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Pathways from child maltreatment to internalizing problems: Perceptions of control as mediators and moderators

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Abstract

Using a prospective longitudinal design, we examined internalizing problems and perceptions of control in a community sample of 785 children, 59 of whom had been maltreated. Children's internalizing problems and perceptions of control were measured via self-report at annual assessments in third grade through seventh grade (modal ages 9–13 years). Children's experiences of multiple types of maltreatment were rated based on social service records, using a standard coding system. Results of longitudinal analyses examining the roles of specific types of maltreatment (neglect, harsh parenting, and sexual abuse) revealed that neglect and sexual abuse were each associated with more internalizing problems, especially among children who experienced both these maltreatment types. Neglected children reported higher levels of perceived external control than other children did. Sexual abuse was associated with higher levels of perceived external control, but only among children who had also been neglected. Results of mediation analyses showed that higher levels of perceived external control accounted substantially for associations between specific maltreatment types and children's internalizing problems. Results of moderator analyses revealed that, among maltreated children, greater perceived internal control predicted fewer internalizing problems, suggesting that perceived internal control functioned as a protective factor. Children maltreated early in life were less likely to have this protective characteristic. Results are discussed in terms of their implications for understanding the developmental consequences of specific and co-occurring types of maltreatment.

Understanding the roots of internalizing problems in childhood and adolescence is an important goal for research in the field of developmental psychopathology. Children and adolescents with serious internalizing problems often do not receive treatment (Keller, Lavori, Beardslee, Wunder, & Ryan, 1991) and are at increased risk for continuing depression and anxiety disorders in adulthood (Kovacs & Devlin, 1998). Affective and anxiety disorders place tremendous personal, social, and economic burdens on the individuals who experience them, as well as on their families and the communities in which they live (Cicchetti & Toth, 1998). Identifying early contributors to the development of internalizing problems could contribute to increased understanding of how early experiences influ-

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ence human development, and could aid in the design of prevention and intervention efforts to reduce these risks.

A sizable body of research has pointed to early adverse environments and experiences as risk factors for the development of internalizing problems. In particular, family conflict, parental rejection and hostility, lack of parental warmth, and inadequate parental care and support have been found to be associated with internalizing problems in children and adolescents (Zahn–Waxler, Klimes–Dougan, & Slattery, 2000). Because these risk factors may co-occur, researchers face a challenge in identifying specific mechanisms linking environmental risk factors to internalizing problems. Continuing efforts to delineate these risks and distinguish their effects are necessary to increase understanding of the genesis of internalizing problems.

In this context, the study of children who have been maltreated by their parents or caregivers can contribute to the goal of understanding environmental contributors to the development of internalizing problems. Maltreatment provides a "natural experiment" (Rutter, 2000) in which children are reared in conditions that deviate dramatically from minimum standards for child care as defined by social consensus, law, medical practice, and developmental science (Child Abuse Prevention and Treatment Act Amendments of 1996; Helfer & Kempe, 1997; Scarr, 1992). Following a developmental psychopathology perspective, research on maltreated children can help to identify contributions of parenting to children's adjustment in normative and in atypical populations.

Definitions and Dimensions of Child Maltreatment

The utility of research on child abuse and neglect as a means of increasing knowledge about environmental contributors to psychopathology derives, in part, from the heterogeneity of children's experiences of maltreatment. The environments and experiences to which maltreated children are exposed vary widely on multiple dimensions, including the presence or absence of physical abuse, neglect, sexual abuse, emotional maltreatment, and exposure to family and community violence (Lynch & Cicchetti, 1998). Therefore, research on the consequences of child maltreatment can offer a means of estimating the unique and interactive effects on children's development of deviations from distinct aspects of normative child rearing. Realization of this potential of child maltreatment research depends, however, on the identification and use of reliable and valid definitions of types of maltreatment.

According to the National Research Council Panel on Research on Child Abuse and Neglect (1993, pp. 43–44), "four general categories of child maltreatment are generally recognized: (1) physical abuse, (2) sexual abuse, (3) neglect, and (4) emotional maltreatment." Each of these categories encompasses a variety of behaviors; for example, physical abuse can include assault and harsh physical punishment; sexual abuse can include incest, sexual assault, and exposure to sexual activity or pornography. Child neglect comprises a broad range of inadequate parental care, including failure to provide or ensure food, clothing, shelter, supervision, medical care, and education. Emotional or psychological maltreatment can involve a wide variety of parent or caregiver acts (and failures to act), including verbal abuse, rejecting, terrorizing, abandonment, and psychological unavailability (Garbarino, Guttman, & Seeley, 1986; Hart, Brassard, & Carlson, 1996; McGee & Wolfe, 1991). Although psychological maltreatment has received increased empirical and professional scrutiny in recent years, and has been suggested to be especially detrimental to children's development (Claussen & Crittenden, 1991; McGee, Wolfe, & Wilson, 1997), no one specific definition has achieved wide acceptance or use by most researchers. This may stem, in part, from the complexity of emotional maltreatment and the varied forms it takes, and from the difficulty of defining as maltreatment an act that does not result in tangible physical harm as physical abuse and physical neglect do.

Although child maltreatment researchers have not reached consensus on specific definitions for different dimensions of maltreat-

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ment, progress has been made in the development of coding schemes to rate the occurrence and severity of multiple maltreatment types. McGee (1990) developed the Ratings of Past Life Events Scale to ask adolescents about their perceptions of having experienced physical maltreatment, sexual maltreatment, emotional maltreatment, exposure to family violence, and neglect (both physical and psychological). Adolescents rate their experiences of each maltreatment type on a 4-point (from *never* to *severely*) scale. Scale points are used subjectively by each respondent rather than being anchored by specific examples of mild versus moderate versus severe maltreatment. A limitation of this severity rating method is that children's perceptions of the severity of their maltreatment may or may not correspond with reports of other observers, such as caseworkers. For example, Gable (1998) found that neglected adolescents rated their families as higher functioning than was indicated by caseworker reports and other measures of their home environments. On the other hand, a strength of this subjective approach is that it assesses adolescents' perceptions of their own experiences and taps adolescents' unique knowledge of occurrences that may not be evident to other observers.

Another concern about retrospective self-reports of maltreatment is that reporting may not be stable over time. Fergusson, Horwood, and Woodward (2000) reported on the stability of maltreatment self-reports in a birth cohort of young adults who were asked at age 18 years and then again at age 21 years about childhood experiences of physical and sexual maltreatment. Of those who reported physical or sexual maltreatment at 21 years, 50% had not reported those events at 18 years; among those who reported maltreatment at 18 years, 50% did not report the maltreatment at 21 years. Results of latent class analyses indicated underreporting of maltreatment by those who experienced it rather than false reporting of maltreatment by those who had not. In contrast to research relying on adult retrospective self-reports, McGee et al. (1997) interviewed youth ages 11–17 years who were part of the current caseload of child welfare agencies. A strength of this approach is that it could reveal aspects of maltreatment experienced by youth but not brought to the attention of others, such as agency caseworkers. A limitation of self-reports, however, is that adolescents and adults would not be able to recall early maltreatment experiences such as those occurring in infancy or toddlerhood.

Another approach to measuring multiple types of maltreatment has focused on gathering information on children's maltreatment experiences from social service agency records. This approach also has limitations, in that records are available only for children who have been the subjects of officially documented reports of maltreatment. On the other hand, it avoids some of the limitations of retrospective self-reports in that ratings of experiences of maltreatment can be made based on investigations conducted at the time of maltreatment or shortly thereafter, without depending on an individual's recollection of these experiences. Barnett, Manly, and Cicchetti (1993) have developed a maltreatment classification system that provides criteria for coding the presence and severity of multiple types of maltreatment, including physical abuse, lack of supervision, failure to provide, emotional maltreatment, sexual abuse, and moral or legal maltreatment, from social service records. The severity of each maltreatment type is rated on a 5-point scale, with each scale point anchored by examples, thus reducing the subjectivity of ratings of mild versus moderate versus severe maltreatment. No one system can measure maltreatment types and severity without error, and future research can benefit from the use of multiple measures of maltreatment. However, a standard rating system for the occurrence and severity multiple types of maltreatment system such as that provided by Barnett and colleagues (1993) can help facilitate investigators' efforts to distinguish among multiple types of maltreatment and examine their developmental consequences. Use of a common classification system to describe types and severity of maltreatment can also provide a lingua franca by which investigators can convey and compare characteristics of their samples as well as results of analyses.

Continuing discussion of alternative mod-

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els for defining maltreatment, based on psychological theory, social consensus, and the needs and perspectives of different professional disciplines, is likely and necessary. In addition, researchers should subject these definitions to empirical scrutiny. Psychometric methods to assess construct validity should be applied to the challenging task of defining the dimensions of child maltreatment. In this article, we describe a step toward this goal by applying factor analysis as a method of construct validation to the goal of defining dimensions of maltreatment. We hypothesized that the variance in children's experiences of maltreatment would be relatively well accounted for by three underlying dimensions: neglect, harsh parenting, and sexual abuse. Each of these dimensions was expected to have both physical and emotional–psychological manifestations in terms of parents' (or caregivers') behavior toward their children. Rather than viewing emotional maltreatment as a dimension or factor separate from physical neglect and physical abuse, we conceptualized neglect as incorporating both physical and emotional–psychological neglect, harsh parenting as including both physical and emotional–psychological abuse, and sexual abuse as consisting of both physical and emotional–psychological aspects of child sexual exploitation. We applied confirmatory factor analysis, implemented through the use of structural equation modeling, to compare this model to alternative models of the dimensional structure of child maltreatment.

Child Maltreatment as a Predictor of Internalizing Problems

A growing body of research indicates that responsive parental care contributes to children's developing abilities to regulate their emotional states (Eisenberg, 1998; Raver, 1996). In contrast, children who experience less positive and responsive parenting may be more likely to experience difficulties in emotion regulation (Eisenberg, Cumberland, & Spinrad, 1998). According to attachment theory, a secure parent–infant relationship based on parental sensitivity and responsiveness contributes to the child's feelings of safety (Ainsworth, Blehar, Waters, & Wall, 1978; Bowlby, 1973). In contrast, anxious–resistant attachment in infancy, theorized as resulting from unresponsive parental care, has been shown to be associated with increased risk of anxiety disorders in adolescence (Warren, Huston, Egeland, & Sroufe, 1997). Parental hostility and lack of parental warmth have been shown to predict an increase over time in adolescent depressive symptoms (Ge, Best, Conger, & Simons, 1996). Thus, developmental theory and research provide a basis for suspecting that children who are maltreated by their parents or caregivers are at high risk for the development of emotional disorders, including internalizing problems.

For purposes of this research, we defined internalizing problems broadly to include both depression and anxiety, as well as social withdrawal and somatic symptoms. Issues in the distinction between depression and anxiety disorders are important questions for psychological research and theory; however, we focused on internalizing problems broadly defined to encompass both of these aspects of internalizing problems. We employed this broader conceptualization of internalizing problems because anxiety and depressive symptoms show substantial comorbidity (Zahn–Waxler et al., 2000), because previous research (Achenbach, 1991) has provided psychometric evidence to support this broadband definition of internalizing problems in childhood and adolescence, and because a sufficiently large research base to draw firm conclusions about links from dimensions of maltreatment to anxiety versus affective symptoms has not yet emerged.

Research on abused and neglected children has provided evidence of an association between maltreatment and internalizing problems, but identifying links to internalizing problems from specific types of maltreatment remains a challenge. Earlier research on consequences of maltreatment often compared outcomes of maltreated children to those of nonmaltreated children, or assessed the occurrence of only one type of maltreatment (e.g., sexual abuse). More recently, however, several studies have been conducted in which investigators measured multiple types of maltreatment and estimated their unique effects

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on children's internalizing symptoms (Manly, Cicchetti, & Barnett, 1994). Results have not been entirely consistent regarding whether specific types of maltreatment (e.g., physical, sexual, or psychological abuse) play a unique role in the development of internalizing problems. Toth, Manly, and Cicchetti (1992) found that abused children showed more depressive symptoms than either nonmaltreated children or children who had been neglected. Lynch and Cicchetti (1998) found that, among maltreated children, those who experienced more severe neglect showed more symptoms of internalizing problems, depressive symptoms, and traumatic stress, whereas the severity of other maltreatment types did not predict these outcomes significantly. Higher levels of exposure to victimization by violence in the community also predicted more traumatic stress and depressive symptoms. In a sample of adolescents who had been maltreated, McGee et al. (1997) found that adolescents' reports of psychological maltreatment, physical abuse, and neglect were correlated with their self-reports of internalizing problems, but only psychological maltreatment (exemplified by being criticized, yelled at, and treated unfairly) predicted internalizing scores significantly when effects of other types of maltreatment were controlled statistically.

Sexual abuse may also play a role in increasing individuals' risk for internalizing problems. Nolen–Hoeksema and Girgus (1994) have proposed that gender differences in depression emerge in early adolescence in part because girls experience a greater increase in biological and social challenges, including sexual abuse, during this time period than boys do. Cutler and Nolen–Hoeksema (1991) reviewed studies of sexual abuse that included both victims and control groups, and estimated that up to 35% of the gender difference in rates of depression among adults might be accounted for be women's higher rates of sexual abuse before the age of 18 years. Some studies of the consequences of sexual abuse have been faulted for failing to measure potential confounds and account for their effects (Briere, 1992). More recent studies have tested whether sexual abuse predicts adjustment problems even after other potentially confounding factors, such as other maltreatment types, are accounted for statistically. Results have been equivocal. For example, Higgins and McCabe (1994) found that sexual abuse (assessed by retrospective self-report) was associated with higher depression scores in a college student sample but that this effect was reduced to nonsignificant after controlling for family background variables, including level of family violence and parental separation or divorce. In contrast, Zuravin and Fontanella (1999) conducted research on a sample of 513 low-income women in Baltimore and found that a self-reported history of childhood sexual abuse was associated with significantly higher depression scores, even after the effects of other family background variables, including physical abuse, physical and emotional neglect, and verbal abuse, were controlled statistically. These studies relied on retrospective self-reports of childhood sexual abuse.

Nolen–Hoeksema and Girgus (1994) noted that not all girls who are abused become depressed and that girls' experiences of sexual abuse do not account completely for the gender difference in depression. Sexual abuse may have a stronger effect on those with fewer coping resources (e.g., more passive styles of coping with distress; Nolen–Hoeksema & Girgus, 1994). Quality of parenting could provide a buffer against the negative effects of sexual abuse. Consistent with this possibility, Lynskey and Fergusson (1997) found that, in a birth cohort of 1025 New Zealand children, sexual abuse was associated with increased risk of anxiety and depression at age 18 years, but parental support and care in childhood was associated with reduced risk of adjustment problems related to sexual abuse. Similarly, Deblinger, Steer, and Lippmann (1999), in a study of 100 sexually abused children, found that children's perceptions of their (nonoffending) mother's parenting style as rejecting rather than accepting was associated with higher levels of depression. Thus, resources such as a positive relationship with a parent or caregiver could help to reduce the negative consequences of sexual abuse, whereas inadequate care could potentially make children more vulnerable to the effects of sexual

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abuse. To evaluate these possibilities, research on sexually abused children must include information from sources other than retrospective self-report and must include assessments of other aspects of maltreatment and quality of parenting.

Pathways From Child Maltreatment to Internalizing Problems

What processes link maltreatment and inadequate parental care to internalizing problems? Identifying the developmental pathways that account for this linkage could help to illuminate why some individuals at risk experience high levels of internalizing symptoms whereas others are able to achieve a more adaptive level of functioning (Cicchetti & Rogosch, 1996a). A compelling body of theory and research points to children's experiences and perceptions of control as one pathway to the development of internalizing problems. Perceived control refers to beliefs about the sources of one's successes and failures (e.g., in attaining academic and social goals). Children with high levels of perceived internal control tend to believe that their own attributes or actions bring about their successes and failures, whereas those with high levels of perceived external control believe that other factors (e.g., powerful others) account for these outcomes (Connell, 1985; Rotter, 1954; Strickland, 1977). Evidence from a range of sources, including learning theory, attachment theory, cognitive-behavioral theory, and developmental research, suggests that control beliefs may play a role in linking maltreatment to internalizing problems.

Research evidence has shown that experiences involving lack of control over bad events can result in a reduction in motivation and the experience of negative emotions (Abramson, Seligman, & Teasdale, 1978; Peterson & Seligman, 1984). Chorpita and Barlow (1998) proposed that experiences of lack of control in the early environment increase the probability of perceiving subsequent events as similarly uncontrollable and thereby contribute to the development of anxiety problems. Chorpita, Brown, and Barlow (1998), in a study of 93 children and their families, found evidence that children's perceived control mediated the relation of family environment to children's negative affect. Attachment theory has emphasized the role of unresponsive parental care and parental loss in the development of anxiety and depressive symptoms, respectively (Bowlby, 1989). Harris, Brown, and Bifulco (1990a, 1999b; Bifulco, Harris, & Brown, 1992) found in studies of women in inner-city London that early maternal loss was associated with increased risk of depression and anxiety disorders in adulthood; their results suggested that the effect of early loss on later internalizing problems was mediated by inadequate care and helplessness in childhood.

These findings point to the possibility that multiple dimensions of maltreatment could contribute to the development of internalizing problems. According to the principle of equifinality, derived from biology and general systems theory (von Bertalanffy, 1968; Waddington, 1957) and applied by Cicchetti and Rogosch (1996b) to developmental psychopathology, in an open system a variety of developmental pathways may lead to the same outcome. For example, abuse and neglect, though conceptually distinct as dimensions of maltreatment, might each increase a child's risk of developing internalizing problems: physical and emotional abuse are characterized by parental behavior that is hostile, punitive, and controlling toward the child; on the other hand, neglected children may actually experience the lowest levels of contingent parental behavior of any group of maltreated children. In addition, neglect is more likely than other maltreatment types to begin early in life. In 1998, the rate of neglect (the most common form of maltreatment) was highest among children 0–3 years old; sexual abuse was most prevalent among 12- to 15-year-olds; and rates of physical abuse and psychological abuse were similar across the age ranges 4–7, 8–11, and 12–15 years (U.S. Department of Health and Human Services, Administration on Children, Youth and Families, 2000). Thus, neglect could play a role in the early development of control perceptions. Sexual abuse could also contribute to the development of internalizing problems, espe-

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cially in early adolescence when the risk of sexual abuse increases, particularly for girls (Russell, 1984). Research on the effects of multiple dimensions of maltreatment is needed to test whether different types of maltreatment (such as neglect, physical abuse, and sexual abuse) each contribute to children's risk of internalizing problems.

Co-occurrence of maltreatment types might also influence the development of internalizing problems in childhood and adolescence. The principle of multifinality implies that "any one component may function differently depending on the organization of the system in which it operates" (Cicchetti & Rogosch, 1996b, pp. 597–598; Wilden, 1980). Thus, the effect of a particular type of maltreatment on internalizing problems would be expected to vary across children, depending on other aspects of the child's functioning. One possibility in this regard is that children who had experienced early maltreatment, such as neglect, would be more likely to perceive a new stressor, such as sexual abuse, as uncontrollable and to show internalizing symptoms in response to that stressor. Additional research is needed to test whether particular maltreatment types, and their co-occurrence, are associated with children's perceptions of control and, in turn, with internalizing problems in childhood and adolescence.

Perceived Control as a Protective Factor Among Maltreated Children

Besides implicating perceived control as a potential mediator between maltreatment and internalizing problems, developmental research suggests that perceived control may also moderate the association between maltreatment and internalizing problems. Research on children growing up in high-risk environments has indicated that those with a sense of internal control are more likely to cope successfully and function well (Luthar, 1991). Research on individuals who have been maltreated suggests that perceived internal control may function as a protective factor, mitigating against the development of internalizing problems. Banyard (1999) found that, among low-income women who had been maltreated in childhood, those who had a more internal locus of control reported fewer depressive symptoms than those with a more external locus of control. Moran and Eckenrode (1992), studying a sample of adolescent girls who had been maltreated, found that those with a more internal locus of control were less depressed on average than those with a more external locus of control. Girls maltreated beginning in childhood were less likely to have an internal locus of control, relative to girls whose maltreatment began later, in adolescence. In each of these studies, locus of control interacted with stress to predict children's outcomes, thus offering support for the role of perceived control as a protective factor. We therefore hypothesized that perceived internal control could play a moderating as well as mediating role with regard to the association between maltreatment and internalizing problems.

Research Objectives

In this context, we tested the following hypotheses: (a) Do experiences of neglect, harsh parenting, and sexual abuse, respectively, predict high levels of internalizing problems in middle childhood and early adolescence? (b) Does neglect interact with other types of maltreatment to increase the probability of internalizing problems? (c) Do experiences of maltreatment, especially child neglect, predict low levels of perceived internal control and high levels of perceived external control? (d) Do low levels of perceived internal control and high levels of perceived external control among maltreated children mediate the hypothesized associations between specific aspects of maltreatment and children's internalizing problems? (e) Does perceived control moderate the association between maltreatment and internalizing problems?

Method

Sources of data

Data were drawn from three sources:

1. Data on children's internalizing problems and perceptions of control were drawn

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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, Kupersmidt, & Vaden, 1990).

2. Information identifying 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 below and in earlier reports of this research (Bolger & Patterson, 2001; Bolger, Patterson, & Kupersmidt, 1998).
3. Data on children's experiences of maltreatment were collected from case files in local Departments of Social Services in cities and counties in Virginia according to procedures described below and in previous reports (Bolger & Patterson, 2001; Bolger et al., 1998).

Participating children and research design

The CLS employed a cohort-sequential design to follow a large, heterogeneous group of students over the years 1986–1989. The study was conducted during an intervention program that was part of the curriculum of the Charlottesville Public Schools. When the CLS began in 1986, the three cohorts of participating children were in the second, third, and fourth grades (modal ages 8, 9, and 10 years, respectively). 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. Few than 2% of parents did so; the resulting sample included more than 95% of all registered students in target grades in the Charlottesville Public Schools and was therefore not only representative but also nearly exhaustive of the population from which it was drawn. Using similar procedures, data were collected annually during each of year of the study. Thus, children were followed from middle childhood to early adolescence and across the transition to middle school, which occurred at sixth grade in this sample.

Data on children's self-reported internalizing problems were collected during the 1988 and 1989 time points of the study. During these years, 785 children in fourth, fifth, sixth, and seventh grades participated in these assessments. These 785 children (411 girls and 374 boys; 41% African American, 57% European American, and 2% members of other ethnic groups) comprise the focal sample for this report. Data on children's perceptions of control were collected during the 1987 and 1988 time points of the CLS. Table 1 shows the sample sizes for each of the three cohorts of participating children, and their modal ages and grade levels at each occasion of measurement of internalizing problems and perceived control.

Identification of maltreated children

Maltreated children were identified by matching the names of CLS participants to those of child victims in CANIS, Virginia's statewide central registry of substantiated maltreatment cases, following American Psychological Association (1992) ethical guidelines and procedures detailed in previous reports of this research (Bolger & Patterson, 2000; Bolger et al., 1998) and below. In Virginia, a reported case of maltreatment must be investigated by a child protective services caseworker, who must find clear and convincing evidence of child abuse or neglect to classify the case as substantiated. 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 (1992) regulations allow researchers to request access to CANIS data for research purposes if (a) such access is essential for conduct of the research; (b) confidentiality of the information is maintained; and (c) the research contributes to the welfare of children in Virginia. 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 communi-

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Table 1. *Variables measured and children's modal ages and grade levels at three occasions of measurement* (*cohort-sequential design*)

	Variables Measured		
	1987: Perceived Control	1988: Perceived Control, Internalizing Problems	1989: Internalizing Problems
Cohort 1 ($n = 205$)	Age 9 (third grade)	Age 10 (fourth grade)	Age 11 (fifth grade)
Cohort 2 ($n = 305$)	Age 10 (fourth grade)	Age 11 (fifth grade)	Age 12 (sixth grade)
Cohort 3 ($n = 275$)	Age 11 (fifth grade)	Age 12 (sixth grade)	Age 13 (seventh grade)

	Grades and Modal Ages at Which Assessments Were Made				
Variable	Third (Age 9)	Fourth (Age 10)	Fifth (Age 11)	Sixth (Age 12)	Seventh (Age 13)
Perceived control	X	X	X	X	
Internalizing problems		X	X	X	X

Note: All ages in years.

cation, 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 reports in the CANIS database. This search of CANIS records was conducted in 1994. For each child who was the subject of a substantiated maltreatment report, VADSS provided a copy of the CANIS record (i.e., one CANIS record for each report) for this research. We then checked each CANIS report against information in the CLS data set to ensure that each match was exact.

Of the 785 participating children who comprised the focal sample for this report, 59 (7.5%) were identified as maltreated (36 girls and 23 boys, 25 of whom were African American and 34 of whom were European American), whereas the remaining 726 children had no known history of abuse or neglect. (Note that this was a smaller group of maltreated children than reported on in our previous reports from this project, e.g., Bolger & Patterson, 2001; Bolger et al., 1998. This was due to our inclusion of only those children who participated in the 1988 and 1989 time points of the CLS, when self-reports of internalizing problems were collected.) Maltreated children were identified in each of Charlottesville's elementary and middle schools. Maltreated children did not differ significantly from nonmaltreated children on gender, χ^2 (1) = 1.92, nor on ethnicity, χ^2 (1) = .00. However, maltreated children were significantly more likely to have experienced low family income, χ^2 (1) = 51.96, $p < .001$ (as indexed by participation in the federal free and reduced price lunch program, an indicator that was available in school records for participating children; see Bolger et al., 1995). Fifty-four (92%) of the 59 maltreated children, compared to 311 (40%) of 726 nonmaltreated children, experienced low family income during 1 or more years of the CLS.

After maltreated children were identified from among CLS participants, we wished to access these children's case records through local Departments of Social Services. Most of these children had been identified as maltreated while residing in the City of Char-

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lottesville; 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). We contacted the Department of Social Services in each of these localities, informed them of the nature and procedures of the study, and invited them to participate. Under conditions of confidentiality, local Departments of Social Services agreed to provide access to case files of the 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 and procedures

Measures of child maltreatment. After identifying maltreated children among CLS participants, we employed procedures detailed in earlier reports of this research (Bolger & Patterson, 2000; Bolger et al., 1998) to access each child's case record through the local Department of Social Services in the city or county in which the child was identified as maltreated. Based on information in these files, we rated each child's experiences of abuse and neglect according to the Maltreatment Classification System developed by Barnett et al. (1993). This system offers specific criteria for rating the severity of multiple types of maltreatment, including (but not limited to) 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 this 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 0 for that type. Reliability (assessed according to procedures described in detail by Bolger et al., 1998) was good (>.7) for each of the severity scales. Of the 59 maltreated children, 34 experienced lack of supervision, 23 experienced failure to provide, 34 were emotionally maltreated, 28 were physically abused, and 18 were sexually abused. Girls were more likely than boys to be sexually abused, χ^2 (1) = 9.86, $p < .01$, but the likelihood of experiencing lack of supervision, failure to provide, emotional maltreatment, and physical abuse, respectively, did not vary significantly as a function of child gender.

Types of maltreatment: Construct validation of a three-dimension model. In previous research (Bolger & Patterson, 2000), we determined that three factors accounted well for the associations among physical abuse, emotional maltreatment, failure to provide, lack of supervision, and sexual abuse among maltreated children in the CLS sample. Specifically, we found that dimensions of harsh, abusive parenting, neglectful parenting, and sexual abuse, respectively, accounted for the pattern of associations among the five maltreatment severity scales. We expected that each of these aspects of serious impairment in parenting would be characterized by both physical and emotional–psychological manifestations. For example, harsh parenting would include both physical and verbal abuse, and neglect would include unresponsiveness to the child's physical as well as emotional and psychological needs. Among 59 maltreated children in this sample, correlations were significant between physical abuse and emotional maltreatment, r (57) = .30, $p < .05$, and between failure to provide and lack of supervision, r (57) = .31, $p < .05$, but not among any other pairs of maltreatment severity scales (all $p > .10$). Thus, the pattern of correlations provided supported for three dimensions of maltreatment, although they failed to support our hypothesis that emotional maltreatment would relate strongly to both physical abuse and neglect. In the Barnett et al. (1993) nosological system, emotional maltreatment that is explicitly or intrinsically related to another particular maltreatment type (e.g., sexual abuse, physical abuse) is coded on the scale for that particular maltreatment type rather than the emotional maltreatment scale. Therefore, we did not necessarily expect emotional maltreat-

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ment ratings to serve as an indicator of other maltreatment types (e.g., sexual abuse) in the maltreated sample.

To test the construct validity of the three-factor model, we also conducted confirmatory factor analyses on the sample of 785 maltreated and nonmaltreated children using structural equation modeling. We compared the fit of the three-dimension (neglect, harsh parenting, and sexual abuse) model to alternative models positing four dimensions of maltreatment (neglect, physical abuse, sexual abuse, and emotional maltreatment) and five dimensions of maltreatment (lack of supervision, failure to provide, physical abuse, sexual abuse, and emotional maltreatment). We did not expect dimensions of maltreatment to be orthogonal to one another, and therefore allowed them to intercorrelate in each of these models compared. To evaluate the fit of this model (and other structural equation models reported below), we computed several indices representing different approaches to assessing model fit, including chi square; Akaike's (1987) information criterion (AIC), on which parsimonious models that fit well receive lower scores; Bollen's (1989) incremental fit index, Δ_2, on which values close to 1 indicate better fit relative to a baseline model; and 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. To compare the fit of nested models, we computed a likelihood ratio test as the difference between model chi-square statistics, distributed as chi square with degrees of freedom equal to the difference in degrees of freedom of the two models being compared.

Results of confirmatory factor analyses showed that the three-dimension model, χ^2 (2) = 69.26 (Δ_2 = .94, AIC = 93.26, RMSEA = .17), fit the data significantly better than the four-dimension model, $\chi^2_{\text{difference}}$ (2) = 18.55, $p < .01$, and significantly better than the five-dimension model, $\chi^2_{\text{difference}}$ (4) = 752.72, $p < .01$. Overall, then, confirmatory factor analyses provided greater support for the model positing three maltreatment dimensions (neglect, harsh parenting, and sexual abuse) than for alternative models with more dimensions of maltreatment. Based on these results, we averaged (a) failure to provide with lack of supervision to create a neglect score and (b) physical abuse with emotional maltreatment to create a harsh parenting score. We employed the neglect composite, the harsh parenting composite, and the sexual abuse score as predictor variables in subsequent analyses, described in the Results section below.

Co-occurrence of maltreatment types. Although neglect, harsh parenting, and sexual abuse were identifiable as relatively distinct aspects of maltreatment, they were not mutually exclusive: although 28 children (14 boys and 14 girls) experienced only one type of maltreatment, 31 children experienced multiple types. Of those who experienced multiple types, 8 (7 girls and 1 boy) children experienced all three maltreatment types. Among the 23 children who experienced two types of maltreatment, 17 (10 girls and 7 boys) experienced neglect and harsh parenting, 5 children (4 girls and 1 boy) experienced harsh parenting and sexual abuse, and 1 girl was neglected and sexually abused. Thus, 25 children (17 girls and 8 boys) experienced neglect plus harsh parenting, 13 children (11 girls and 2 boys) experienced sexual abuse plus harsh parenting, and 9 children (8 girls and 1 boy) experienced neglect plus sexual abuse.

Verification of the onset of specific maltreatment types. Because we intended to examine sequelae of specific types of maltreatment, we sought to verify when children's experiences of each of the three types of maltreatment (i.e., neglect, harsh parenting, and sexual abuse) began, relative to when child outcomes (i.e., internalizing problems and perceptions of control) were measured. To examine maltreatment onset, we examined each child's substantiated maltreatment reports and each child's local social services case record. For 46 of the 59 maltreated children, substantiated maltreatment reports and case records indicated that each maltreatment type the child experienced began before the first occasion on which the child's internalizing problems were measured. For the remaining 13 children, the first substantiated report of one

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Table 2. *Descriptive statistics for internalizing problems and perceived control*

	Third Grade, Modal Age 9 (n = 139)		Fourth Grade, Modal Age 10 (n = 194)		Fifth Grade, Modal Age 11 (n = 380)		Sixth Grade, Modal Age 12 (n = 426)		Seventh Grade, Modal Age 13 (n = 133)	
Variable	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Internalizing problems			55.74	11.26	52.13	10.71	50.54	10.26	44.98	9.54
Perceived internal control	3.03	0.61	3.24	0.49	3.34	0.46	3.35	0.40		
Perceived external control	2.27	0.60	2.06	0.56	1.88	0.49	1.83	0.48		

Note: All ages in years.

or more of the maltreatment types the child experienced was not received until after the child began participating in the CLS, but we were not able to ascertain, based on case records, a precise date upon which maltreatment began. This lack of precision was a limitation of our procedure for collecting maltreatment data, which relied on a retrospective review of agency records made at the time of the maltreatment reports. We wished to ensure to the greatest extent possible that this limitation did not bias results of subsequent data analyses. We deemed it inappropriate to classify these 13 children as nonmaltreated for data analysis purposes given that their experiences of maltreatment were ultimately substantiated. Therefore, we next conducted analyses to evaluate whether to include or exclude these cases in subsequent analyses. Comparisons of the 46 cases with verified early maltreatment to the 13 cases without verified early maltreatment on gender and family low-income status (using chi-square tests) and on internalizing problems at each occasion of measurement (using t tests) revealed no significant differences between the two groups. In addition, we conducted all analyses reported below (see Results), first with these 13 cases included and then with these cases excluded. For each analysis, the pattern of significant versus nonsignificant results was the same whether or not these cases were included (although specific parameter estimates of course varied depending on inclusion or exclusion of the cases). Results presented below are for analyses in which all 59 maltreatment cases were included.

Measurement of children's internalizing problems. Children's internalizing problems were assessed using the Youth Self-Report (YSR; Achenbach, 1991). Descriptive statistics for this measure appear in Table 2. Based on the cohort sequential design of the CLS, the three cohorts of participating children reported on their internalizing problems during fourth and fifth grades, fifth and sixth grades, and sixth and seventh grades, respectively, in 1988 and 1989. Children rated each YSR item on a three point scale (0, *not true*; 1, *somewhat or sometimes true*; 2, *very true or often true*). This extensively validated instrument includes an internalizing problems scale, comprised by items tapping anxiety and depression (16 items; e.g., "I cry a lot," "I am nervous or tense"); somatic complaints (9 items; e.g., headaches); and withdrawal (7 items; e.g., "I keep from getting involved with others"). Internal consistency for this scale was high (Cronbach's $\alpha \geq .90$) at each occasion of measurement. We converted children's raw scores on the internalizing problems scale to T scores, which are normed separately for girls and for boys and offer an equivalent clinical range cutoff score (at the 98th percentile, compared to national norms; Achenbach, 1991) for both genders. Mean internalizing T scores (averaged across occasions of measurement) were 52.73 (SD = 10.26) for girls and 51.02 (SD = 10.08) for boys. We also exam-

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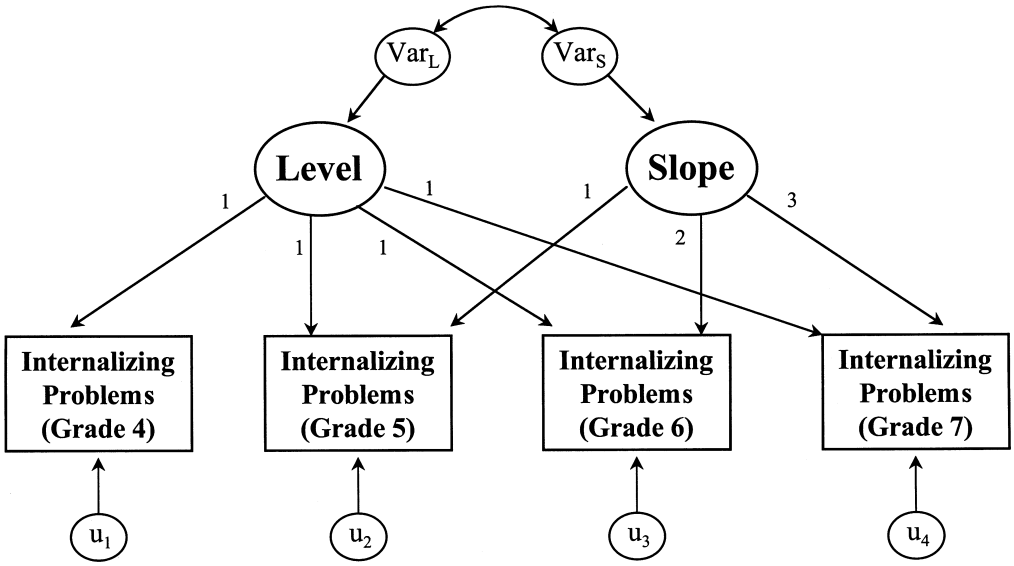


Figure 1. Linear change model of internalizing problems over time.

ined whether each child ever reported internalizing problems in the clinical range (i.e., at or above the 98th percentile relative to national norms for the YSR). Sixty-eight (17%) of 411 girls and 43 (11%) of 375 boys reported internalizing problems in the clinical range (see Table 2).

To prepare for analyses involving internalizing problems, we examined their stability versus change over time using latent 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 a function of three components: a level (or intercept) component represents individual differences that are stable over time, a slope component represents change over time, and an error or uniqueness component at each time point represents sources of variance not accounted for by level or slope. Assumptions of the latent growth curve model, which were tested and met for models described below, include no autocorrelation among errors and equal error variances across occasions of measurement. To test for stability versus change over time, we compared a model with no slope component to a model with a slope component representing a linear pattern of change in internalizing problems over time (shown in Figure 1).

Based on the cohort-sequential design of the study, this model was estimated as a three-group model. As shown in Table 1, Cohort 1 (n = 205) included children who were in fourth and fifth grades during 1988 and 1989, respectively; Cohort 2 (n = 305) included children who were in fifth and sixth grades; and Cohort 3 (n = 275) included children in sixth and seventh grades during these years. Three children (one maltreated child and two non-maltreated children) experienced grade retention in 1988 and repeated their grade the following year. Although these three children did not advance a grade in 1988 as their peers did, they were grouped with the other members of their cohort for data analysis purposes. Regression parameters were constrained to be equal across groups. Some children had missing data at one time point, due to events such as school absences and residential moves; we therefore tested these and subsequent models using direct maximum likelihood estimation with missing data (Arbuckle, 1996).

Results of growth curve analyses showed that the linear change model for internalizing problems, χ^2 (9) = 29.00 (Δ_2 = .99, AIC =

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41.00, RMSEA = .05), fit the data significantly better than the no-slope model, $\chi^2_{\text{difference}}$ (3) = 103.12, $p < .01$. The level mean for the linear change model was 56.63 ($p < .01$); a significant level variance, 68.55 ($p < .01$) indicated the presence of significant individual differences in children's mean levels of internalizing problems over time. The slope mean for the linear model, −3.54, also differed significantly from 0 ($p < .01$), indicating that children's internalizing scores tended to decrease over time. However, the slope variance, 1.94 ($p < .70$), was not statistically significant, indicating few individual differences in change over time in internalizing problems. Thus, mean levels of internalizing problems varied widely across children, but the rate of decrease over time in internalizing problems was relatively consistent across children.

Measurement of children's perceptions of control. Children's perceptions of control were measured using Connell's (1985) Multidimensional Measure of Children's Perceptions of Control. This questionnaire measures children's beliefs about whether their successes and failures are caused by their own attributes (internal control), other people's attributes (powerful others control), or unknown factors (unknown control). Descriptive statistics for this measure appear in Table 2. CLS participants completed the social and cognitive subscales of this measure, each of which comprises four items tapping internal control, four items for powerful others control, and four items for unknown control. For example, the item "If I want to do well in school, it's up to me to do it" relates to internal control in the cognitive domain, "If I want to be an important member of my class, I have to get the popular kids to like me" represents powerful others control in the social domain, and "If somebody doesn't like me, I usually can't figure out why" reflects unknown control in the social domain. Items are rated on a 1- to 4-point (*not at all true* to *very true*) scale. Children completed this measure in 1987 and 1988, as shown in Table 1.

Examination of scale intercorrelations revealed that, at each time point of the CLS, scores on powerful others control and unknown control were significantly correlated (mean r across time points was .44, all $p < .001$). In contrast, internal control was not highly correlated with either powerful others control (mean $r = .04$) or with unknown control (mean $r = .14$). We therefore averaged powerful others control and unknown control at each time point to create a summary score for external control, which did not correlated highly with internal control (mean $r = .10$). Thus, children's scores on internal and external control represented two distinct dimensions of their beliefs about the sources of their successes and failures in social and cognitive domains. Internal consistency of the internal and external control composites was adequate at each time point (Cronbach's $\alpha = .65$ for the 8-item internal control scale and $\alpha \geq .80$ for the 16-item external control scale).

To prepare for analyses involving perceived internal control and perceived external control, we examined stability versus change over time in these variables using latent growth curve modeling. Separate models were tested for internal and external perceived control, respectively. As in the growth curve analyses of internalizing problems described above, these models were estimated as three-group models based on the cohort-sequential design of the study. No child in the sample experienced grade retention during 1987, the 1st year in which perceived control was assessed; all advanced a grade in the next academic year, with the other members of their cohort.

Perceived internal control. Results of growth curve analyses showed that the linear change model for perceived internal control, χ^2 (9) = 36.71 ($\Delta_2 = .99$, AIC = 48.71, RMSEA = .06), fit the data significantly better than the no-slope model, $\chi^2_{\text{difference}}$ (3) = 54.01 ($p < .01$). The level mean for the linear change model was 53.20 ($p < .01$); a significant level variance, 101.14 ($p < .01$), indicated the presence of significant individual differences in children's mean levels of perceived internal control over time. The slope mean, 2.27 ($p < .01$) was significantly greater than 0, indicating that children's perceptions

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of internal control tended to increase over time. The slope variance, 8.18 ($p < .25$), was not statistically significant, indicating few individual differences in change over time. Thus, mean levels of perceived internal control varied widely across children, but the rate of increase over time in this construct was relatively consistent across children.

Perceived external control. Results of growth curve analyses showed that the linear change model for perceived external control, χ^2 (9) = 34.76 (Δ_2 = .98, AIC = 46.76, RMSEA = .06), fit the data significantly better than the no-slope model, $\chi^2_{\text{difference}}$ (3) = 59.91, $p < .01$. The level mean for the linear change model was 29.30 ($p < .01$); a significant level variance, 144.94 ($p < .01$), indicated the presence of significant individual differences in children's mean levels of perceived external control. A significant negative slope mean, –2.97 ($p < .01$), indicated that children's perceptions of external control tended to decrease over time. The slope variance, 12.61 ($p < .15$), was not statistically significant, indicating few individual differences in change over time. Thus, mean levels of perceived external control varied widely across children, but the rate of increase over time in this construct was relatively consistent across children.

Correlations among measures. Correlations among internalizing problems, perceived internal control, and perceived external control (each averaged over time); maltreatment dimensions (neglect, harsh parenting, and sexual abuse); family income level (dummy-coded 1 for low income); and child gender (dummy-coded 1 for female) are shown in Table 3.

Results

Data analyses and results are presented below, organized into five sections. The first section describes the data analysis strategy employed to test each hypothesis. The second section describes analyses of internalizing problems as a function of neglect, harsh parenting, sexual abuse, child gender, and family income level. The third section describes analyses of children's perceptions of control as a function of the three maltreatment types, child gender, and income level. The fourth section describes analyses testing perceived control as a mediator of the relation of specific dimensions of maltreatment to children's internalizing problems. The fifth section describes analyses testing perceived control as a moderator of the relation of maltreatment to children's internalizing problems.

Data analysis strategy

To estimate effects of maltreatment types on children's internalizing problems and perceptions of control, we returned to the linear growth models described above for internalizing problems and perceptions of internal and external control. To these models, we added neglect, harsh parenting, and sexual abuse as exogenous variables predicting level and slope, as shown in Figure 2 (for internalizing problems). Each maltreatment type was dummy-coded 1 for children who had experienced that type of maltreatment and 0 for children who had not; nonmaltreated children therefore received scores of 0 on all three maltreatment variables. Child gender (coded 1 for girls and 0 for boys) and family income level (dummy-coded 1 for low income) were also entered into each model as covariates predicting level and slope. In this manner, we tested whether individual differences and change over time in internalizing problems, perceived internal control, and perceived external control varied as a function of each type of maltreatment; child gender; and family income level. All two-way interactions were tested, with those not significant excluded from each final model. Significance tests were one tailed because hypotheses were directional.

In addition to testing these models with dichotomous maltreatment variables, we also replicated each analysis reported below using the 5-point severity scale score, rather than dummy variable, for each type of maltreatment. Results were highly consistent whether maltreatment types were coded as dichotomous variables or as continuous severity

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Table 3. *Correlations among internalizing problems, perceived control, maltreatment types, family income level, and child gender*

	Variable					
	Internalizing Problems	Neglect	Harsh Parenting	Sexual Abuse	Income Level	Child Gender
Internalizing problems	—	.11**	.08*	.09*	.17**	.08*
Perceived internal control	.05	.01	.03	.03	−.07	.02
Perceived external control	.34**	.08*	.10*	.03	.17**	−.18**

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

scores. We have chosen to present the results of these analyses using dichotomies to promote ease in interpreting our results.

Because children's scores on internalizing problems, perceived internal control, and perceived external control all had nonsignificant slope variances (i.e., few individual differences in change over time), we did not expect any exogenous variable or interaction between exogenous variables to predict slope significantly for these three constructs. This expectation was borne out by the results of analyses: slope was not predicted significantly by any exogenous variable nor by any interaction between exogenous variables. We therefore fixed the regression paths from exogenous variables to slope at 0 in each model reported below.

Internalizing problems as a function of maltreatment types, family income level, and child gender

Results of the model predicting internalizing problems (see Figure 2) revealed significant main effects on level of child gender (B = 1.63, β = .10, $p < .05$), family income level (B = 2.06, β = .12, $p < .01$), and sexual abuse (B = 4.18, β = .07), $p < .05$). The main effect of neglect (B = 3.20, β = .07) was significant at $p < .06$ but not at $p < .05$. Girls reported more internalizing problems than boys did. Low family income, sexual abuse, and neglect were each associated with higher levels of internalizing problems. The main effect of harsh parenting (B = 1.21, β = .03) was not significant ($p < .60$). Results also revealed a Neglect × Sexual Abuse interaction (B = 6.96, β = .06, $p < .05$). Children who were both neglected and sexually abused reported particularly high levels of internalizing problems, as shown in Figure 3. This model provided a relatively good fit to the data, χ^2 (70) = 236.28 (Δ_2 = .97, AIC = 376.28, RMSEA = .06).

Perceived internal control as a function of maltreatment types, family income level, and child gender

Results of the model predicting perceived internal control revealed no significant effects of maltreatment types, income level, child gender, or any of their two-way interactions (no $p < .10$).

Perceived external control as a function of maltreatment types, family income level, and child gender

Results of the model predicting perceived external control (see Figure 4) revealed significant main effects on level of child gender (B = −.14, β = −.20, $p < .01$), family income level (B = .08, β = .11, $p < .01$), and neglect (B = .14, β = .08, $p < .05$). The effect of harsh parenting (B = .11, β = .07) was significant at $p < .06$ but not at $p < .05$. Girls reported lower levels of perceived external control than boys did. Low family income, neglect, and harsh parenting were each associated with higher perceived external control scores. The main effect of sexual abuse (B = .01, β = .00) was not statistically significant. Results also revealed a Neglect × Sexual Abuse interaction (B = .20, β = .04, $p < .05$). As shown in Figure 5, sexual abuse was associated with higher

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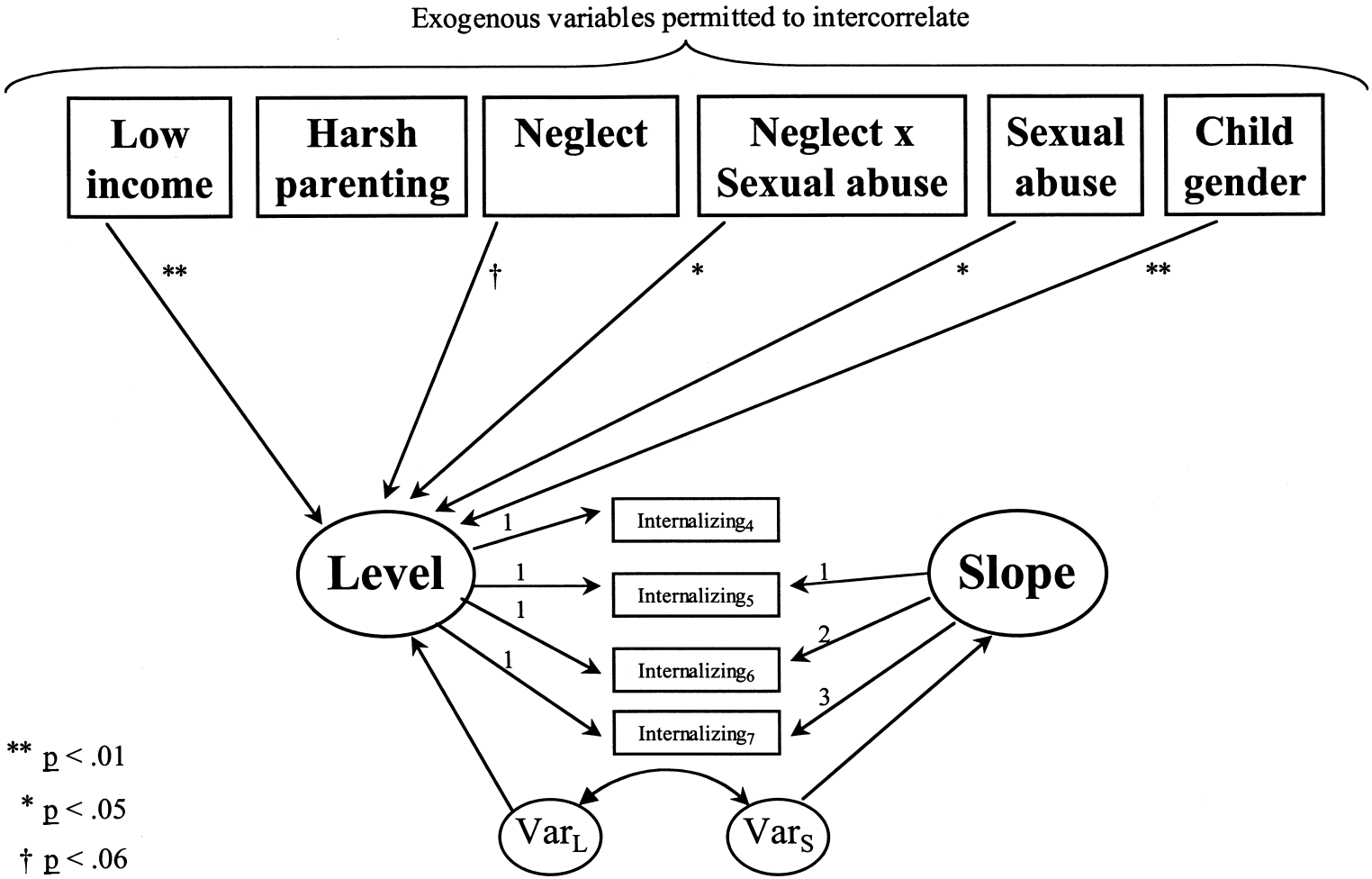


Figure 2. Linear change model of internalizing problems as a function of maltreatment types, family income level, and child gender. Regression paths to level and slope from each exogenous variable were estimated; only significant paths are shown here.

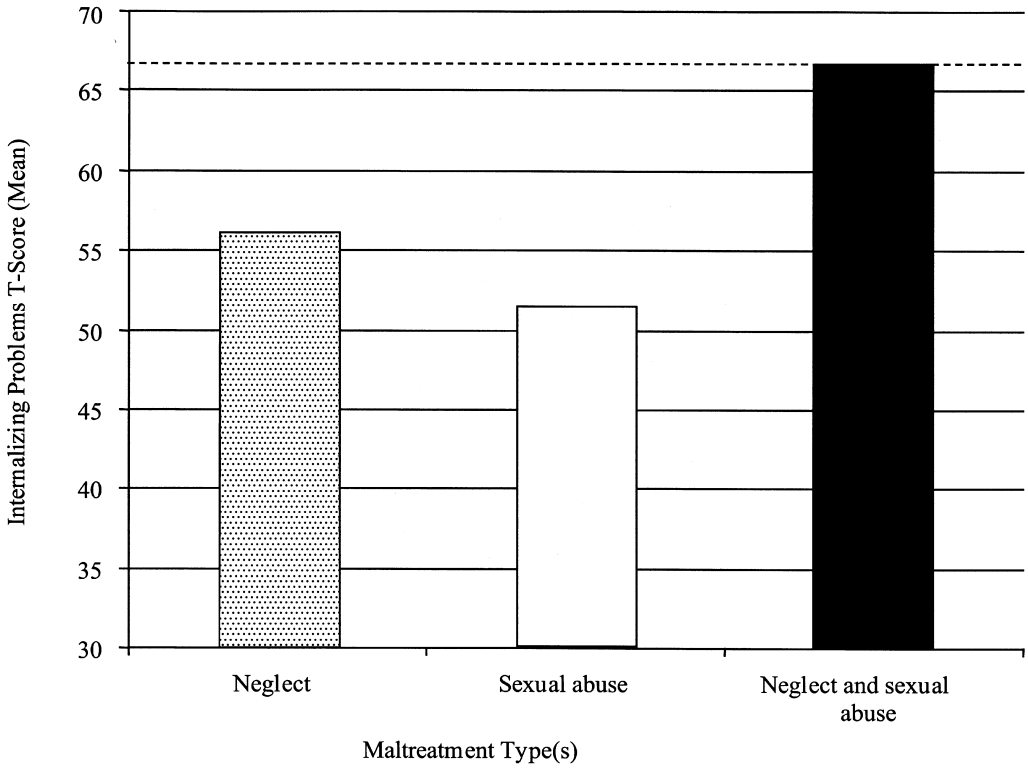


Figure 3. Internalizing problems (*T* score, averaged across occasions of measurement) among children who were neglected, children who were sexually abused, and children who were *both* neglected and sexually abused. (---) The clinical range threshold.

levels of perceived external control among children who had been neglected. This model provided a relatively good fit to the data, χ^2 (70) = 228.21 (Δ_2 = .97, AIC = 379.20, RMSEA =.06).

Perceived control as a mediator of the association between maltreatment types and internalizing problems

Structural equation modeling was employed to test the hypothesis that perceived control mediated the relation between maltreatment and internalizing problems. To accomplish this, a model (depicted in Figure 6) was tested that incorporated the linear change models for internalizing and perceived external control described above. Maltreatment types (neglect, harsh parenting, and sexual abuse), child gender, and family income level were entered into the model as exogenous predictors of level of internalizing problems and perceived external control, respectively (as in the linear change models described above). In addition, the regression path from level of perceived external control to level of internalizing problems was added to the model, as shown in Figure 6. This allowed for testing and comparison of *direct* effects of maltreatment types, income level, and gender on level of internalizing problems, and *indirect* effects (mediated by level of perceived external control) of these predictors on level of internalizing problems.

As predicted, results revealed a main effect of Level of perceived external control on level of internalizing problems (B = 12.80, β = .41, $p < .01$). Results also revealed that, when the effect of level of perceived external control (the mediator) on level of internalizing problems (the outcome) was included in the model, the previously significant effects on

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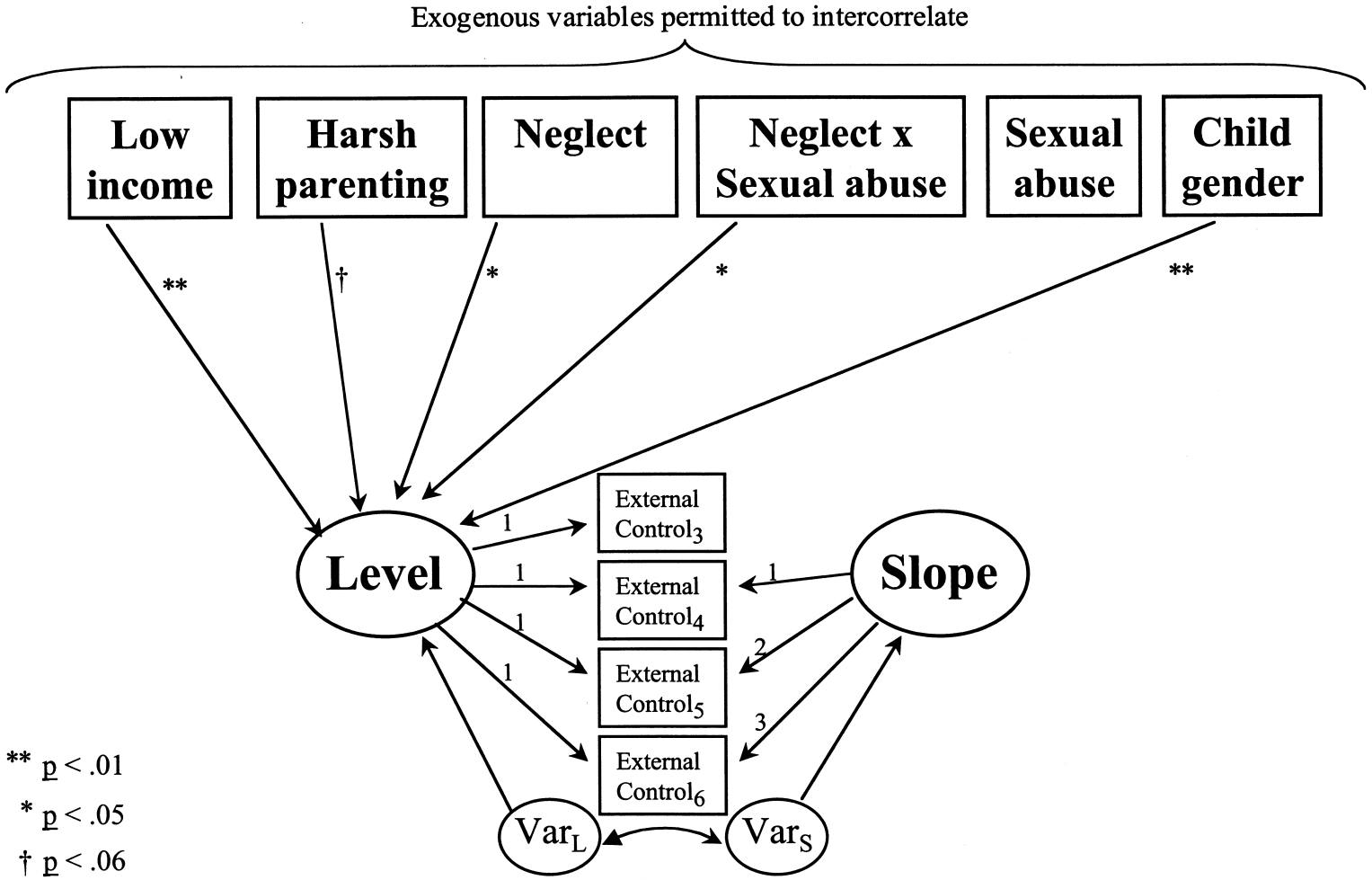


Figure 4. Linear change model of perceived external control as a function of maltreatment types, family income level, and child gender. Regression paths to level and slope from each exogenous variable were estimated; only significant paths are shown here.

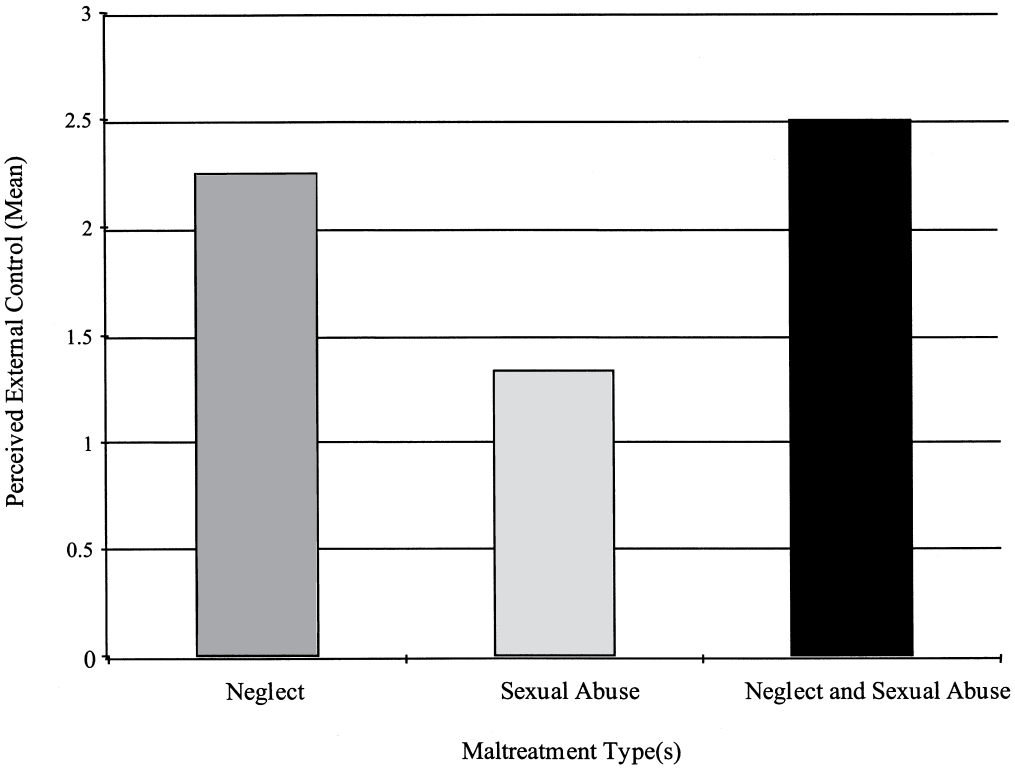


Figure 5. Perceived external control (averaged across occasions of measurement) among children who were neglected, children who were sexually abused, and children who were *both* neglected and sexually abused.

internalizing problems of family income level, neglect, and the Neglect × Sexual Abuse interaction were reduced. Specifically, the main effect of income level on internalizing was reduced from $B = 2.06$, $\beta = .12$, $p < .01$, to $B = 1.16$, $\beta = .06$, $p < .05$; the main effect of neglect was reduced from $B = 3.20$, $\beta = .07$, $p < .06$, to $B = 1.68$, $\beta = .04$, $p < .40$; and the Neglect × Sexual Abuse interaction was reduced from $B = 6.96$, $\beta = .06$, $p < .05$, to $B = 2.50$, $\beta = .02$, $p < .50$. In contrast, the main effect of sexual abuse (which did not predict perceived external control significantly) and the main effect of child gender (which indicated that girls perceived lower levels of external control) were not reduced by the addition of the regression path from perceived control to internalizing problem. Thus, these effects were not mediated by perceived external control. The mediation model provided a relatively good fit to the data, χ^2 (117) = 333.93 ($\Delta_2 = .98$, AIC = 498.93, RMSEA = .05). Of the variance in level of internalizing problems accounted for by family income level, 22% was mediated by level of perceived external control. Of the variance accounted for by neglect, 23% was mediated by perceived external control. Of the variance accounted for by the Neglect × Sexual Abuse interaction, 21% was mediated by perceived external control.

Perceived internal control as a moderator of the relation between maltreatment and internalizing problems

We next examined whether perceived internal control moderated the relation between maltreatment and internalizing problems. We hypothesized that, among maltreated children, higher levels of perceived internal control would be associated with lower scores on

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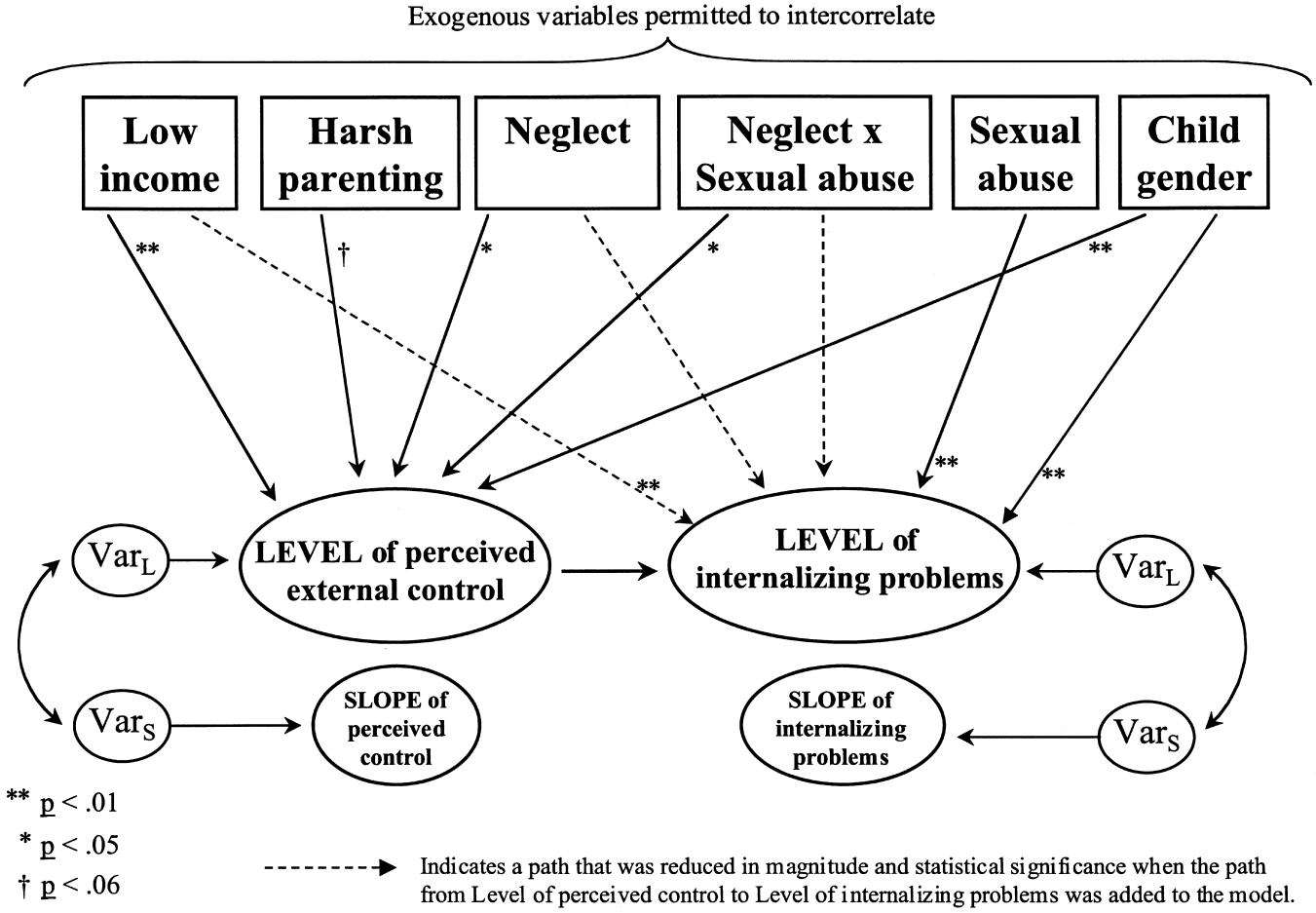


Figure 6. Perceived external control as a mediator of the relation of internalizing problems to maltreatment types, family income level, and child gender. Indicators of level and slope of perceived control were children's scores on this construct from 3rd through 6th grade (see Figure 2). Indicators of level and slope of internalizing problems were children's scores on this construct from 4th through 7th grade (see Figure 4).

internalizing problems. This hypothesis was tested by estimating a multiple-group model linear growth structural equation model to compare the relations of perceived internal control to internalizing problems among maltreated children versus nonmaltreated children. Endogenous variables in each group were internalizing problems, assessed at Grades 4–7 (as depicted in Figure 1). Child gender, family economic status (both dummy-coded) and perceived internal control (coded as the child's mean score across occasions of measurement for this variable) were entered as exogenous variables predicting level and slope of internalizing problems. To test for interactions, we estimated a series of nested models in which the effect of each exogenous variable was constrained equal across groups (maltreated vs. not maltreated) versus permitted to vary across groups. A finding that the effect of an exogenous variable differs across groups (i.e., that the variant-effects model fits significantly than the equal-effects model) indicates the presence of an interaction with maltreatment status.

Results revealed a significant Maltreatment × Perceived Internal Control interaction, χ^2 (1) = 8.39, $p < .01$. Consistent with the protective factor hypothesis, greater perceived internal control was associated with fewer internalizing problems among maltreated children ($B = -8.58$, $\beta = -.24$, $p < .05$) but not among nonmaltreated children ($B = 3.65$, $\beta = .18$, $p < .01$).

As described above, perceived internal control did not vary as a function of maltreatment type. However, because a relation between internal locus of control and age at maltreatment onset had been identified in previous research (Moran & Eckenrode, 1992), we examined post hoc the association between perceived internal control (averaged across occasions of measurement) and age at onset of maltreatment. To accomplish this we estimated, within the sample of 59 maltreated children, a linear growth model with perceived internal control assessed at Grades 3–6 as the endogenous variables, and age at onset of maltreatment as an exogenous variable. Results revealed a main effect of age at onset on level of perceived internal control ($B = .02$, $\beta = .63$, $p < .05$), reflecting significant regression paths from age at maltreatment onset to perceived internal control at each occasion of measurement (mean $\beta = .19$, all $p < .05$). As shown in Figure 7, children who were maltreated earlier in life perceived significantly lower levels of internal control than children whose maltreatment began later. This result held even after controlling for the effect of maltreatment chronicity (assessed as the length of time between when maltreatment began and when it ended, or when the child's social service case was closed) on perceived internal control, which was not statistically significant.

Discussion

Overall, our results revealed significant associations between specific types of maltreatment and internalizing problems in childhood and early adolescence. Children who had been neglected by their parents or caregivers showed elevated levels of internalizing problems in comparison to children with no known history of neglect. Having been sexually abused was also associated with significantly higher levels of internalizing problems. These findings highlight the importance of defining and examining specific types of maltreatment. Consistent with the principle of equifinality, our findings indicate that specific types of maltreatment added to the prediction of internalizing problems. Consistent with the principle of multifinality, the association between sexual abuse and internalizing problems was especially strong among children who had also been neglected.

Our results also indicated that the relation of neglect, and of sexual abuse in combination with neglect, to internalizing problems was mediated statistically by perceived external control. Children who had been neglected, and especially those who had been neglected and sexually abused, were more likely to report that important outcomes in their social and academic lives (e.g., being liked, doing well in school) were controlled by powerful others or unknown factors. These perceptions of external control were, in turn, associated with higher levels of internalizing problems.

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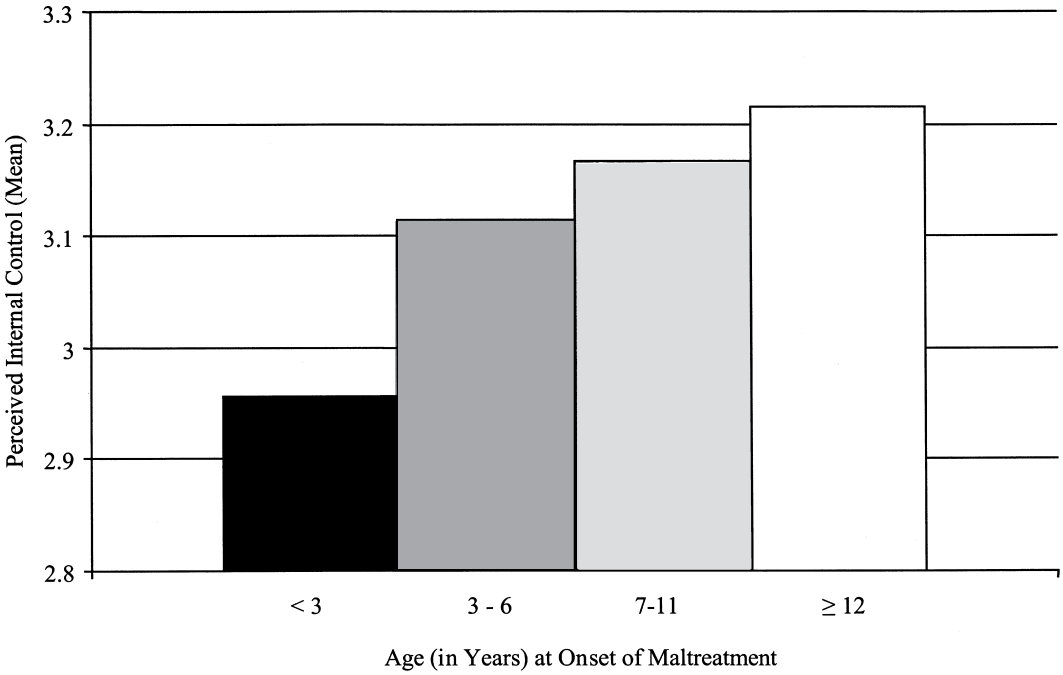


Figure 7. Perceived internal control (averaged across occasions of measurement) as a function of age at onset of maltreatment.

Thus, our findings add support to the proposal that early experiences of unresponsive parenting promote the development of internalizing problems and that perceptions of control are one of the pathways accounting for this association.

Although our findings indicate a role for perceived external control as a mediator between maltreatment and internalizing problems, it should be noted that perceived external control did not act as a mediator for all types of maltreatment. The significant main effect of sexual abuse on internalizing problems in our sample was not accounted for by perceived external control. This finding suggests that higher levels of perceived external control among maltreated children may be specifically related to the experience of neglect. One possibility is that neglect, which is characterized by unresponsive, noncontingent parenting and which tends to begin early in life, influenced children's perceptions of events and outcomes in their lives as being controlled by external forces. Sexual abuse among children who have been neglected may further increase children's perceptions of external control and their vulnerability to emotional disregulation and to the development of internalizing problems. However, the main effect of sexual abuse was not mediated by perceived control, which suggests that other processes must also be considered to account more fully for the relation between sexual abuse and internalizing problems.

Contrary to our a priori hypothesis, perceived internal control did not vary significantly as a function of maltreatment and thereby failed to mediate the relation between maltreatment and internalizing problems. This raises questions about the developmental origins of perceived internal control and about the role of perceived internal control in explaining individual differences in internalizing problems. Given that perceived internal control was not predicted by maltreatment, it is important to consider other possible sources contributing to children's cognitions about internal control. According to Bandura (1986), direct mastery experiences contribute powerfully to expectations of personal efficacy (a

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construct related, though not identical, to perceived internal control; see Rodin, 1990). Some maltreated children may have experienced successes (e.g., scholastic achievements, excelling in physical competence or sports, displaying musical or artistic talent, engagement of others in positive social interactions) despite, and unrelated to, their experiences of maltreatment. These mastery experiences might contribute to the children's developing perceptions of internal control over the events and outcomes in their lives.

We also tested the hypothesis that perceived internal control functioned as a protective factor, conveying sustained or increased competence in the face of the substantial adversity constituted by maltreatment (Luthar, Cicchetti, & Becker, 2000). Results revealed that, among maltreated children, those with high levels of perceived internal control reported having fewer internalizing problems. This finding is consistent with previous research on individuals who have been maltreated (Banyard, 1999; Moran & Eckenrode, 1992) as well as on other risk samples (Luthar, 1991). Our results also replicate Moran and Eckenrode's (1992) finding that children who were maltreated earlier in life were less likely to have the protective characteristic of perceive internal control. This finding suggests that early-onset maltreatment may impede children's development of a sense of autonomy and competence, an important stage-salient task in early childhood (Cicchetti, Beeghly, Carlson, Coster, Gersten, Rieder, & Toth, 1991; Creasey & Jarvis, 1994; Sroufe, 1996). Exploring this possibility remains an important goal for future research. The finding that perceived internal control moderated the impact of maltreatment may help to account for some of the heterogeneity in coping and adjustment among abused and neglected children. In addition, increased knowledge of the moderating role of perceived internal control helps to illuminate the developmental pathways by which some children experience more serious negative consequences of stressful experiences, whereas others achieve or maintain more competent functioning.

Our confidence in these findings is strengthened by the longitudinal nature of this study, and by its inclusion of a relatively large and representative community sample of participating children. Assessments conducted across multiple years according to a cohort-sequential design made it possible to conduct analyses spanning the period from middle childhood to early adolescence. Results of these analyses indicated that differences in children's internalizing problems and perceived control as functions of maltreatment were detectable at the earliest occasions of measurement in the study, in third and fourth grades. Over time in the sample as a whole, children's perceptions of internal control increased, their perceptions of external control decreased, and their reported internalizing problems decreased, consistent with a developmental progression by which children mature, their competence grows, and their ability to regulate their emotions increases (Zahn–Waxler et al., 2000). However, the difference in levels of internalizing problems and perceived external control as a function of specific aspects of maltreatment (neglect, sexual abuse, and their interaction) remained stable across middle childhood to early adolescence. Thus, these aspects of maltreatment predicted enduring rather than transitory difficulties for the children who experienced them, at least within the age range studied here. Inclusion of a community sample rather than a clinically referred group of maltreated children ensured that these differences were not based on a bias toward including children who had been referred for internalizing problems or other adjustment difficulties.

Among the three maltreatment types we considered, harsh parenting (characterized by physical abuse and emotional maltreatment) did not predict internalizing problems significantly when considered in models that also included neglect and sexual abuse as predictors. To verify that this lack of effect was not an artifact of having combined physical and emotional abuse to create a single predictor variable, we also retested all models described above with physical abuse and emotional maltreatment as separate variables. No new significant findings emerged in these analyses. A substantial body of research has shown harsh, physically punitive parenting to be associated

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with externalizing problems and aggression (Dodge, Bates, & Pettit, 1990; Herrenkohl, Egolf, & Herrenkohl, 1997; Widom, 1989), but it was not a key predictor of internalizing problems in our sample. Although harsh parenting did not predict internalizing problems significantly, it was associated with higher levels of perceived external control, which may reflect these children's experiences with punitive, controlling parents. Further research will be needed to determine whether the finding that harsh parenting did not uniquely predict internalizing problems will be replicated in other samples.

In addition to identifying neglect and sexual abuse as predictors of internalizing problems, our results showed economic hardship to be a major risk factor in this regard. Children from low-income families reported significantly higher levels of internalizing problems and perceptions of external control than children whose families were more economically advantaged. Most maltreated children (92%) had low family incomes at some time during the course of this research. Notably, however, maltreatment was associated with higher levels of internalizing problems and perceptions of external control even after the effect of low family income was controlled statistically. The higher rates of internalizing problems reported by maltreated children were, therefore, not a result of confounding maltreatment with socioeconomic status. These findings indicate that most maltreated children were at heightened risk for internalizing problems based on the additive effects of both low income and maltreatment.

As in other studies (see Nolen–Hoeksema & Girgus, 1994, for a review), our findings showed that girls reported higher levels of internalizing problems than boys did. This gender difference was evident across each year of this longitudinal study. Gender differences in maltreatment experiences—specifically, the higher prevalence of sexual abuse among girls—could account for a portion of this difference. For example, among the nine children who were sexually abused and neglected, eight were girls. Results of our analyses showed, however, that girls reported higher levels of internalizing problems than boys did, even after the effect of sexual abuse was controlled statistically. It remains possible (and likely) that our sample includes some cases undisclosed sexual abuse, as well as of other types of maltreatment. Thus, our analyses constitute conservative tests of the associations between maltreatment and internalizing problems. In contrast to the links between maltreatment types and internalizing, the association between child gender (i.e., being female) and internalizing problems was not mediated by perceptions of control. In fact, girls' perceived external control scores were significantly lower, on average, than those of boys. Other processes potentially related to internalizing problems, including girls' socialization experiences, dispositional characteristics, and biological factors (Nolen–Hoeksema & Girgus, 1994; Zahn–Waxler et al., 2000), that are beyond the scope of the present study must be considered.

A number of other limitations of this study must also be acknowledged. One is that we did not distinguish anxiety from depression and were therefore unable to draw conclusions about differential prediction of these two types of internalizing problems by specific types of maltreatment. Previous research shows that comorbidity of anxious and depressive symptoms in children is high (Kovacs & Devlin, 1998; Zahn–Waxler et al., 2000); Achenbach's (1991) validation of the YSR provides an empirical foundation for combining these two dimensions in one scale. Additional research would be required to examine connections from specific maltreatment types to anxious and depressive symptoms, respectively.

A second limitation of the present study is that we have focused on psychosocial aspects of the links between maltreatment and internalizing problems. Other aspects of this relation, including possible biological and genetic pathways from maltreatment to internalizing, must also be considered. For example, the passive, withdrawn behavior that has been observed in neglecting parents (Polansky, Chalmers, Buttenwieser, & Williams, 1981) could be a marker for parental depression, a vulnerability to which could be transmitted from parent to child through genetic inheritance as

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well as parenting behavior. A full consideration of these mechanisms is beyond the scope of the present paper, but the progress of research in these areas illustrates the continuing necessity of considering psychosocial as well as biological pathways. For example, Kendler, Myers, and Prescott (2000) found, in a study of adult women recruited from a twin registry, that parenting history (in particular, lack of parental warmth) made a moderate-sized and statistically significant contribution to the prediction of women's depression and anxiety disorders, even when genetic factors were controlled. As this study illustrates, multiple methods will be needed to clarify more fully the linkages between parenting and the development of internalizing problems.

A final limitation relates to the role of perceived control as mediator between maltreatment and internalizing problems. Our results fit with a theoretical model in which maltreatment, particularly neglect and sexual abuse, increases children's perceptions of external control of outcomes in their lives, which contributes in turn to the development of internalizing problems. Although our findings are compatible with this model, they do not allow us to rule out other possible causal sequences. For example, some maltreated children's beliefs that their successes and failures are due to external sources of control could be an epiphenomenon, rather than a cause, of their high levels of internalizing problems. Additional research will be needed to illuminate this question further. Intervention studies that target the role of children's cognitions and expectancies in the development and maintenance of internalizing problems (e.g., Gillham & Reivich, 1999; Gillham, Reivich, Jaycox, & Seligman, 1995) may be particularly useful in this regard.

In summary, results of this research reveal significant relations between specific aspects of maltreatment, particularly neglect and sexual abuse, and internalizing problems during childhood and adolescence. These linkages were accounted for, in part, by differences in children's perceptions of control. Our findings highlight the need for defining and estimating the effects of specific types of maltreatment, to promote an increased understanding of the developmental roots of psychopathology and to inform more effective prevention and intervention efforts.

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