these variables are studied in isolation or among smaller numbers of constructs. It has not been uncommon for investigators to study only one form of relationship adversity and one type
of maladjustment (e.g., Burks et al., 1995) or one form of belief and one type of dysfunction (e.g., Boivin & Begin, 1989; Rabiner et al., 1993). Even though we investigated a complex nexus of relations, the strength of our findings appears no less powerful than those reported in previous studies. We say appears no less powerful because the constructs, number of predictors and criteria, designs, and analytic tools often differ substantially across studies, making exact comparisons difficult. This caveat aside, several comparisons are instructive. First, whereas Boivin and Hymel (1997) accounted for 12% of the variance in children’s perceived acceptance concurrently, we predicted 12% of the variance in children’s social-self acceptance over several years, even though the strength of prediction typically attenuates over time (see Cairns & Cairns, 1994). Boivin et al. (1995) predicted 28.3% of the variance in internalizing problems (depression only) and DeRosier et al. (1994) accounted for 5% of the variance in shy and anxious behavior. Comparatively, we forecasted 11% of the variance in a composite internalizing construct. The fact that Boivin et al. accounted for more variance in internalizing problems may be because these investigators used a measure of loneliness to predict depression, and loneliness is a measure of negative affect that shares substantial variance with depression. Furthermore, our model enabled us to predict 36% of the variance in loneliness, whereas Boivin et al. forecasted 19.2%, and Boivin and Hymel accounted for 15.6% (concurrently). Finally, we predicted 34% of the variance in externalizing problems—an amount identical to that reported by DeRosier et al. (i.e., 34%).

Second, of the three investigated outcome criteria, it is perhaps not surprising that the strongest findings were obtained for loneliness. Because self-reports were used to index both loneliness and children’s self- and peer beliefs, it is possible that the associations between these factors was overestimated because of shared method and source variance. However, construct assessment must also be guided by theoretical considerations such the degree to which children’s internal states have observable manifestations and the extent to which different types of reporters (child vs. peers or teachers) are privy to such information and can report it reliably and accurately (see Ladd & Kochenderfer-Ladd, 2002; Ladd & Profeit, 1996). Because children become more sophisticated in their ability to hide their feelings from peers and adults (Saarni, 1984), self-reports may be among the most reliable sources of information about internal emotional states such as loneliness. Moreover, a growing literature on the social-cognitive correlates of loneliness points to self-referent attributions (i.e., internal, stable causes for social failures) and evaluations as risks for loneliness (Anderson, 1999; Graham & Juvonen, 1998; Hymel et al., 1990; Renshaw & Brown, 1993). For similar reasons, beliefs about the self and peers may be best assessed through self-report. Shared method variance, however, is not a reasonable explanation for the finding that peer beliefs added to the prediction of loneliness independent of maladaptive self-appraisals. Thus, in our view, the results of this investigation are based on a more extensive assessment of children’s belief systems than has been typical in past research and, because of this, provide a more integrated and comprehensive account of the links between children’s belief systems and their feelings of loneliness.

Third, the mediational processes examined in this investigation were assessed within a particular developmental period (i.e., early to middle childhood) and inferences about the associations between children’s peer relationships, social beliefs, and psychological adjustment may be specific to this period. As children mature, the nature of their peer relationships and their interpretations of their relational experiences may change. Evidence indicates that relational roles such as rejected status and victim of peer harassment become more stable as children grow older (Coie & Dodge, 1983). Because of their increased cognitive capacities and skills, older children may also become more aware of their relationship difficulties and be better at incorporating these experiences into their social beliefs (e.g., develop lowered evaluations and expectations of themselves for this context). For example, an increased ability for abstraction (Harter, 1998) and a proneness toward self-reflection (Harter, Stocker, & Robinson, 1996; Shirk & Renouf, 1992) may increase the likelihood that children will integrate experiences in the peer context into their self- and peer beliefs. Moreover, as children move into adolescence, they develop greater behavioral and emotional independence from their parents (Larson & Richards, 1991; Steinberg & Silverberg, 1986) and more reliance on peers (Berndt, 1982; Hunter & Youniss, 1982). As a result, social-self acceptance and peer beliefs may play an increasingly larger role in the development of internalizing and externalizing problems than beliefs related to other domains (e.g., academic competence; perceived parental support). Thus, many of the hypothesized links presented in the current model may be stronger when examining these premises with older children and adolescents.
In conclusion, by examining both child characteristics (i.e., early behavioral dispositions, social beliefs) and enduring features of the child’s relational environment (i.e., chronic peer rejection, friendlessness, and victimization) within the same model, it was possible to gather evidence about the direct and indirect contributions of these factors to children’s psychological adjustment. Consistent with past research, children’s early behavioral dispositions—specifically, anxious and fearfulfulness and aggressiveness—were found to be directly linked with later internalizing and externalizing problems, respectively. The importance of investigating chronic rather than current relational difficulties was underscored by findings indicating that persistent peer difficulties were associated with later psychological dysfunction even after controlling for children’s contemporary relational problems. The hypothesis that the effects of relationship adversity on children’s adjustment would be mediated through their social beliefs received partial support. Significant indirect effects were found from chronic peer rejection and current peer victimization to loneliness through children’s social-self acceptance, and from current victimization to internalizing problems through children’s social-self acceptance. Taken together, these findings support a mediated child-by-environment model in which: (a) children’s early behavioral dispositions operate as precursors to a number of relational risks that for many children may operate as stressors over many years, and (b) from these chronic, adverse relational experiences, children tend to develop unfavorable views of themselves and peers that in turn may increase their risk for internalizing problems and loneliness.

References


Laurent, J., & Stark, K. D. (1993). Testing the cognitive content-specificity hypothesis with anxious and


