

Developmental Pathways from Child Maltreatment to Peer Rejection

Kerry E. Bolger and Charlotte J. Patterson

Using a prospective longitudinal design, rejection by peers, aggressive behavior, and social withdrawal were examined among a representative community sample of 107 maltreated children and an equal number of non-maltreated children. Results revealed that chronic maltreatment was associated with heightened risk of rejection by peers. Chronically maltreated children were more likely to be rejected by peers repeatedly across multiple years from childhood to early adolescence. Maltreatment chronicity was also associated with higher levels of children's aggressive behavior, as reported by peers, teachers, and children themselves. Aggressive behavior accounted in large part for the association between chronic maltreatment and rejection by peers. Socially withdrawn behavior was associated with peer rejection, but did not account for the association between chronic maltreatment and peer rejection. These results held for both girls and boys, followed from childhood through early adolescence. Moreover, the links among chronic maltreatment, aggressive behavior, and peer rejection were already established by early school age. Implications of these results for developmental theory and intervention are discussed.

INTRODUCTION

Forming positive relationships with peers is a key developmental task during childhood. A growing body of developmental research suggests that parent-child relationships play an important role in helping children to master this challenge (Parke & Ladd, 1992). In the context of this research, studies of children who have been maltreated by their parents or caregivers can help to illuminate the contributions of experiences within the family to relationships with peers. A number of studies have shown that children who have been maltreated are at increased risk for unpopularity among their peers (Bolger, Patterson, & Kupersmidt, 1998; Cicchetti, Lynch, Shonk, & Manly, 1992; Rogosch, Cicchetti, & Aber, 1995; Salzinger, Feldman, Hammer, & Rosario, 1993). This association is a cause for concern, given that substantial research evidence points to peer rejection as a risk factor for adjustment problems in childhood, adolescence, and adulthood (Coie & Cillessen, 1993; Parker & Asher, 1987). An important goal for current and future research is to identify specific mechanisms that account for the increased risk of peer rejection and unpopularity among maltreated children. An increased understanding of the processes that link childhood maltreatment with troubled peer relationships would contribute to developmental theory about connections between family and peer relationships, and could help to inform prevention and intervention efforts targeted for maltreated youth and their families.

Potential Pathways from Maltreatment to Peer Rejection: Aggression and Social Withdrawal

Two potentially important pathways by which maltreatment may lead to problems in peer relationships are via aggressive and socially withdrawn behavior, respectively. Rubin (1995) has noted that these two types of adjustment problems constitute the most frequently described behavior disorders during childhood. Developmental theorists have proposed both aggression and withdrawal as consequences of maltreatment and as factors linking maltreatment to problems with peers (Dodge, Pettit, & Bates, 1997; Kaufman & Cicchetti, 1989; Mueller & Silverman, 1989; Widom, 1989).

Aggression as a Pathway from Maltreatment to Peer Rejection

According to a model positing aggression as a mediator between maltreatment and peer rejection, experiencing maltreatment leads children to become more aggressive, and their aggressive behavior in turn causes them to be disliked and rejected by peers. A number of studies have documented, particularly among boys, that aggressive behavior is associated with peer rejection and unpopularity (Coie, Dodge, Terry, & Wright, 1991; Little & Garber, 1995; Pope & Bierman, 1999; Pope, Bierman, & Mumma, 1989, 1991; Price & Dodge, 1989; Ray, Cohen, Secrist, & Duncan,

1997; see Coie, Dodge, & Kupersmidt, 1990, for a review). Among investigations of the relation of aggression to rejection are a number of studies in which previously unacquainted children (typically boys) were brought together to examine the establishment of peer relationships and social status within the group (e.g., Coie et al., 1991; Coie & Kupersmidt, 1983; Dodge, 1983; Dodge, Coie, Pettit, & Price, 1990). Results of these studies indicated that children who showed high levels of aggression tended to become rejected within the newly formed groups, which suggests a potential causal role for aggressive behavior in the emergence of peer rejection.

In addition to these studies linking aggression with peer rejection, a considerable body of research suggests that aggression may be a consequence of experiencing maltreatment or poor parenting. Both harsh parenting (Dodge, Bates, & Pettit, 1990; Herrenkohl, Egolf, & Herrenkohl, 1997; Shields & Cicchetti, 1998; Strassberg, Dodge, Pettit, & Bates, 1994; Taussig & Litrownik, 1997; Weiss, Dodge, Bates, & Pettit, 1992; Widom, 1989) and underinvolved parenting (Loeber & Dishion, 1983; Loeber & Stouthamer-Loeber, 1986) have been implicated as factors contributing to the development of children's aggressive and antisocial behavior. Patterson (1995) has observed that parents need to encourage children's prosocial behavior while also discouraging their coercive behavior by using effective, nonphysical discipline. When parents fail to respond in this appropriate and contingent manner, children become more likely to use coercive behaviors in social interactions (Patterson, 1995). Thus, children who have experienced extremely harsh parenting (such as that characterized by physical and emotional abuse) or very neglectful parenting, or both, could be at especially high risk for becoming aggressive and coercive in interactions with others.

In support of this linkage from harsh and neglectful parenting to aggression, and subsequently to peer rejection, Bierman and Smoot (1991) found that punitive and ineffective discipline in the home was associated with child conduct problems, which predicted peer relationship problems at school. Pettit, Clawson, Dodge, and Bates (1996) have reported that children rejected by their peers had experienced more restrictive discipline and were more aggressive and less socially skilled than other children. Schwartz, Dodge, Pettit, and Bates (1997) found that children who were both aggressive and bullied by peers had experienced more punitive, aggressive, and hostile treatment within their families. Thus, a compelling body of evidence suggests that aggressive behavior may link experiences of maltreatment by parents or caregivers

with rejection by peers. In the present research, aggressive behavior was evaluated as a potential mediator from key aspects of maltreatment (including maltreatment type and maltreatment timing) to peer rejection, assessed longitudinally from middle childhood to early adolescence.

Social Withdrawal as a Pathway from Maltreatment to Peer Rejection

A second potential pathway between maltreatment and lack of peer acceptance is via social withdrawal. Withdrawal has been proposed as a pathway to peer rejection (Rubin, LeMare, & Lollis, 1990), but the evidence with which to evaluate this proposal is less abundant than for the connection between aggression and peer rejection. In addition, whether such a connection could be best understood by viewing social withdrawal as a cause of unpopularity or as a consequence of rejection and negative treatment by peers is unclear. In support of a connection between social withdrawal and peer relationship problems, some investigators (e.g., Hymel, Rubin, Rowden, & LeMare, 1990; La Greca, 1981) have reported an association between socially withdrawn behavior and unpopularity with peers, and others (Bell-Dolan, Foster, & Christopher, 1995; Volling, MacKinnon-Lewis, Rabiner, & Baradaran, 1993) have identified a group of withdrawn-unpopular or withdrawn-rejected children.

Social withdrawal has also been proposed, and supported in some studies, as a consequence of maltreatment (de Paul & Arruabarrena, 1995; Fantuzzo et al., 1996; Kaufman & Cicchetti, 1989; Prino & Peyrot, 1994). The relation between maltreatment and social withdrawal is less clear, however, and has received less empirical scrutiny than the connection between maltreatment and aggressive behavior. One reason for the more equivocal nature of research findings linking social withdrawal to maltreatment and to peer rejection may be that it is more difficult to observe and assess internalizing behaviors, like social withdrawal, than aggressive behaviors. Little if any research has considered social withdrawal, maltreatment, and peer rejection together, to test directly the potential role of social withdrawal as a mediator between maltreatment and rejection. To our knowledge, the present study is the first to do so, employing a longitudinal research design to examine social withdrawal as a potential mediator of the relation of maltreatment to peer rejection from childhood to adolescence. Thus, this study tested whether social withdrawal, aggressive behavior, or both accounted for the expected association between maltreatment

and peer rejection, assessed longitudinally from childhood to early adolescence.

Chronic Maltreatment as a Threat to Children's Development

A growing body of research has shown that chronic stressors, such as persistent poverty (Bolger et al. 1995; Duncan, Brooks-Gunn, & Klebanov, 1994; McLeod & Shanahan, 1996) and chronic family instability (Ackerman, Kogos, Youngstrom, Schoff, & Izard, 1999), are associated with more deleterious outcomes for children's development than are more transient forms of the same stressful events or circumstances. A developmental perspective suggests that chronic maltreatment, in contrast to maltreatment experienced over a shorter period of time, could exert an especially harmful influence on children's development. Chronically maltreated children are likely to be abused, neglected, or both across multiple developmental periods, which may impair their capacity to master developmental tasks such as regulating their emotions and behavior and forming social relationships. Chronically maltreated children are especially likely to have experienced a long history of both punitive noncontingent interactions with parents, which may engender aggressive behavior in social interactions. In addition, chronically maltreated children are likely to have had fewer opportunities to observe and experience empathy and responsiveness in their interactions with parents, which could impede their ability to develop prosocial skills such as helping, sharing, and cooperation (Zahn-Waxler & Smith, 1992). Overall, chronic maltreatment seems likely to put children at especially high risk for problems in relationships with peers.

Relatively little research has examined the impact of chronic versus more short-lived experiences of maltreatment on children's adjustment. Recent research (Bolger, Patterson, & Kupersmidt, 1998), reported that the chronicity of maltreatment was associated with unpopularity with peers, even after controlling for the effects of maltreatment type (e.g., physical abuse versus neglect), severity, and age at onset. An important goal for continued research is to identify pathways that connect chronic maltreatment with developmental difficulties, including rejection by peers. The present research sought to address this goal by examining whether aggression and social withdrawal, respectively, would mediate the expected association between *chronic* maltreatment and peer rejection.

The Role of Cognitive Ability in Aggression and Peer Rejection

In addition to examining aggression and social withdrawal as potential pathways to peer rejection, this research also considered other factors that might help to explain the link between chronic maltreatment by parents and rejection by peers. In particular, children's intelligence was viewed as an important variable to consider. Bierman and Wargo (1995) have proposed that cognitive deficits including low IQ could promote the stability of aggression, because children with these deficits respond more poorly to socialization efforts and experience more negative and punitive experiences in school and with peers. Lefkowitz, Huesmann, and Eron (1978) hypothesized that low IQ makes it difficult for some children to acquire the subtle and widely varying social skills that brighter children can exercise. Instead, the social behavior of these children may tend to be limited to more direct and salient actions such as aggression.

To understand linkages among maltreatment, aggression, and peer rejection, the association between cognitive ability and aggression must be considered along with evidence of correlations between parent and child IQ (see Scarr, 1997, 1998). These issues raise the possibility of a behavior-genetic confound in the relation of chronic maltreatment to aggressive behavior. According to one possibility, maltreating parents tend to have lower levels of intellectual ability (see Taylor et al., 1991) and higher levels of aggression than other parents. Children of maltreating parents would be viewed as likely to share these characteristics, thereby being more aggressive and more likely to be rejected by peers. In this scenario, aggressive behavior would be correlated with maltreatment, but the common association of maltreatment and aggression with IQ could account for this correlation. The present research was not designed to contrast behavior-genetic models with socialization accounts of the consequences of maltreatment; indeed, both biologically based individual differences and environmental processes are likely to contribute to children's development in this context. Rather, a measure of cognitive ability was included in data analyses to help clarify potential pathways between maltreatment and children's aggressive behavior. For this research, access to IQ test scores for parents or children was not available, but access to children's scores on standardized academic achievement tests administered in school was available. Hence, whether a difference in cognitive ability associated with maltreatment accounted for the relations of aggression and peer rejection to maltreatment could be estimated.

Research Objectives

In summary, the objectives of this research were to examine social rejection by peers as a function of children's experiences of maltreatment, and to identify mechanisms linking maltreatment to rejection by peers. Specifically, whether the relation between chronic maltreatment and peer rejection was mediated by heightened levels of aggression and of socially withdrawn behavior among chronically maltreated children was tested.

METHOD

Sources of Data

Data were drawn from three sources:

1. Data on children's peer relationships and behavior were drawn from the archives of the Charlottesville Longitudinal Study (CLS), a study of psychosocial risk and resilience among children in the Charlottesville Public Schools (Patterson, Kupersmidt, & Griesler, 1990; Patterson, Vader, & Kupersmidt, 1991).
2. Information on children who had been maltreated was obtained from the Virginia Child Abuse and Neglect Information System (CANIS; the statewide central registry of all substantiated child maltreatment cases in Virginia) according to procedures described later and by Bolger, Patterson, and Kupersmidt (1998).
3. Data on children's experiences of maltreatment were collected from case files in local Departments of Social Services in 11 cities and counties in Virginia according to procedures described later and by Bolger et al. (1998).

Participating Children

The CLS employed a cohort-sequential design to follow a large, heterogeneous group of students over the years 1986–1989. When the CLS began, the three cohorts of children were in the second, third, and fourth grades (modal ages 8, 9, and 10 years, respectively). The study was conducted as a component of an intervention program that was part of the curriculum of the Charlottesville Public Schools. Parents received a letter explaining the study and were given the option of notifying the school if they preferred not to have their child participate. Fewer than 2% of parents so refused. Using similar procedures, data were collected annually during each of 4 years of the study. In all, 1,920 children participated in the study at one or more time points, a number constituting more than

95% of all registered students in target grades in Charlottesville Public Schools. Whereas most previous studies of maltreated children have relied on non-random samples, often drawn from treatment settings, the sample for this study was a representative group of children drawn from focal grades in all public schools in the community in which the study was conducted. This sample of participating children was not only representative but also nearly exhaustive of the population from which it was drawn.

From among CLS participants, 139 children were identified from CANIS records as having been maltreated. Examination of children's social services records (described later) revealed that, for 32 of the 139 maltreated children, the reported maltreatment began after the children had participated in the CLS. These 32 children were therefore excluded from analyses. Of the remaining 107 children, 55 (51%) were male and 52 (49%) were female. Sixty-four children (60%) were White and 43 (40%) were African American. The maltreated sample did not differ significantly from the rest of the CLS sample on gender, $\chi^2(1, N = 1,920) = .31, p > .8$, or ethnicity, $\chi^2(1, N = 1,920) = .40, p > .5$.

Research Design

The resources of the CLS made it possible to construct a comparison group of nonmaltreated children, matched on a variety of characteristics with children in the maltreated group. Thus, along with the group of maltreated children, a comparison group comprising an equal number of nonmaltreated children was selected. These children were exactly matched to the maltreated children on age, gender, ethnicity, and the school they attended when they began participating in the CLS.

Comparison children were also matched to the maltreated children on family economic status, i.e., whether their families had experienced low family income in each year of the CLS. Children were identified as being from a low-income family in any year that they received federally mandated free or reduced-price school lunches (for further details, see Bolger et al., 1995, 1998). This indicator was available in school records for every child participating in the study. Ninety-nine of the 107 maltreated children (92%) experienced low family income during at least one of the years of the CLS; 76 maltreated children (70%) had low family income during every year they participated in the CLS. On average in both maltreated and comparison groups, children experienced family economic hardship during 3 out of 4 years of the CLS.

Measures and Procedure

Identification of Maltreated Children

Maltreated children were identified by matching the names of CLS participants to those of child victims in CANIS. For a reported case of maltreatment to be substantiated in Virginia, the report must be investigated by a child protective services caseworker, who must find clear and convincing evidence of child abuse or neglect. A record of each substantiated case is kept in CANIS until 10 years after the 18th birthday of the youngest child involved in the report.

Virginia law (Virginia Social Service Laws and Related Statutes, 1992) and Virginia Department of Social Services regulations (Virginia Department of Social Services, 1992) allow researchers to apply for access to CANIS data for research purposes if (1) such access is essential for the conduct of the research, (2) confidentiality of the information is maintained, and (3) the research contributes to the goal of child protection. The Director of the Virginia Department of Social Services (VADSS) Division of Service Programs approved the protocol for this research and granted access to CANIS data under these conditions (D. L. Stewart, personal communication, April 12, 1993). The research protocol was then reviewed and approved by the University of Virginia Institutional Review Board (IRB). Families were not recontacted for this archival portion of the research. After VADSS and IRB approval of the study, VADSS staff members checked names and birthdates of children who participated in the CLS against all child abuse and neglect reports in the CANIS database. For each child who had a substantiated report of maltreatment, VADSS provided a copy of the CANIS record (i.e., one CANIS record for each report) for this research. Each CANIS report was then checked against information in the CLS dataset to ensure that each match was exact.

After maltreated children were identified from among CLS participants, access to these children's case records through local Departments of Social Services was sought. Most of these children had been identified as maltreated while residing in the City of Charlottesville; however, approximately one third of this group had been maltreated in other localities in Virginia (mainly in Albemarle County, which surrounds Charlottesville, but also in 10 other cities and counties). The Department of Social Services in each of these localities was contacted, informed of the nature and procedures of the study, and invited to participate. Under conditions of confidentiality, these local Departments of Social Services agreed to provide access to case files for 138 of the 139 maltreated children. Local case information about one child was not

available because the county in which that child had received services refused to participate. For this child, we relied upon the information in the CANIS record to assess maltreatment history.

Measures of Child Maltreatment

On the basis of information in local social services case files, each child's experience of maltreatment was rated according to the Maltreatment Classification System developed by Barnett, Manly, and Cicchetti (1993). This system offers specific criteria for rating the severity of multiple types of maltreatment, including physical abuse, emotional maltreatment, failure to provide, lack of supervision, and sexual abuse. Severity of each type of maltreatment was rated along a 5-point scale, with 1 representing mild maltreatment of this type and 5 representing severe maltreatment of the specified type (see Barnett et al., 1993, for details and examples of severity scoring for each maltreatment type). Children who did not experience a particular maltreatment type received a score of zero for that type.

During data collection, 35 cases (25% of the sample) were also coded by a reliability coder. Interrater reliability for each severity scale was assessed by calculating the generalizability coefficient of the two raters' scores (Crocker & Algina, 1986, pp. 157–191). Reliability was good ($\geq .77$) for each of the scales (see Bolger et al., 1998, for additional details on reliability for each severity scale).

Associations among Measures of Maltreatment

To examine relations among aspects of maltreatment, correlations between maltreatment type severity scores among the 107 maltreated children were computed. Physical abuse correlated significantly with emotional maltreatment, $r(105) = .33, p < .01$, but not with other maltreatment types, $r(105) = .00$ with failure to provide, $-.18$ with lack of supervision, and $-.02$ with sexual abuse. Failure to provide correlated highly with lack of supervision, $r(105) = .35, p < .01$. Emotional maltreatment correlated most strongly with physical abuse, but also with failure to provide, $r(105) = .19, p < .05$, and with lack of supervision, $r(105) = .22, p < .05$. Sexual abuse did not correlate significantly with other maltreatment types, $r(105) = .15$ with emotional abuse, $-.02$ with physical abuse, $-.02$ with failure to provide, and $-.02$ with lack of supervision. This pattern of associations suggested three major dimensions of maltreatment underlying the five scales, with one dimension representing harsh and abusive parenting, one representing ne-

glectful parenting, and a third representing sexual abuse.

To test this model, a confirmatory factor analysis (within the maltreated sample) was conducted by using Procrustes rotation to a target matrix (Gorsuch, 1983, pp. 232–234; Hurley & Cattell, 1962). Principal factor analysis revealed three eigenvalues >1 . Physical abuse and emotional maltreatment loaded most highly on the first factor, with loadings of .81 and .50, respectively. The second factor evidenced high loadings for lack of supervision (.78) and failure to provide (.47). The third factor was defined by a loading of .96 for sexual abuse. All other factor loadings were $<.33$. Within this sample of maltreated children, the three factors did not correlate significantly with each other, $r(105) = .11$ for Factors 1 and 2, $-.03$ for Factors 1 and 3, and $-.10$ for Factors 2 and 3. To create more robust measures while distinguishing among these three dimensions, lack of supervision scores were averaged with failure to provide scores to create a neglect scale, and physical abuse scores were averaged with emotional maltreatment scores to create a physical/emotional abuse scale.

Although these three scales assessed relatively distinct aspects of maltreatment, they were not mutually exclusive. Table 1 shows frequencies and co-occurrence of the three types of maltreatment, along with mean severity scores for each maltreatment type among children who experienced it. Girls were more likely than boys to be sexually abused, $\chi^2(1, N = 107) = 10.18, p < .01$, but the likelihood of other maltreatment types did not vary by gender: for neglect, $\chi^2(1, N = 107) = .03$, for abuse, $\chi^2(1, N = 107) = .05$.

Table 1 Frequency, Severity, and Co-Occurrence among Types of Maltreatment

	Frequency		Severity	
	<i>n</i>	(%)	<i>M</i>	(<i>SD</i>)
Type of maltreatment				
Neglect	79	(74)	2.20	(1.06)
Physical/emotional abuse	69	(64)	2.02	(1.06)
Sexual abuse	32	(30)	3.47	(.98)
Co-occurrence of maltreatment types				
Neglect only	28	(26)		
Physical/emotional abuse only	16	(15)		
Sexual abuse only	8	(7)		
Neglect with physical/emotional abuse	31	(29)		
Physical/emotional abuse with sexual abuse	4	(4)		
Sexual abuse with neglect	2	(2)		
All three types	18	(17)		

Note: $N = 107$.

Maltreatment Timing

On the basis of each child's case record, the time at which the child's maltreatment had begun and when it had ended was determined as specifically as possible. Chronicity was operationalized as the length of time between these two time points. At the time they began participating in the CLS, children had experienced maltreatment ranging in chronicity from a single incident to more than 11 years of recurring incidents of maltreatment, $M = 4.07$ years, $SD = 3.18$. Age at maltreatment onset ranged from 1 month to 12 years, $M = 4.92$, $SD = 3.65$. Correlations among maltreatment variables appear in Table 2. Among maltreated children, age at onset correlated negatively with chronicity, $r(105) = -.75, p < .01$, which indicates that maltreatment tended to last longer when it began early in life. The number of substantiated maltreatment reports each child received was also counted. Number of reports per child ranged from 1 to 6; most children (72; 67%) received one substantiated report. Among maltreated children, number of reports correlated significantly with each of the three maltreatment types and with both chronicity, $r(105) = .42, p < .01$ (one-tailed), and age at onset, $r(105) = -.31, p < .01$ (see Table 2).

Associations between Maltreatment Types and Maltreatment Timing among Maltreated Children

Among maltreated children, neglect was the form of maltreatment most likely to begin early in life and to endure over a long period of time: correlations with age at onset were $r(105) = -.41, p < .01$, for neglect, $r(105) = -.09, p > .30$, for physical/emotional abuse, and $r(105) = .07, p > .40$, for sexual abuse; correlations with chronicity were $r(105) = .45, p < .01$, for neglect, $r(105) = .25, p < .05$, for physical abuse, and $r(105) = .15, p > .10$, for sexual abuse. Chronically maltreated children tended to experience more types of maltreatment, $r(105) = .45, p < .01$, as did children whose maltreatment began early in life, $r(105) = -.29, p < .01$, and those who received more substantiated reports of maltreatment, $r(105) = .54, p < .01$.

Associations among Maltreatment Variables for Maltreated and Comparison Children

After associations among maltreatment variables within the sample of maltreated children were examined, correlations for the sample as a whole (i.e., both maltreated and comparison children; $N = 214$) were computed. Correlations for both of these samples appear in Table 2. Because children in the comparison

Table 2 Correlations among Maltreatment Variables

Maltreatment Variable	Neglect	Physical/ Emotional Abuse	Sexual Abuse	Chronicity	Onset	Reports
Among maltreated children only ($n = 107$)						
Neglect		.14*	-.01*	.45**	-.41**	.39**
Physical/emotional abuse			.14*	.25**	-.09	.34**
Sexual abuse				.15	.07	.29**
Chronicity					-.75**	.42**
Age at onset						-.31**
Substantiated reports						
Among maltreated and comparison children ($N = 214$)						
Neglect		.45**	.24**	.68**	-.46**	.67**
Physical/emotional abuse			.31**	.54**	-.25**	.61**
Sexual abuse				.37**	-.06	.47**
Chronicity					-.73**	.69**
Age at onset						-.42**
Substantiated reports						

* $p < .05$; ** $p < .01$.

group had experienced no known maltreatment, they received a severity score of zero for each maltreatment type, and a score of zero for number of maltreatment types, number of substantiated reports, and chronicity of maltreatment. Age at onset of maltreatment was a relevant variable only for the maltreated children and not for the comparison nonmaltreated children; therefore, this variable was recoded as a linear contrast, with nonmaltreated children assigned a score of zero. This allowed inclusion of both maltreated and comparison children in subsequent analyses, while contrasting the influence of earlier versus later onset among the maltreated children (see Rosenthal & Rosnow, 1985).

Measurement of Peer Rejection

Measures of children's peer relationships were drawn from the archives of the Charlottesville Longitudinal Study. In each year of the CLS, group sociometric testing was conducted in each participating classroom by an adult experimenter with one or two aides, according to the procedures described by Coie, Dodge, and Coppotelli (1982). Children were presented with an alphabetized list of children in their grade (or class, for second graders) and were asked to nominate three children whom they liked most and three whom they liked least. Each child received a score for number of most-liked votes received and for number of least-liked votes received, respectively.

Coding of the sociometric data was accomplished by using criteria and procedures developed by Coie and colleagues (1982). Specifically, the sociometric

data were used to classify each child as rejected or not rejected by peers during each year of the study from second through seventh grade. In each year of the CLS, number of liked-most nominations and number of liked-least nominations were each standardized within each grade (or class, for second graders). To create social preference scores, each child's liked-least z score was subtracted from the liked-most z score, and the resulting scores were again standardized. Children classified as rejected in a given year had social preference z scores 1 SD or more below the mean in that year (see Coie et al., 1982).

Table 3 shows the frequency of peer rejection among maltreated and nonmaltreated children across time points of the study. (Note that because of the cohort-longitudinal design of the study and because of events such as residential moves and school transfers, not every child received a peer rejection score at every time point.) Among the 214 maltreated and comparison children, 136 (64%) were never classified as rejected; 60 (28%) were rejected during at least one, but not all, of the years; and the remaining 18 children (8%) were rejected during every year they participated in the study. Thus, consistent with research by other investigators (Bierman & Wargo, 1995; Cillessen, Van IJzendoorn, Van Lieshout, & Hartup, 1992; Pettit et al., 1996), some children were rejected repeatedly over time, whereas for other children the experience of rejection by peers appeared to be more transient. To maintain this distinction, a summary score for peer rejection over time was created by calculating the number of years in which each child had been classified as rejected, $M = .52$, $SD = .80$.

Table 3 Frequency of Peer Rejection among Maltreated and Nonmaltreated Children

	Grade of Maltreated Children						Grade of Nonmaltreated Children					
	2	3	4	5	6	7	2	3	4	5	6	7
Cohort 1												
No. rejected/ <i>n</i>	12/38 (34%)	3/29 (10%)	1/13 (8%)	2/13 (15%)			8/42 (19%)	7/36 (19%)	1/17 (6%)	2/16 (12%)		
Cohort 2												
No. rejected/ <i>n</i>		6/13 (46%)	3/9 (33%)	5/13 (38%)	1/11 (9%)		3/12 (25%)	2/10 (20%)	4/16 (25%)	2/13 (15%)		
Cohort 3												
No. rejected/ <i>n</i>			9/25 (36%)	6/24 (25%)	5/30 (17%)	7/22 (32%)		8/32 (25%)	3/30 (10%)	1/30 (3%)	5/27 (19%)	
Total												
No. rejected/ <i>n</i>	12/38 (34%)	9/42 (31%)	13/47 (28%)	13/50 (26%)	6/41 (15%)	7/22 (32%)	8/42 (19%)	10/48 (25%)	11/59 (20%)	9/62 (18%)	3/43 (7%)	5/27 (19%)

Measures of Children's Academic Achievement

As an index of cognitive ability, children's scores on standardized academic achievement tests were employed. These tests were administered by the school system during each year of the CLS. During 1986 and 1987, schools administered the SRA Achievement Series (Naslund, Thorpe, & Lefever, 1978). During 1988 and 1989, schools administered the Iowa Test of Basic Skills (Hieronymus & Hoover, 1985). For both SRA and Iowa tests, the child's reading, language, and math composite scores were used. In each year of the CLS, scores were converted to percentiles to increase comparability across tests. Each child's scores were averaged across years of the study to create a summary variable indexing cognitive ability (among maltreated children: $M = 37$, $SD = 22$; among comparison children: $M = 42$, $SD = 23$; for the combined sample: $M = 40$, $SD = 23$).

Measures of Children's Aggressive Behavior and Social Withdrawal

Aggression and social withdrawal were assessed by using peer nominations, teacher ratings, and self-reports during each year of the CLS. Descriptive statistics for these measures appear in Table 4. During the group sociometric testing described earlier, children were asked to nominate peers in response to the questions "Who starts fights?" and "Who avoids other people?" Each child received summary scores for aggression and for social withdrawal based on the total number of nominations received during each year. Classroom teachers rated each child's behavior by using a standard scale adapted from the Classroom Adjustment Rating Scales developed by Cowen

and his colleagues (Cowen, Lorion, & Caldwell, 1975; Patterson et al., 1990). Teachers rated each item on a 5-point Likert-type scale. One item ("child is aggressive") focused specifically on aggressive behavior, and another, "child is withdrawn or shy," addressed socially withdrawn behavior. Thus, children received a score for teacher-rated aggression and social withdrawal, respectively, at each time point of the CLS.

The Youth Self-Report (YSR; Achenbach, 1991) was also used to evaluate children's aggression and social withdrawal. This extensively validated instrument is appropriate for use with children ages 11 to 18 years (Achenbach, 1991). The YSR was administered in 1988 and 1989, when children in the CLS sample were old enough for valid comparisons of their scores to the norms for this measure. Children rated each YSR item on a 3-point scale (0 = not true, 1 = somewhat or sometimes true, 2 = very true or often true). The YSR aggression scale comprises 19 items (e.g., "I get in many fights"). The withdrawn scale includes 7 items (e.g., "I keep from getting involved with others").

Associations among Measures of Aggression and Withdrawal

To prepare for analyses involving aggression and social withdrawal, associations among measures of these constructs were examined within and across time points. It was hypothesized that, at each time point from second to seventh grade, peer nominations, teacher ratings, and self-reports of aggressive behavior would load on a common aggression factor, whereas reports of socially withdrawn behavior from these three sources would load on a common withdrawal factor. This hypothesis was tested by using

Table 4 Descriptive Statistics for Peer Nominations, Teacher Ratings, and Self-Reports of Children's Aggression and Social Withdrawal, Averaged over Time, among Maltreated and Nonmaltreated Girls and Boys

	Maltreated				Nonmaltreated			
	Girls (<i>n</i> = 55)		Boys (<i>n</i> = 52)		Girls (<i>n</i> = 55)		Boys (<i>n</i> = 52)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Peer nominations								
Starts fights	2.04	2.75	4.71	5.23	1.38	1.76	3.94	5.03
Avoids others	3.50	4.50	2.24	2.27	3.50	4.63	2.04	2.06
Teacher ratings								
Aggressive	1.53	.93	2.20	1.11	1.26	.45	1.70	1.05
Withdrawn	1.35	.65	1.55	1.01	1.34	.74	1.33	.62
Self-reports								
Aggressive	9.71	7.31	9.29	5.98	7.38	4.74	11.63	8.01
Withdrawn	5.26	2.89	4.15	2.18	3.88	1.99	3.80	2.34

structural equation modeling to fit a longitudinal factor model. We fit this model first for measures of aggression, and then separately for measures of social withdrawal. As noted previously, not every child participated at every time point, in part because of the cohort-sequential design of the study. Consistent with this design, longitudinal factor models were fitted as multiple-group models, with each group comprising children measured at the same time points (i.e., Group 1 measured at grades 2 through 5, Group 2 measured at grades 3 through 6, etc.). Regression parameters were constrained equal across groups. Some children also had missing data at given time points because of events such as residential moves. Therefore, these models were fitted by using full information maximum likelihood estimation with missing data (Arbuckle, 1996). Five children were excluded from analyses because of missing data on aggression and withdrawal across time points.

To test for measurement invariance (i.e., whether the measures assessed the same construct over time), the fit of an invariance model was compared with that of a variant-loadings model. In the invariant model, factor loadings for peer nominations, teacher ratings, and self-reports, respectively, were constrained to be equal across time points, whereas in the variant model, loadings were permitted to vary across time. To compare the fit of these two nested models, a likelihood ratio test was computed by calculating the difference between the χ^2 goodness-of-fit index for each of the models, which is distributed as χ^2 with degrees of freedom equal to the difference between the degrees of freedom for the two models. To evaluate overall model fit, χ^2 was examined for each model along with three indices representing different approaches to assessing model fit. These three indices were (1) the incremental fit index, Δ_2 (Bollen, 1989),

on which values close to 1 indicate better fit, assessed relative to a baseline model; (2) Akaike's (1987) information criterion (AIC), on which parsimonious models that fit well receive lower scores; and (3) the root mean square error of approximation (RMSEA; Browne & Cudeck, 1993), on which scores close to zero denote better fit, with $RMSEA \leq .05$ representing close fit and >1 poorer fit.

Associations among measures of aggression across time points. Results of the longitudinal factor model for aggression revealed that peer nominations, teacher ratings, and self-reports loaded substantially on a single common factor. For the invariance model, mean standardized loadings across groups were .63 for peer nominations, .63 for teacher ratings, and .53 for self-reports. The invariance model fit the data relatively well, $\chi^2(64, N = 209) = 198.75$, $\Delta_2 = .91$, $AIC = 396.75$, $RMSEA = .1$. Model comparison showed that the fit of the variant-loadings model failed to improve significantly over that of the invariant model, $\chi^2_{diff}(9, N = 209) = 2.5$. Thus, reports of aggression by peers, teachers, and children themselves assessed a common construct at each time point. On the basis of this evidence, peer nominations, teacher ratings, and self-reports of aggression were combined to achieve more robust measurement of this construct. Each measure of aggression was standardized within time point and then the resulting *z* scores were averaged to create a score for aggression at each time point.

Associations among measures of social withdrawal across time points. In contrast, a one-factor model did not fit measures of social withdrawal. Teacher-reported and peer-reported withdrawal loaded on a common factor (scaled to peer nominations) at each time point, with mean standardized loadings of .87 for peer and .43 for teacher reports, but the mean fac-

tor loading for self-reported withdrawal was only $-.07$. Thus, peer nominations and teacher ratings of withdrawal assessed a common construct across time, but self-reports of withdrawal were not congruent with those of peers and teachers. The longitudinal factor model was therefore re-estimated with peer and teacher reports, but not self-reports, included as indicators. This model, with invariant loadings, provided a relatively good fit to the data, $\chi^2(25, N = 209) = 61.21$, $\Delta_2 = .97$, $AIC = 241.21$, $RMSEA = .08$. The fit of the variant-loadings model failed to improve significantly over the fit of the invariance model, $\chi^2(5, N = 209) = 7.73$. A composite measure was therefore created of social withdrawal by standardizing peer and teacher reports of withdrawal within each time point and then averaging the resulting z scores to create a score for peer- and teacher-reported social withdrawal at each time point. On the basis of results of the longitudinal factor model, self-reported withdrawal (standardized within each time point, to promote comparability with the other measures) was preserved as a separate variable.

Stability over Time in Measures of Aggression and Social Withdrawal

On the basis of evidence from other research (e.g., Olweus, 1980; Pope & Bierman, 1999), individual differences in aggression and social withdrawal were expected to show a substantial degree of stability over time. Therefore, to prepare for analyses of these measures, their stability over time was examined by using growth curve modeling (McArdle & Epstein, 1987). According to the growth curve model, an individual's score on a dependent variable at a given time point is viewed as a function of three components: a level component represents individual differences that are stable over time; a slope component embodies individual differences in change over time; and an error or uniqueness component represents sources of variance not accounted for by level or slope.

Growth models were created by adding level and slope factors to the longitudinal factor models described earlier (for aggression and for peer- and teacher-reported aggression) as exogenous latent variables influencing each factor from grade 2 to grade 7 (i.e., as second-order factors). To test for stability versus change over time, two alternative models of change (a linear pattern and a latent or nonlinear pattern estimated from the data) were compared with a model with no slope component (i.e., a stable individual differences model). This series of nested models was tested first for aggression, then for peer- and teacher-reported withdrawal, and finally for self-reported

withdrawal (represented as a manifest variable rather than a factor at each time point, consistent with results of the longitudinal factor analysis). For each of these constructs, the stable individual differences model fit the data relatively well, for aggression: $\chi^2(84, N = 209) = 296.6$, $p < .05$, $IFI = .86$, $AIC = 437.56$, $RMSEA = .1$; for peer- and teacher-reported withdrawal: $\chi^2(49, N = 209) = 194.19$, $IFI = .89$, $AIC = 326.19$, $RMSEA = .1$; and for self-reported withdrawal: $\chi^2(8, N = 103) = 12.22$, $p < .15$, $IFI = .98$, $AIC = 20.22$, $RMSEA = .05$. In each of these models, the variance of the level factor was statistically significant, $p < .05$, which indicates the presence of significant differences across children in initial levels of aggression and social withdrawal.

Next, the linear and nonlinear alternative models for each construct were examined to assess whether children's trajectories of aggression and social withdrawal were characterized by significant patterns of change over time. To accomplish this, the mean and variance of the slope factor were examined in each of these models. A significant slope mean would indicate a pattern of change over time for the sample as a whole, and a significant slope variance would indicate that this pattern of change varies significantly across individual children. Across the three constructs, results of the linear and nonlinear models indicated that slope means and variances were not significant at $p < .05$. Therefore, it could not be concluded that aggression and social withdrawal in this sample were characterized by individual differences that were relatively stable over time.

On the basis of this evidence of stable individual differences, children's z scores were averaged over time for each of the three constructs. This procedure produced, for each child, summary scores for aggression, peer- and teacher-reported withdrawal, and self-reported withdrawal. Aggression was related negatively to peer- and teacher-reported withdrawal, $r(207) = -.22$, $p < .01$, but positively to self-reported withdrawal, $r(207) = .34$, $p < .01$. Self-reported withdrawal did not correlate significantly with peer- and teacher-reported withdrawal, $r(207) = -.09$.

RESULTS

Peer Rejection as a Function of Maltreatment

Data Analysis Strategy

To examine peer rejection as a function of maltreatment, Poisson regression, a special case of the *generalized* linear model that is particularly well suited to analyzing count data, was employed. Unlike OLS regression, the Poisson regression model does not assume homoscedasticity (an assumption often not met when predicting

count variables), but does observe the constraint that the dependent variable can only take positive integer values, as in count data (Gardner, Mulvey, & Shaw, 1995). Poisson regression was a more appropriate alternative to OLS regression because OLS, when used to predict count data, can produce misleading estimates for regression coefficients (Gardner et al., 1995). Poisson regression is a log-linear model; thus, a significant regression coefficient predicts an exponential, rather than linear, change in the dependent variable.

To verify that years of peer rejection followed a Poisson distribution, the distribution of this variable was compared with the expected counts predicted by a Poisson distribution with $\mu = .52$ (the sample mean of years of peer rejection). Results of this comparison revealed a good fit to the Poisson model, $\chi^2(3) = 14.9, p > .95$. The mean of years of peer rejection was compared with its variance because the Poisson distribution has the property $\mu (y) = \text{Var} (y)$. The variance of years of peer rejection was .64, close to its mean of .52, which provides further evidence of fit to the Poisson model.

Results of Analyses of Peer Rejection as a Function of Maltreatment

To estimate the influence of maltreatment on peer rejection, a Poisson regression model with years of peer rejection as the dependent variable was tested. Independent variables (entered simultaneously) were maltreatment chronicity (in years); age at onset of maltreatment (linear contrast); physical/emotional abuse, neglect, sexual abuse (severity scores), and child gender. The dispersion, parameter (calculated as $\sqrt{\chi^2}/df$) was also estimated to check for overdispersion of the dependent variable, which can bias parameter estimates (Gardner et al., 1995). The dispersion parameter can be included in a model to correct such bias. For each Poisson model, dispersion was <1.2 , closely approximating the ideal value of 1.0. Moreover, no parameter estimate varied by more than .01 when the dispersion parameter was included in, versus excluded from, the model, nor did inclusion of dispersion change the statistical significance of any variable. Therefore, the unadjusted parameter estimates for the standard (as opposed to overdispersed) Poisson model are reported.

For this regression model and each regression model reported later, all two-way interactions were tested, but were not significant and were therefore excluded from final models. Significance tests were one-tailed where hypotheses were directional; otherwise they were two-tailed. Because maltreatment variables were correlated, collinearity was tested for by computing (1) the condition number ($K =$

$\sqrt{[\text{largest eigenvalue}/\text{smallest eigenvalue}]}$) of the covariance matrix and (2) the variance inflation factor (VIF) for each variable (see Fox, 1984, pp. 147–153). These diagnostics indicated that regression results were not threatened by collinearity: $K = 10.40$ (cf. the standard of $K = 30$ for an ill-conditioned matrix; Belsley, Kuh, & Welsch, 1980); all VIF <1.75 .

As expected, chronic maltreatment was associated with increased risk of peer rejection, $B = .13, p < .05$ (see Bolger et al., 1998, for additional documentation on the association in this sample between chronic maltreatment and unpopularity with peers). The longer maltreatment continued, the more likely a child was to be rejected repeatedly by peers over time (see Figure 1). No other independent variable predicted peer rejection significantly, for age at onset of maltreatment: $B = .04, SE = .06$; for physical/emotional abuse: $B = -.10, SE = .11$; for neglect: $B = -.11, SE = .11$; for sexual abuse: $B = .05, SE = .08$; and for child gender: $B = .03, SE = .10$; all $p > .30$.

Analyses to rule out possible confounds with chronic maltreatment were also conducted. First, a Poisson model was tested with number of substantiated maltreatment reports and number of maltreatment types entered as covariates. Neither predicted rejection significantly, for number of maltreatment types: $B = -.11, SE = .13, p < .45$, for substantiated reports: $B = -.07, SE = .06, p < .30$, nor were any two-way interactions significant. Another possible confound was the number of occasions on which each child participated in the study. As noted previously (see Method section), not every child received a peer rejection score during every year of the study, in part because of events such as residential moves and school transfers. Children who participated at more time points therefore had a greater chance to be rejected at more time points. To ensure that this association did not bias the predictions of peer rejection as a function of any other variable, a variable representing the number of time points that each child participated in the CLS ($range = 1-4$ time points) was created and added as a covariate to the Poisson model predicting rejection. As expected, more years of participation were associated with a greater likelihood of more years of rejection, $B = .39, p < .01$. Years of participation did not interact significantly, however, with any other independent variable, nor did its presence in the equation change the magnitude or statistical significance of the regression weight for any other predictor.

Aggression and Social Withdrawal as Functions of Maltreatment

OLS regression was used to examine relations of children's aggressive and withdrawn behavior to specific

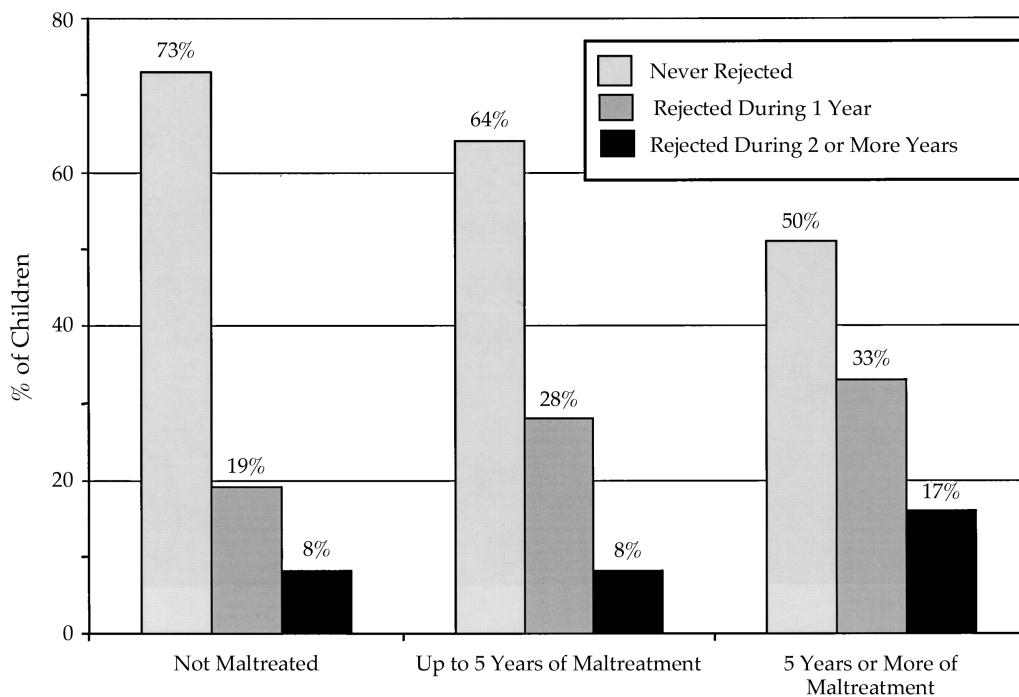


Figure 1 Peer rejection as a function of maltreatment chronicity.

aspects of maltreatment. Dependent variables were aggression (composite score based on teacher, peer, and self-reports); teacher- and peer-reported social withdrawal; and self-reported social withdrawal. For each model, independent variables (entered simultaneously) were maltreatment chronicity (in years); age at onset (linear contrast); physical/emotional abuse, neglect, and sexual abuse (severity scores); and child gender. For the first model, aggression was the dependent variable. Teacher- and peer-reported social withdrawal was the dependent variable for the second model, and self-reported withdrawal was the dependent variable for the third model.

Aggression as a Function of Maltreatment

Results revealed a main effect for chronic maltreatment on aggression, $B = .08$, $\beta = .30$, $p < .05$. Children who experienced more years of maltreatment tended to be more aggressive. Results also indicated a main effect for gender, $B = .24$, $\beta = .32$, $p < .01$, with boys reported to be more aggressive than girls. No other main effect predicted maltreatment significantly, for age at onset: $B = .03$, $SE = .03$; for physical/emotional abuse: $B = -.01$, $SE = .06$; for neglect: $B = -.05$, $SE = .06$; for sexual abuse, $B = .00$, $SE = .05$). As with analyses predicting peer rejection, a version of this model was also tested with number of substantiated reports and num-

ber of maltreatment types as covariates. No two-way interactions were significant, nor did number of substantiated reports, $B = -.09$, $p < .20$, predict aggression. The main effect for number of maltreatment types was significant, $B = .32$, $p < .01$, which indicates that children who experienced more types of maltreatment tended to be more aggressive. Even with these covariates in the model, however, the effect of chronicity on aggression remained significant, $B = .07$, $p < .05$. These results are illustrated in Figure 2.

Whether the relation of aggression to chronic maltreatment would be attenuated when cognitive ability was added to the equation was also tested. To this end, children's cognitive ability score was added as covariate to the model predicting aggression. No two-way interactions with this covariate were significant. A main effect for cognitive ability, $B = -.01$, $\beta = -.18$, $p < .01$, indicated that children with lower cognitive scores tended to be more aggressive. The effect, however, for chronic maltreatment, $B = .085$, $\beta = .32$, $p < .01$, was not reduced by the addition of cognitive ability to the model.

Social Withdrawal as a Function of Maltreatment

Results of the second regression model, for self-reported withdrawal, and the third model, for teacher- and peer-reported withdrawal, revealed that none of

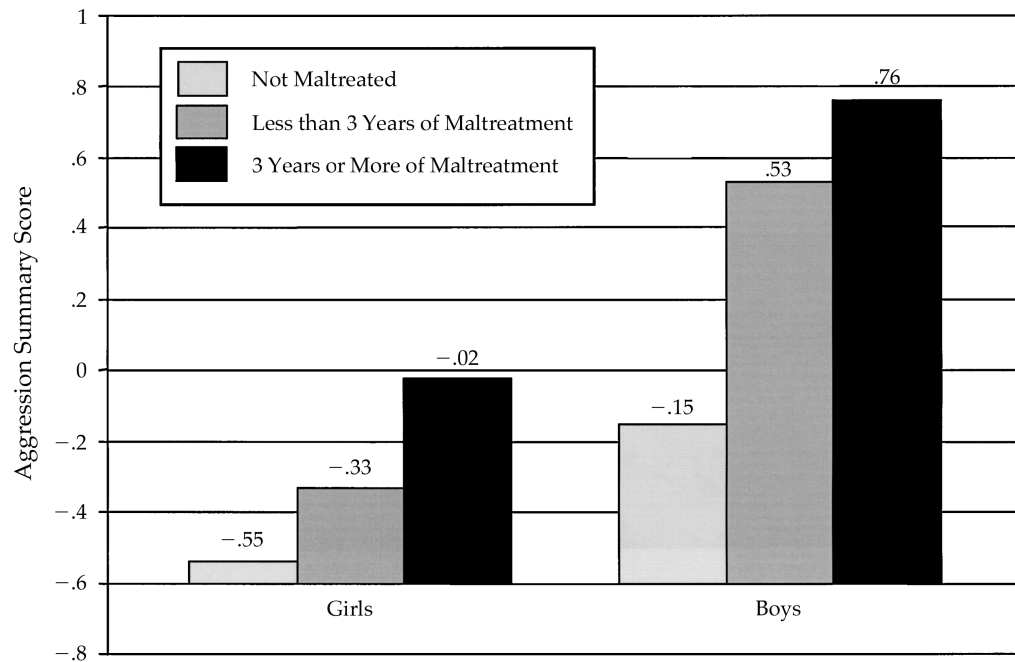


Figure 2 Aggression as a function of maltreatment chronicity and child gender.

the maltreatment variables nor child gender predicted social withdrawal significantly, no $p < .10$. Because much previous research has focused on the effect of physical abuse, specifically, on children's adjustment problems, all of the regression models reported previously were also retested with physical abuse and emotional maltreatment (severity scores) as separate variables, to enhance comparability of the current findings to those of other investigators. This change did not alter the significant findings: Chronic maltreatment emerged as the significant predictor in each model.

Peer Rejection as a Function of Aggression and Social Withdrawal

To estimate effects of aggression and withdrawal on rejection, a Poisson regression model with years of peer rejection as the dependent variable was tested. Independent variables (entered simultaneously) were aggression (teacher ratings, peer nominations, and self-report composite), teacher- and peer-reported social withdrawal, self-reported social withdrawal, and child gender. Results revealed main effects for aggression, $B = .70$, $SE = .11$, $p < .01$, and teacher- and peer-reported withdrawal, $B = .24$, $SE = .10$, $p < .05$. Self-reported withdrawal, $B = -.04$, $SE = .10$, and gender, $B = -.22$, $SE = .12$, did not predict rejection significantly.

Aggression as a Mediator of the Relation between Chronic Maltreatment and Peer Rejection

Structural equation modeling was used to test whether aggression mediated between chronic maltreatment and peer rejection. On the basis of results of the Poisson models, withdrawal was ruled out as a potential mediator between maltreatment and peer rejection: Although teacher- and peer-reported social withdrawal predicted peer rejection, withdrawal was not in turn predicted by maltreatment.

Exogenous variables included in the structural equation model were maltreatment chronicity, age at onset, physical/emotional abuse, neglect, sexual abuse (severity scores), and child gender. Endogenous variables were aggression and years of peer rejection. To test for mediation, the results of this model were examined to determine (1) whether maltreatment chronicity predicted aggression (the proposed mediator) significantly, and (2) whether aggression predicted years of peer rejection significantly. Most germane to the question of mediation was the subsequent examination of whether the *indirect* effect of chronic maltreatment on years of peer rejection, mediated by aggression, was statistically significant. The structural equation modeling approach permits a direct test of the statistical significance of this mediated path.

Results revealed that chronic maltreatment predicted aggression, $B = .10$, $\beta = .26$, $p < .05$, which in

turn predicted peer rejection, $B = .25$, $\beta = .38$, $p < .01$ (see Figure 3). Most directly relevant to the question of mediation, results also revealed a significant *indirect* effect for chronic maltreatment on peer rejection, mediated by aggression, $B = .025$, $\beta = .10$, $p < .05$. The direct (i.e., nonmediated) path from chronicity to peer rejection, $B = .05$, $\beta = .19$, was not statistically significant. Child gender also contributed to the prediction of aggression, $B = .37$, $\beta = .31$, $p < .01$, with boys more aggressive than girls. No other exogenous variable predicted aggression or rejection significantly. This model accounted for 19% of the variance in peer rejection. Of the variance in rejection accounted for by chronic maltreatment, 27% was mediated by aggression. Assessments of normality revealed significant multivariate kurtosis among variables in this model (Mardia's coefficient of multivariate kurtosis = 24.58, $p < .01$; see Mardia, 1970). Excessive multivariate kurtosis can produce incorrect standard errors and p values in structural equation models (Browne, 1984). Bootstrapping techniques were therefore applied to produce bootstrapped percentile confidence intervals and p values when testing this model (using Amos 4.0 software; Arbuckle & Wothke, 1995–1999). Implementation of bootstrapping did not change the pattern of significant versus nonsignificant results reported here, but did result in slightly more conservative estimates for some parameters.

Chronic Maltreatment, Aggression, and Peer Rejection at Early School Age

After establishing that chronic maltreatment was associated with a greater likelihood of peer rejection across years from elementary to middle school, the

question of whether this link was already established by early school age, and if so, whether aggressive behavior accounted for the linkage was examined. To address this question, focus was placed on the subset of 80 children (38 maltreated and 42 comparison) who participated in the CLS during second grade. A structural equation model with maltreatment chronicity (as of second grade), age at onset (as of second grade; coded as a linear contrast), and child gender as exogenous variables was fit. Endogenous variables were aggression (teacher- and peer-report composite) and peer rejection (coded 1 for rejected and 0 for not rejected) at second grade. Assessments of normality revealed no significant multivariate kurtosis among variables in this model. Models that included physical/emotional abuse, neglect, and sexual abuse (severity scores) as independent variables were also tested. Consistent with the longitudinal models, these variables showed no significant main effects nor any significant interactions with any other predictor.

Results revealed that chronic maltreatment predicted aggression, $B = .12$, $\beta = .23$, $p < .05$, which in turn predicted peer rejection, $B = .04$, $\beta = .30$, $p < .01$. Most relevant to the question of mediation, results also revealed a significant *indirect* effect for chronic maltreatment on peer rejection mediated by aggression, $\beta = .07$, $p < .05$. The direct (i.e., nonmediated) path from chronicity to peer rejection, $B = .03$, $\beta = .23$, was not statistically significant. Child gender also contributed to the prediction of aggression, $B = .50$, $\beta = .33$, $p < .01$, with boys more aggressive than girls. No other exogenous variable predicted aggression or rejection significantly. This model accounted for 22% of the vari-

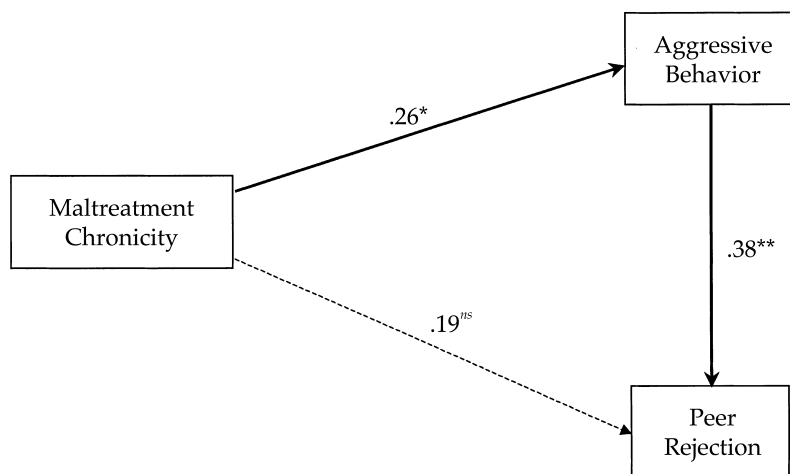


Figure 3 Aggression as a mediator of the relation between chronic maltreatment and peer rejection. $\beta = .10$, $p < .05$. Standardized coefficients are shown. * $p < .05$; ** $p < .01$. *ns* = not significant.

ance in peer rejection at second grade. Of the variance in peer rejection accounted for by chronic maltreatment, 23% was mediated by aggression.

Overall, results of the second-grade analyses were consistent with those of the longitudinal analyses: By early elementary school, chronically maltreated children showed higher levels of aggression and were more likely to be rejected by peers. Aggression accounted for a substantial proportion of the association between chronic maltreatment and peer rejection in early elementary school.

DISCUSSION

Overall, results of this research provide evidence about several important aspects of developmental pathways to peer rejection among maltreated children. First, chronic maltreatment was associated with both increased aggressive behavior and a greater likelihood of being rejected by peers. Over time from middle childhood to early adolescence, chronically maltreated children were reported by teachers, peers, and themselves to be significantly more aggressive than other children. Differences in children's cognitive ability, as indexed by achievement test scores, did not explain the association between chronic maltreatment and aggression. Chronically maltreated children were more likely to be rejected by peers, not only on a single occasion of measurement but also across multiple years from second to seventh grade. Heightened levels of aggressive behavior accounted substantially for the increased risk of peer rejection, including repeated peer rejection, associated with chronic maltreatment.

These findings are cause for concern, particularly in light of evidence that aggression and peer rejection are significant predictors of subsequent adjustment problems, including psychopathology, delinquency and criminality, and low educational attainment (Coie, Terry, Lenox, & Lochman, 1995; Kupersmidt & Coie, 1990; Kupersmidt, Coie, & Dodge, 1990; Parker & Asher, 1987). In particular, recent research suggests that aggression and peer rejection in combination are especially potent predictors of later problems (Coie & Cillessen, 1993). The present findings contribute to knowledge in this area by identifying chronic maltreatment by parents or caregivers as a significant predictor of both high levels of aggression and repeated peer rejection from childhood to early adolescence.

Findings of this research indicate that chronicity, rather than type, of maltreatment best predicted both aggression and rejection by peers. This raises the question of how both chronic abuse and chronic neglect, which appear to constitute quite different forms

of inadequate parenting, could each lead to common outcomes, that is, aggression and peer rejection. Before addressing this question, it is important to observe that many maltreated children experience more than one type of abuse or neglect. In the sample of maltreated children that participated in this study, a majority (51%) experienced more than one type of maltreatment, with physical/emotional abuse plus neglect being the most common pattern of co-occurring maltreatment types. Chronically maltreated children were especially likely to experience multiple maltreatment types: For example, among those who experienced 5 years or more of maltreatment, 70% experienced two or more maltreatment types, with physical/emotional abuse plus neglect again the most common pattern of co-occurrence. Neither the number of maltreatment types nor specific patterns of co-occurrence (i.e., interactions between maltreatment types) accounted for the association of chronic maltreatment with aggression and peer rejection. The association between chronicity and multiple maltreatment types indicates, however, that the rearing experiences of chronically maltreated children tend to include both harsh treatment and neglect.

Why would chronic abuse, neglect, or both lead to increases in children's aggressive behavior and rejection by peers? One potentially important mechanism is through parent-child interactions that encourage children's coercive behavior while failing to promote their prosocial skills. As documented by Patterson and colleagues (see, e.g., Patterson, 1995), parents' failure to use appropriately contingent and nonphysical discipline is an important predictor of children's subsequent coercive and antisocial behavior. By definition, abuse and neglect constitute patterns of parenting that are harsh and punitive, as well as unresponsive to children's behavior and to their developmental needs. Thus, both abuse and neglect are likely to contribute to children's propensity to use coercive, aggressive behaviors in their interactions with others, which may in turn contribute to children becoming disliked and rejected by peers. In the present study, one limitation that should be noted in this context is that parent-child coercive interaction was not directly measured by using methods such as observational coding. Overall, however, the findings regarding aggression as a developmental pathway from maltreatment to peer rejection fit well with this theoretical framework. In addition, the findings add to knowledge in this area by indicating that *chronically* maltreated children, who have had a long history of punitive, noncontingent interactions with their parents or caregivers, were at especially high risk of following this developmental pathway to peer rejection.

Along with encouraging children's aggression, chronic abuse and neglect may impede children's development of emotional security and prosocial skills. Abuse and neglect each represent a degree of parental rejection of and unresponsiveness to children's basic needs for security and care. Although healthy child development can take place in a wide range of rearing environments, parental warmth and acceptance appear to contribute to optimal child development across cultures (Rohner, 1986). Subtly different parental socialization practices may be required to promote positive development among different children: For example, Kochanska (1997) has shown that mothers' gentle discipline predicted conscience development among children fearful as toddlers, whereas secure attachment and maternal responsiveness promoted conscience development among more fearless children. Clearly though, both abuse (characterized by harsh, rather than gentle, discipline) and neglect (characterized by unresponsiveness) deviate markedly from effective parenting practices involving gentle discipline and parent responsiveness. Thus, the family environments of maltreated children—especially those who have been maltreated over long periods of time—may offer few opportunities for acquiring prosocial skills, but many for learning aggressive and coercive ones.

Evidence that chronicity, rather than type, of maltreatment best predicted aggression and peer rejection does not mitigate the importance of research to assess specific types of maltreatment. Indeed, particular forms of maltreatment may have differential effects on some outcomes, both during childhood and later in life (see, e.g., Eckenrode, Laird, & Doris, 1993; Johnson, Cohen, Brown, Smailes, & Bernstein, 1999; Stevenson, 1999). Thus, no argument is made against assessing the occurrence and consequences of specific types of maltreatment. It is suggested, however, that a developmental perspective on child abuse and neglect requires consideration of timing and duration, as well as type, of maltreatment.

The measurement of aggression in the present study was strengthened by the use of reports gathered from teachers, peers, and the participating children themselves, and by the assessment of aggression longitudinally from early elementary school (second grade) to middle school (seventh grade). Results indicated a strong degree of congruence over time among these sources of information about children's aggression, adding to confidence in the validity of this construct over the course of the study. Some limitations in our measurement of aggression must be noted, however. Assessments in this research did not distinguish physical aggression from other forms of aggression such as relational aggression, which has been reported to be

more prevalent among girls than boys (Crick & Grotpeter, 1995). Nevertheless, across years from elementary to middle school, aggression accounted statistically for the connection between chronic maltreatment and peer rejection for both boys and girls. In addition, distinctions were not drawn among different types of physical aggression, such as reactive versus instrumental aggression (cf. Crick & Dodge, 1996; Dodge, Coie, et al., 1990; Schwartz et al., 1998). Thus, although additional research is needed to clarify understanding of different aspects of aggression among maltreated children, results of this study document a key role of aggression in linking chronic maltreatment to peer rejection.

Unlike aggression, social withdrawal did not constitute a significant pathway from maltreatment to peer rejection. Although social withdrawal was associated with rejection by peers, no aspect of maltreatment predicted social withdrawal significantly. Thus, in the present sample, social withdrawal did not account for the connection between maltreatment by parents or caregivers and rejection by peers. This finding does not, of course, rule out internalizing problems in general as potential sequelae of maltreatment. Continued investigation is needed to examine whether maltreatment predicts other types of internalizing problems, such as symptoms of depression and anxiety. In addition, some limitations in this study's measurement of social withdrawal should be noted, especially in comparison with the measurement of aggression. For aggression, strong congruence among reports from children, peers, and teachers was found. This congruence provided particularly robust measurement of this construct. In contrast, teacher and peer reports of social withdrawal were inconsistent with self-reports. Thus, the measurement of withdrawal in this study was less robust than that of aggression, and this may have contributed to the lack of findings supporting withdrawal as a link between aggression and rejection. Further research is needed to identify the most effective strategies for assessing social withdrawal and related internalizing problems, and to clarify their roles in the development of maltreated children.

From a methodological viewpoint, some limitations might also be noted about the procedure for classifying children as maltreated. Despite the strengths of the detailed official records relied upon for this task, some children who were maltreated but not known to social service departments could have been classified as non-maltreated. To the extent that this occurred, however, it would have worked against the hypotheses regarding chronic maltreatment. Thus, the analyses provide a conservative test of the relation of chronic maltreatment to aggression and peer rejection, which adds to the confidence in these results. In addition, this ap-

proach provides a complement to important studies that have used other methods, such as parent reports (see, e.g., Dodge, Bates, et al., 1990), to assess children's experiences of maltreatment and harsh discipline.

The findings regarding risks associated with chronic maltreatment have important implications for prevention and intervention efforts for maltreated children and those at risk for maltreatment. Among maltreated children who participated in this study, most (59%) experienced maltreatment beginning before the age of 5 years. Maltreatment that became chronic tended to begin even earlier in life: Among those maltreated for 5 years or more, maltreatment began, on average, at age 2 years. These chronically maltreated children typically experienced a lengthy period of abuse, neglect, or both before entering elementary school and becoming eligible for any school-based interventions. Moreover, the results indicate that links from chronic maltreatment to aggression and peer rejection were already established by early elementary school age. This pattern of timing suggests that interventions to prevent chronic maltreatment and its consequences for children's development should begin early in life.

While stressing the importance of early intervention, we should note that early onset of maltreatment did not show a significant direct effect on children's aggressive behavior; rather, early onset was related to aggression via its association with maltreatment chronicity. Thus, the findings are more consistent with a cumulative effects model, rather than a critical or sensitive period model, of the influence of maltreatment on children's adjustment. This finding, however, must be interpreted with the caveat that chronicity and age at onset of maltreatment were closely associated in the sample: Maltreatment that became chronic was much more likely to begin early in life. The ecology of chronic maltreatment can be better understood, therefore, by considering that this enduring risk factor is likely to begin early in children's lives.

Thompson (1995) has reviewed a number of promising strategies to prevent child maltreatment and improve parenting, including home visitation (see Hawaii Department of Health, 1992; Olds et al., 1997) and intensive family preservation (see, e.g., Kinney, Haapala, Booth, & Leavitt, 1990). Empirical evidence (e.g., Dishion & Patterson, 1992; Webster-Stratton, 1998) also supports the effectiveness of parent-training interventions to reduce children's aggressive and antisocial behavior. Along with these approaches, an agenda to improve parenting and prevent maltreatment of children must include efforts to improve the economic well-being of at-risk families. In the sample for the present study, over 90% of maltreated children experienced significant family economic hardship across

the years in which they participated in this study. Results of this research, which employed a demographically matched comparison group of children, showed that chronic maltreatment was associated with significant risks for children's development, above and beyond those attributable to socioeconomic status. Furthermore, child maltreatment is not limited to low-income families. Extensive research, however, documents a strong connection between poverty and difficulties in parenting, and suggests that economic loss and financial strain erode parents' ability to provide consistent, supportive care for their children (see Price, 1992; Thompson, 1995). Thus, interventions to improve family economic well-being could contribute meaningfully to the prevention of child maltreatment.

In summary, it was found that chronic maltreatment was associated with heightened levels of aggressive behavior and repeated peer rejection during childhood and early adolescence. Aggressive behavior accounted in large part for the higher rate of rejection by peers among chronically maltreated children. The results highlight the need for a developmental approach to studying the timing and chronicity of stressful experiences in childhood and for prevention and intervention efforts to protect children from these risks.

ACKNOWLEDGMENTS

The authors gratefully acknowledge support for this research from grant 90CA1650 from the Office on Child Abuse and Neglect, the Children's Bureau, U.S. Department of Health and Human Services. Views expressed are solely the responsibility of the authors and do not represent the official view of the funding agency. Support for the Charlottesville Longitudinal Study was provided by the W. Alton Jones Foundation and the U.S. Department of Education. The authors wish to thank Janis B. Kupersmidt for her important contributions to the conceptualization and data collection of the Charlottesville Longitudinal Study. Thanks also go to Preston A. Britner for his contributions to reliability coding of the maltreatment data. The authors are grateful to Jody Todd Manly and Dante Cicchetti, who shared their maltreatment classification system, developed at Mt. Hope Family Center, University of Rochester; Joan Kammire of the Charlottesville Department of Social Services; Judy Randle of the Albemarle County Department of Social Services; and the staff members of the participating state and local social services departments, without whose generous assistance this research would not have been possible. Portions of this research were presented at the biennial meeting of the Society for

Research in Child Development in Albuquerque, New Mexico, April 1999.

ADDRESSES AND AFFILIATIONS

Corresponding author: Kerry E. Bolger, Department of Psychology, University of Miami, 5665 Ponce de Leon Blvd., Coral Gables, FL 33146; e-mail: kbolger@miami.edu. Charlotte J. Patterson is at the University of Virginia, Charlottesville.

REFERENCES

- Achenbach, T. M. (1991). *Manual for the Youth Self-Report and 1991 Profile*. Burlington: University of Vermont Department of Psychiatry.
- Ackerman, B. P., Kogos, J., Youngstrom, E., Schoff, K., & Izard, C. (1999). Family instability and the problem behaviors of children from economically disadvantaged families. *Developmental Psychology, 35*, 258–268.
- Akaike, H. (1987). Factor analysis and AIC. *Psychometrika, 52*, 317–332.
- Arbuckle, J. L. (1996). Full information estimation in the presence of incomplete data. In G. A. Marcoulides & R. E. Schumacker (Eds.), *Advanced structural equation modeling: Issues and techniques* (pp. 243–277). Mahwah, NJ: Erlbaum.
- Arbuckle, J. L., & Wothke, W. (1995–1999). *Amos 4.0 user's guide*. Chicago: SmallWaters Corporation.
- Barnett, D., Manly, J. T., & Cicchetti, D. (1993). Defining child maltreatment: The interface between policy and research. In D. Cicchetti & S. L. Toth (Eds.), *Child abuse, child development, and social policy* (pp. 7–74). Norwood, NJ: Ablex.
- Bell-Dolan, D. J., Foster, S. L., & Christopher, J. S. (1995). Girls' peer relations and internalizing problems: Are socially neglected, rejected, and withdrawn girls at risk? *Journal of Clinical Child Psychology, 24*, 463–473.
- Belsley, D. A., Kuh, E., & Welsch, R. E. (1980). *Regression diagnostics: Identifying influential data and sources of collinearity*. New York: Wiley.
- Bierman, K. L., & Smoot, D. L. (1991). Linking family characteristics with poor peer relations: The mediating role of conduct problems. *Journal of Abnormal Child Psychology, 19*, 341–356.
- Bierman, K. L., & Wargo, J. B. (1995). Predicting the longitudinal course associated with aggressive-rejected, aggressive (nonrejected), and rejected (nonaggressive) status. *Development and Psychopathology, 7*, 669–682.
- Bolger, K. E., Patterson, C. J., & Kupersmidt, J. B. (1995). Psychosocial adjustment among children experiencing persistent and intermittent family economic hardship. *Child Development, 66*, 1107–1129.
- Bolger, K. E., Patterson, C. J., & Kupersmidt, J. B. (1998). Peer relationships and self-esteem among children who have been maltreated. *Child Development, 69*, 1171–1197.
- Bollen, K. A. (1989). A new incremental fit index for general structural equation models. *Sociological Methods and Research, 17*, 303–316.
- Browne, M. W. (1984). Asymptotic distribution free methods in analysis of covariance structures. *British Journal of Mathematical and Statistical Psychology, 37*, 62–83.
- Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. In K. A. Bollen & J. S. Long (Eds.), *Testing structural equation models* (pp. 136–162). Newbury Park, CA: Sage.
- Cicchetti, D., Lynch, M., Shonk, S., & Manly, J. T. (1992). An organizational perspective on peer relations in maltreated children. In R. D. Parke & G. W. Ladd (Eds.), *Family-peer relationships: Modes of linkage* (pp. 345–383). Hillsdale, NJ: Erlbaum.
- Cillessen, A. H., Van IJzendoorn, H. W., Van Lieshout, C. F., & Hartup, W. W. (1992). Heterogeneity among peer-rejected boys: Subtypes and stabilities. *Child Development, 63*, 893–905.
- Coie, J. D., & Cillessen, A. H. (1993). Peer rejection: Origins and effects on children's development. *Current Directions in Psychological Science, 2*, 89–92.
- Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Developmental Psychology, 18*, 557–570.
- Coie, J. D., Dodge, K. A., & Kupersmidt, J. B. (1990). Peer group behavior and social status. In S. R. Asher & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 17–59). Cambridge, U.K.: Cambridge University Press.
- Coie, J. D., Dodge, K. A., Terry, R., & Wright, V. (1991). The role of aggression in peer relations: An analysis of aggression episodes in boys' play groups. *Child Development, 62*, 812–826.
- Coie, J. D., & Kupersmidt, J. B. (1983). A behavioral analysis of emerging social status in boys' groups. *Child Development, 54*, 1400–1416.
- Coie, J., Terry, R., Lenox, K., & Lochman, J. (1995). Childhood peer rejection and aggression as predictors of stable patterns of adolescent disorder. *Development and Psychopathology, 7*, 697–713.
- Cowen, E. L., Lorion, R. P., & Caldwell, R. A. (1975). Non-professionals' judgments about clinical interaction problems. *Journal of Consulting and Clinical Psychology, 43*, 619–625.
- Crick, N. R., & Dodge, K. A. (1996). Social information processing mechanisms in reactive and proactive aggression. *Child Development, 67*, 993–1002.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social psychological adjustment. *Child Development, 66*, 710–722.
- Crocker, L., & Algina, J. (1986). *Introduction to classical and modern test theory*. New York: Holt, Rinehart, & Winston.
- de Paul, J., & Arruabarrena, M. I. (1995). Behavior problems in school-aged physically abused and neglected children in Spain. *Child Abuse and Neglect, 19*, 409–418.
- Dishion, T. J., & Patterson, G. R. (1992). Age effects in parent training outcome. *Behavior Therapy, 23*, 719–729.
- Dodge, K. A. (1983). Behavioral antecedents of peer social status. *Child Development, 54*, 1386–1399.
- Dodge, K. A., Bates, J. E., & Pettit, G. S. (1990). Mechanisms in the cycle of violence. *Science, 250*, 1678–1683.
- Dodge, K. A., Coie, J. D., Pettit, G. S., & Price, J. M. (1990). Peer status and aggression in boys' groups: Developmental and contextual analyses. *Child Development, 61*, 1289–1309.

- Dodge, K. A., Pettit, G. S., & Bates, J. E. (1997). How the experience of early physical abuse leads children to become chronically aggressive. In D. Cicchetti & S. L. Toth (Eds.), *Developmental perspectives on trauma: Theory, research, and intervention. Rochester symposium on developmental psychology* (Vol. 8, pp. 263–288). Rochester, NY: University of Rochester Press.
- Duncan, G. J., Brooks-Gunn, J., & Klebanov, P. K. (1994). Economic deprivation and early childhood development. *Child Development, 65*, 296–318.
- Eckenrode, J., Laird, M., & Doris, J. (1993). School performance and disciplinary problems among abused and neglected children. *Developmental Psychology, 29*, 53–62.
- Fantuzzo, J. W., Sutton-Smith, B., Atkins, M., Meyers, R., Stevenson, H., Coolahan, K., Weis, A., & Manz, P. (1996). Community-based resilient peer treatment of withdrawn maltreated preschool children. *Journal of Consulting and Clinical Psychology, 64*, 1377–1386.
- Fox, J. (1984). *Linear statistical models and related methods*. New York: Wiley.
- Gardner, W., Mulvey, E. P., & Shaw, E. C. (1995). Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. *Psychological Bulletin, 118*, 392–404.
- Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Hawaii Department of Health. (1992). *Healthy Start: Hawaii's system of family support services*. Honolulu, HI: Author.
- Herrenkohl, R. C., Egolf, B. P., & Herrenkohl, E. C. (1997). Preschool antecedents of adolescent assaultive behavior: A longitudinal study. *American Journal of Orthopsychiatry, 67*, 422–432.
- Hieronymus, A. N., & Hoover, H. D. (1985). *Iowa Tests of Basic Skills*. Chicago: Riverside.
- Hurley, J., & Cattell, R. B. (1962). The procrustes program: Producing direct rotation to test a hypothesized factor structure. *Behavioral Science, 7*, 258–262.
- Hymel, S., Rubin, K. H., Rowden, L., & LeMare, L. (1990). Children's peer relationships: Longitudinal prediction of internalizing and externalizing problems from middle to late childhood. *Child Development, 61*, 2004–2021.
- Johnson, J. G., Cohen, P., Brown, J., Smailes, E. M., & Bernstein, D. P. (1999). Childhood maltreatment increases risk for personality disorders during early adulthood. *Archives of General Psychiatry, 56*, 600–606.
- Kaufman, J., & Cicchetti, D. (1989). Effects of maltreatment on school-age children's socioemotional development: Assessments in a day-camp setting. *Developmental Psychology, 25*, 516–524.
- Kinney, J., Haapala, D., Booth, C., & Leavitt, S. (1990). The homebuilders model. In J. K. Whittaker, J. Kinney, E. M. Tracy, & C. Booth (Eds.), *Reaching high-risk families: Intensive family preservation in human services* (pp. 31–64). New York: Aldine de Gruyter.
- Kochanska, G. (1997). Multiple pathways to conscience for children with different temperaments: From toddlerhood to age 5. *Developmental Psychology, 33*, 228–240.
- Kupersmidt, J. B., & Coie, J. D. (1990). Preadolescent peer status, aggression, and school adjustment as predictors of externalizing problems in adolescence. *Child Development, 61*, 1350–1362.
- Kupersmidt, J. B., Coie, J. D., & Dodge, K. (1990). The role of poor peer relationships in the development of disorder. In S. R. Asher & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 274–305). Cambridge, U.K.: Cambridge University Press.
- La Greca, A. M. (1981). Peer acceptance: The correspondence between children's sociometric scores and teachers' ratings of peer interactions. *Journal of Abnormal Child Psychology, 9*, 167–178.
- Lefkowitz, M. M., Huesmann, L. R., & Eron, L. D. (1978). Parental punishment: A longitudinal analysis of effects. *Archives of General Psychiatry, 35*, 186–191.
- Little, S. A., & Garber, J. (1995). Aggression, depression, and stressful life events predicting peer rejection in children. *Development and Psychopathology, 7*, 845–856.
- Loeber, R., & Dishion, T. (1983). Early predictors of male delinquency: A review. *Psychological Bulletin, 94*, 68–99.
- Loeber, R., & Stouthamer-Loeber, M. (1986). Family factors as correlates and predictors of juvenile conduct problems and delinquency. In M. Tonry & N. Morris (Eds.), *Crime and justice* (pp. 29–149). Chicago: University of Chicago Press.
- Mardia, K. V. (1970). Measures of multivariate skewness and kurtosis with application. *Biometrika, 75*, 519–530.
- McArdle, J. J., & Epstein, D. (1987). Latent growth curves within developmental structural equation models. *Child Development, 58*, 110–133.
- McLeod, J. D., & Shanahan, M. J. (1996). Trajectories of poverty and children's mental health. *Journal of Health and Social Behavior, 37*, 207–220.
- McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American Psychologist, 53*, 185–204.
- Mueller, E., & Silverman, N. (1989). Peer relations in maltreated children. In D. Cicchetti & V. Carlson (Eds.), *Child maltreatment: Theory and research on the causes and consequences of child abuse and neglect* (pp. 529–578). Cambridge, U.K.: Cambridge University Press.
- Naslund, R. A., Thorpe, L. P., & Lefever, D. W. (1978). *SRA Achievement Series*. Chicago: Science Research Associates.
- Olds, D. L., Eckenrode, J., Henderson, C. R., Kitzman, H., Powers, J., Cole, R., Sidora, K., Morris, P., Pettitt, L. M., & Luckey, D. (1997). Long-term effects of home visitation on maternal life course and child abuse and neglect. *Journal of the American Medical Association, 278*, 637–643.
- Olweus, D. (1980). The consistency issue in personality psychology revisited—with special reference to aggression. *British Journal of Social and Clinical Psychology, 19*, 377–390.
- Parke, R. D., & Ladd, G. W. (Eds.). (1992). *Family-peer relationships: Modes of linkage*. Hillsdale, NJ: Erlbaum.
- Parker, J. G., & Asher, S. R. (1987). Peer relations and later personal adjustment: Are low-accepted children at risk? *Psychological Bulletin, 102*, 357–389.
- Patterson, C. J., Kupersmidt, J. B., & Griesler, P. C. (1990). Children's perceptions of self and of relationships with others as a function of sociometric status. *Child Development, 61*, 1335–1349.
- Patterson, C. J., Vaden, N. A., & Kupersmidt, J. B. (1991). Family background, recent life events, and peer rejection

- during childhood. *Journal of Social and Personal Relationships*, 8, 347–361.
- Patterson, G. R. (1995). Coercion as a basis for early age of onset for arrest. In J. McCord (Ed.), *Coercion and punishment in long-term perspectives* (pp. 81–105). Cambridge, U.K.: Cambridge University Press.
- Pettit, G. S., Clawson, M. A., Dodge, K. A., & Bates, J. E. (1996). Stability and change in peer rejected status: The role of child behavior, parenting, and family ecology. *Merrill-Palmer Quarterly*, 42, 267–294.
- Pope, A. W., & Bierman, K. L. (1999). Predicting adolescent peer problems and antisocial activities: The relative roles of aggression and dysregulation. *Developmental Psychology*, 35, 335–346.
- Pope, A. W., Bierman, K. L., & Mumma, G. H. (1989). Relations between hyperactive and aggressive behavior and peer relations at three elementary grade levels. *Journal of Abnormal Child Psychology*, 17, 253–267.
- Pope, A. W., Bierman, K. L., & Mumma, G. H. (1991). Aggression, hyperactivity, and inattention-immaturity: Behavior dimensions associated with peer rejection in elementary school boys. *Developmental Psychology*, 27, 663–671.
- Price, J. M., & Dodge, K. A. (1989). Reactive and proactive aggression in childhood: Relations to peer status and social context dimensions. *Journal of Abnormal Child Psychology*, 17, 455–471.
- Price, R. H. (1992). Psychosocial impact of job loss on individuals and families. *Current Directions in Psychological Science*, 1, 9–11.
- Prino, C. T., & Peyrot, M. (1994). The effect of child physical abuse and neglect on aggressive, withdrawn, and prosocial behavior. *Child Abuse and Neglect*, 18, 871–884.
- Ray, G. E., Cohen, R., Secrist, M. E., & Duncan, M. K. (1997). Relating aggressive and victimization behaviors to children's sociometric status and friendships. *Journal of Social and Personal Relationships*, 14, 95–108.
- Rogosch, F. A., Cicchetti, D., & Aber, J. L. (1995). The role of child maltreatment in early deviations in cognitive and affective processing abilities and later peer relationship problems. *Development and Psychopathology*, 7, 591–609.
- Rohner, R. P. (1986). *The warmth dimension: Foundations of parental acceptance-rejection theory*. Beverly Hills, CA: Sage.
- Rosenthal, R., & Rosnow, R. L. (1985). *Contrast analysis: Focused comparisons in the analysis of variance*. New York: Cambridge University Press.
- Rubin, K. H. (1995). Parents of aggressive and withdrawn children. In M. H. Bornstein (Ed.), *Handbook of parenting: Vol. 1. Children and parenting* (pp. 255–284). Mahwah, NJ: Erlbaum.
- Rubin, K. H., LeMare, L. J., & Lollis, S. (1990). Social withdrawal in childhood: Developmental pathways to peer rejection. In S. R. Asher & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 217–249).
- Salzinger, S., Feldman, R. S., Hammer, M., & Rosario, M. (1993). The effects of physical abuse on children's social relationships. *Child Development*, 64, 169–187.
- Scarr, S. (1997). Behavior-genetic and socialization theories of intelligence: Truce and reconciliation. In R. J. Sternberg & E. L. Grigorenko (Eds.), *Intelligence, heredity, and environment* (pp. 3–41). Cambridge, U.K.: Cambridge University Press.
- Scarr, S. (1998). How do families affect intelligence? Social environmental and behavior genetic predictions. In J. J. McArdle & R. W. Woodcock (Eds.), *Human cognitive abilities in theory and practice* (pp. 113–136). Mahwah, NJ: Erlbaum.
- Schwartz, D., Dodge, K. A., Coie, J. D., Hubbard, J. A., Cillessen, A. H. N., Lemerise, E. A., & Bateman, H. (1998). Social cognitive and behavioral correlates of aggression and victimization in boys' play groups. *Journal of Abnormal Child Psychology*, 26, 431–440.
- Schwartz, D., Dodge, K. A., Pettit, G. S., & Bates, J. E. (1997). The early socialization of aggressive victims of bullying. *Child Development*, 68, 665–675.
- Shields, A., & Cicchetti, D. (1998). Reactive aggression among maltreated children: The contributions of attention and emotion dysregulation. *Journal of Clinical Child Psychology*, 27, 381–395.
- Stevenson, J. (1999). The treatment of the long-term sequelae of child abuse. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, 40, 89–111.
- Strassberg, Z., Dodge, K. A., Pettit, G. S., & Bates, J. E. (1994). Spanking in the home and children's subsequent aggression toward kindergarten peers. *Development and Psychopathology*, 6, 445–461.
- Taussig, H. N., & Litrownik, A. J. (1997). Self- and other-directed destructive behaviors: Assessment and relationship to type of abuse. *Child Maltreatment*, 2, 172–182.
- Taylor, C. G., Norman, D. K., Murphy, J. M., Jellinek, M., Quinn, D., Poitras, F. G., & Goshko, M. (1991). Diagnosed intellectual and emotional impairment among parents who seriously mistreat their children: Prevalence, type, and outcome in a court sample. *Child Abuse and Neglect*, 15, 389–401.
- Thompson, R. A. (1995). *Preventing child maltreatment through social support: A critical analysis*. Thousand Oaks, CA: Sage.
- Tucker, L. R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika*, 38, 1–10.
- Volling, B. L., MacKinnon-Lewis, C., Rabiner, D., & Baradaran, L. P. (1993). Children's social competence and sociometric status: Further exploration of aggression, social withdrawal, and peer rejection. *Development and Psychopathology*, 5, 459–483.
- Webster-Stratton, C. (1998). Preventing conduct problems in Head Start children: Strengthening parenting competencies. *Journal of Consulting and Clinical Psychology*, 66, 715–730.
- Weiss, B., Dodge, K. A., Bates, J. E., & Pettit, G. S. (1992). Some consequences of early harsh discipline: Child aggression and a maladaptive social information processing style. *Child Development*, 63, 1321–1335.
- Widom, C. S. (1989). Does violence beget violence? A critical examination of the literature. *Psychological Bulletin*, 106, 3–28.
- Zahn-Waxler, C., & Smith, K. D. (1992). The development of prosocial behavior. In V. B. Van Hasselt & M. Hersen (Eds.), *Handbook of social development: A lifespan perspective* (pp. 229–256). New York: Plenum.