

PARENTING AS A MEDIATOR IN THE RELATION BETWEEN
POVERTY AND DEPRESSIVE SYMPTOMS IN CHILDREN

By

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CHAPTER I

INTRODUCTION

Over 12 million children in the United States live below the poverty threshold (Proctor & Dalaker, 2003). Children from poor or low socio-economic status families are more likely to experience low self-esteem and socio-emotional problems than their middle-class counterparts (Adams, Hillman, & Gaydos, 1994; Butler, Stargfield, & Stenmark, 1984; Isralowitz & Singer, 1986). Researchers have implicated a number of variables as possible mediators in the relation between poverty and socio-emotional problems, including environment, family characteristics, and coping strategies (Grant, Compas, Stuhlmacher, Thurn, & Halpert, 2003).

The current study focuses on parenting as a partial mediator between poverty and depressive symptoms. The partial mediation hypothesis implies three relations: (a) poverty is associated with parenting, (b) parenting is associated with depressive symptoms, and (c) other variables besides parenting cause poverty to be related to depressive symptoms. Previous literature provides evidence for each of these contentions.

First, researchers have demonstrated that poverty and economic stress have negative implications for parenting behavior. In their early work with children of the Great Depression, Elder and colleagues found that fathers experiencing economic stress were more irritable and tense and in turn more punitive and inconsistent with their children (Elder, 1974; Elder, Liker, & Cross, 1984; Elder, Nguyen, & Caspi, 1985). Subsequent research supported Elder's findings, reporting the tendency for parents

experiencing economic stress to discipline their children in a punitive and inconsistent manner and to neglect their children's dependency needs (Conger, Ge, Elder, Lorenz, & Simons, 1994; Dodge, Pettit, & Bates, 1994; McLoyd, Jayaratne, Ceballo, & Borquez, 1994). Economic stress influences positive parenting behaviors as well. Parents in poverty are less likely to exhibit parenting behaviors such as responsiveness, warmth, and supervision (Bornstein & Bradley, 2003; McLoyd et al., 1994; Sampson & Laub, 1994). Theorists speculate that parents in poor families are also more likely to exhibit more negative and less positive parenting behaviors because of the psychological distress generated by negative life events and stressful living conditions (McLoyd, 1998).

Second, parenting is related to depressive symptoms in children. Past research has shown that warm, supportive parenting is associated with increased self-efficacy, optimism, and sense of worth in children (Bandura, 1986; Maccoby, 1992; Maccoby & Martin, 1983). Studies with clinically depressed children have demonstrated that parents of depressed children tend to show decreased parental warmth and support and increased criticism (Asarnow, Tompson, Hamilton, Goldstein, & Guthrie, 1994; Kaslow, Brown, & Mee, 1994). Neglecting or uninvolved parenting has also been associated with children's depressive symptoms (Maccoby & Martin, 1983; Simons, Murry, McLoyd, Lin, Cutrona, & Conger, 2002).

Third, other variables (aside from parenting) play a key role in the relation between poverty and depressive symptoms in children. The environment of poverty is characterized by a variety of sub-optimal physical and psychosocial conditions, including greater levels of violence, family disruption, and separation from family in comparison to children from a middle class environment (Evans, 2004). Because of the multiple

disadvantages that compose the ecological context of poverty, it is unlikely that only one agent or process underlies the psychological problems seen in poor children (Bronfenbrenner & Morris, 1998; Evans, 2004). Consequently, direct relations between poverty and depressive symptoms as well as indirect relations through parenting should be expected in mediation analyses.

A recent meta-analysis reviewed studies that had estimated at least one of the three correlations between parenting, poverty, and socio-emotional problems in children (Grant et al., 2003). Forty-six studies that reported one or more associations among poverty, child and adolescent socio-emotional symptoms, and parenting were included in the meta-analysis. The results best fit a model that included a direct pathway from economic stressors to psychological symptoms as well as a mediating pathway through parenting. The direct effect found in the meta-analysis is not surprising in light of recent work by theorists who have called attention to the direct pathways from poverty to socio-emotional problems in children (Evans, 2004).

Grant et al.'s work provides much needed insight into the mixed results in the literature; however, further analysis is warranted. The nature of meta-analysis requires the inclusion of studies that vary in quality. When the quality of studies is not weighted, the results of the meta-analysis combine the good and the bad studies equally so that conclusions are at least partially based on studies that have methodological weaknesses (Rosenthal & DiMatteo, 2001).

Grant et al.'s meta-analysis investigated every study found in the literature that included at least one of the relations required to demonstrate mediation; however, only a small subset of the studies included in the meta-analysis actually tested mediation. The

results of these studies were mixed. Of the twelve studies that actually tested the mediating role of parenting in the relation between economic variables and internalizing symptoms, only four provided consistent evidence for mediation (Lempers, Clark-Lempers, and Simons, 1989; Simons, Whitbeck, & Wu, 1991; Whitbeck, Simons, Conger, Lorenz, Huck, & Elder, 1991; Whitbeck, Simons, Conger, Wickrama, Ackley, & Elder, 1997). Five studies produced mixed results (Bolger, Patterson, Thompson and Kupersmidt, 1995; Eamon, 2000; Eamon, 2002; Elder, Nguyen, & Caspi, 1985; McLeod and Shanahan, 1993) and three provided no evidence of mediation (Clark-Lempers, Lempers, & Netusil, 1990; Duncan, Brooks-Gunn, & Kilebanov, 1994; Hanson, McLanahan, & Thomson, 1997).

Much of this small literature has methodological weaknesses. In particular, many analyses have used the same method to measure economic variables, parenting, and/or internalizing symptoms. When more than one construct is measured in the same way, the relation between the two constructs will often be overestimated if shared method variance has not been controlled. When shared method variance is not controlled, it contributes to the estimate of the correlation between the constructs and as a result the estimate is artificially inflated. In addition to mono-methodism, much of the previous literature has been based on racially and economically homogenous samples (Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1992; Conger, Conger, Elder, Lorenz, Simons, & Whitbeck, 1993; Elder, Nguyen, & Caspi, 1985, Lempers, Clark-Lempers, & Simons, 1989; Simons, Whitbeck, & Wu, 1991; Whitbeck, et al., 1991; Whitbeck, et al., 1997). Finally, the existing literature has used samples with a restricted range of depressive symptoms in children. Most studies selected children for reasons other than their

depressive symptoms (e.g., family's income); therefore, the number of children with elevated depressive symptoms in these samples reflects the prevalence of child depression in epidemiological samples (2-5%). The paucity of depressed children in these samples makes it difficult to determine the connection between poverty, parenting, and depressive symptoms.

Three aspects of the current study's design address some of the methodological weaknesses apparent in the existing literature. First, we utilized a racially and economically heterogeneous sample. Whereas much of previous research has relied on Caucasian families, 76% of children in the current study identified as non-Caucasian. Unlike previous research in which a small percentage of the sample lives in poverty, the current sample represents families of varying economic classes, including those at or below the poverty line.

Second, the current study relies on multiple methods for data collection. Poverty was measured using the income-to-needs ratio, which compares each family's reported income to the U.S. Census Bureau's poverty threshold. Parenting was measured using observer's ratings of parenting behaviors during an interaction task designed to elicit parenting behaviors associated with depressive symptoms in children (Maccoby & Martin, 1983). Depressive symptoms were measured using interview and paper-and-pencil methods with parents and children. The use of a different method to measure each variable reduces the effect of shared method variance on estimates of these relations.

Third, the current sample included children with varying levels of depressive symptoms. Children were recruited from a larger study based on their cognitive risk for depression; those who were at high or low risk for depression were included in the

current sample. Because half of the children in the sample were included specifically because they were high risk for depression, there is an increased likelihood that the sample will include a range of depressive symptoms.

After accounting for the weaknesses in the sample and mono-methodism in the measurement strategy, the current study will challenge the mediation model by controlling for maternal depression and prior levels of depressive symptoms. Because mediation is essentially testing the mechanism whereby one variable effects another, it is necessary to consider prior levels of the dependent variable (Cole & Maxwell, 2003). Therefore, prior levels of depressive symptoms will be added to the mediation model as a control variable. Children's depressive symptoms one year prior to the current study will be included in mediation models to measure change in depressive symptoms. Maternal depression will also be added as a control variable. Because research has clearly shown that maternal depression is associated with depressive symptoms in children (Goodman & Gotlib, 1999; Gotlib & Goodman, 2002), it is a potential third variable confound and will be included in the mediation model.

In general, the current study investigates parenting as a mediator between poverty and depressive symptoms in children. Specifically, there are three hypotheses. First, parenting partially mediates the relation between poverty and depressive symptoms in children. Second, a direct relation between poverty and depressive symptoms in children exists even after controlling for parenting. Third, direct and indirect relations will exist even after controlling for prior levels of depression and mother's depressive symptoms.

CHAPTER II

METHOD

Participants

The 100 families targeted in the current investigation were chosen from children participating in a large school-based study of cognitive risk for depression in children. Children were invited to participate with one of their parents. Although some grandparents, aunts, and other guardians participated, caregivers will be referred to as “parents” for brevity. Parents and children were chosen based on the child’s scores on questionnaires administered during the larger study. Children were in one of two groups: high cognitive risk for depression and low cognitive risk for depression. Risk was assessed based on the scores of three measures given during the larger study: the Children’s Attributional Style Interview (Conley, Haines, Hilt, & Metalsky, 2001), the Cognitive Triad Inventory (Kaslow, Stark, Printz, Livingston, & Tsai, 1992), and the Self-Perception Profile for Children (Harter, 1982; 1984; Harter & Pike, 1984). To be considered high risk, children met two criteria. First, their scores were above a predetermined “high risk” cutoff (1 SD above the mean) on any one of these three measures. Second, no score on any of the measures was below a pre-determined “low risk” cutoff score (1 SD below the mean). Conversely, low risk children scored below the pre-determined “low risk” cutoff on any one of the three measures (-1 SD) and did not score higher than the pre-determined “high risk” cutoff score on any measure (+1 SD). Both families and research associates working on the project were naive as to the risk

status of the participating families. After children from the larger school-based study were identified as high or low risk, their families were contacted by mail and by phone and invited to participate. The identified child and one parent from each family participated.

Participating children were in either third (51%) or fifth (49%) grade when recruited. Ages of third graders ranged from 7 to 10 (Mean=8.62). Ages of fifth graders ranged from 9 to 13 (Mean=11.12). Participants were racially diverse (69% African American, 24% Caucasian, and 1% Hispanic and 5% Mixed Ethnicity). Family sizes ranged from 2 to 11 members (Mean=4.44). Families were economically diverse. Incomes ranged from \$0-\$84,000 per year (median yearly income=\$13,000). The majority of families reported receiving some type of public assistance in the past year. 39% received welfare, 36% lived in public housing, and 57% received food stamps.

Measures

Risk assessment. Three measures were used to identify cognitive risk for depression in children from the larger school-based study. First, we obtained information about children's attributions using the Children's Attributional Style Interview (CASI; Conley, et al., 2001). The original version of the CASI included 8 positive and 8 negative items; however, we used only the negative items. Each item presents a hypothetical situation and an accompanying picture. Children are asked to imagine themselves in the situation and provide the one main reason that the situation happened to them. Children then rate their causal attribution on three 7-point scales: internality (how much their

causal reason was “because of you”), stability (if their reason “would be true again”), and globality (if their reason would “make other bad things happen”). Total scores range from 24 to 169 with higher scores representing a more depressogenic attributional style. A validation study of this measure in a group of children (age range 5 to 10) revealed good subscale internal consistency (Cronbach’s alphas range from .72-.82; Conley et al., 2001). Cronbach’s alpha for the 8 negative items used in the sample from which participants were recruited was .83.

Second, we used the Cognitive Triad Interview for Children (CTI-C; Kaslow, et al., 1992) to measure children’s depressive cognitive schemas. The CTI-C is a 36-item self-report questionnaire assessing children’s views of themselves (e.g., “I am a failure”), their world (e.g., “The world is a very mean place”), and their future (e.g., “Nothing is likely to work out for me”). Children indicate having had specific thoughts, using a *yes/maybe/no* response format. Scores range from 0 to 72 with higher scores representing more negative views. The CTI-C has been shown to have acceptable internal consistency (Cronbach’s alpha = .92 for full scale and range from .69-.92 for subscales; Kaslow et al., 1992). In the larger sample from which participants were recruited Cronbach’s alpha was .94 for the full scale.

Third, we used Harter’s (1982) Self-Perception Profile for Children (SPPC). This self-report inventory contains 36 items measuring five domains of self-perceived competence (academic competence, social acceptance, athletic competence, physical appearance, and behavioral conduct) and global self-worth. For each item, children select one of two statements to indicate whether they are more like a child who is good or a child who is poor at a particular activity. Then they select statements indicating whether

the selected statement is “sort of true” or “really true” about them. For both measures, items are scored on a 4-point rating scale such that high scores reflect greater self-perceived competence. The SPPC shows a highly interpretable factor structure and its subscales have good internal consistency (Cronbach's alphas range from .53 to .86; Harter, 1982, 1985). In the larger school-based sample Cronbach's alpha was .91 for the SPPC. The self-perceived competence variable used in the current study consisted of the sum of the five domains (excluding self-worth) on the SPPC.

Income. Income was measured using the income-to-needs ratio, a construct that compares household income to the official poverty threshold to measure the amount of poverty or affluence a family has experienced in the last year. Poverty thresholds are the statistical yardstick used by the U.S. Government to determine how much income a family needs to live (Proctor & Dolaker, 2003). Because poverty thresholds are based on income and family size, determination of the income-to-needs ratio requires three pieces of information: the number of adults living in the household in the last year, the number of children living in the household in the last year, and the total amount of income received from all members of the household in the past year (including public assistance, alimony, child support, worker's compensation, and Social Security benefits). Lab assistants extensively interviewed parents regarding all sources of income as well as family size and structure. To determine each family's poverty threshold, their income and family size was compared to the most current poverty thresholds available from the U.S. Census Bureau's Poverty Thresholds (Proctor & Dalaker, 2003). Each family's income was divided by the appropriate poverty threshold to create the income-to-needs ratio. An

income-to-needs ratio of 1.0 indicates a household income that is equal to the poverty threshold. Higher numbers indicate greater affluence. For example, a family of four that includes two adults and two children has a poverty threshold of \$18,660. If that family's income over the last year was \$50,000, their income-to-needs ratio is 2.68. In the current sample, income-to-needs ratios ranged from .03 to 5.09 (median=1.18). 47% of the sample had an income-to-needs ratio of 1.0 or less, indicating that they lived at or below the poverty threshold.

Parenting. Parenting was observed during a puzzle task designed to encourage problem solving and conflict and to elicit parenting behaviors associated with depressive symptoms in children. Parent/child dyads were given instructions before the puzzle task and then left alone in a lab room. Tasks were videotaped for later coding. During the puzzle task, parents and children worked together on five puzzles of increasing difficulty. Parents were instructed to be the “coach” by giving verbal advice but avoiding manipulation of the puzzle pieces. The puzzle task lasted approximately 15 minutes.

Parental behavior on the puzzle task was coded on five different dimensions: hostility, warmth, neglecting/distancing, intrusiveness, and encouraging independence. Each parent was given a rating on each of these five global codes. The codes were based on a global coding system created by Iowa State University's Institute for Social and Behavioral Research (Conger, et al., 1992; Conger, et al., 1993; Conger, et al., 1994). Each code considered the content of parent's statements as well as nonverbal communication and emotional expression. *Hostility* measured the degree to which the parent displayed hostile, angry, critical, disapproving, and/or rejecting behavior toward

the child. Examples of hostility include statements such as, “you really are a brat,” and “shut up;” behaviors include rolling eyes while sighing. *Warmth* measured the degree to which the parent expressed liking, appreciation, praise, care, concern, or support for the child. Examples of warm statements include, “that was a nice job,” and “thanks for your help.” Warm behaviors include hugs and affectionate touches. *Neglecting/Distancing* measured the degree to which the parent was uncaring, apathetic, under involved, ignoring, aloof, unresponsive, and/or self-focused. Examples of neglecting/distancing statements include, “I can’t worry about your problems- take care of it yourself.” Examples of neglecting/distancing behaviors include failing to respond to comments and sitting passively while the child abandons the task. *Encouraging Independence* measured the extent to which the parent promoted the child’s autonomy and independence in thought and actions. Examples of statements encouraging independence include, “I know you can do it, just give it another try,” and “You have a good plan, give it a try.” Examples of behaviors that encourage independence include allowing the child to learn from experience without interference and telling a child she is trusted to do well. *Intrusiveness* assessed intrusive and over-controlling behaviors that were parent-centered rather than child-centered. Examples of intrusive statements include, “here, use this piece instead,” and “I think you should do it this way.” Intrusive behaviors include offering a continuous barrage of directions and not allowing the child to select puzzle pieces.

In order to train coders, we sent five videotapes to be coded by experts at Iowa State University’s Institute for Social and Behavioral Research. Research assistants studied these five tapes to learn the coding system. Five coders were trained to 90% agreement to Iowa State’s ratings. Throughout the coding process, coders met regularly,

reviewing early tapes to prevent rater drift and coding tapes together to ensure reliable coding. After training on the coding system, coders watched each interaction on video several times to give a global rating on each of the five codes. A random 30% of interaction tasks were double-coded in order to determine inter-coder reliability. Warmth, hostility, and intrusiveness all had a high degree of internal consistency (Cronbach's $\alpha = .92, .90, \& .91$, respectively). Two parenting codes, neglecting/distancing parenting and encouraging independence, had a low degree of internal consistency due to the low frequency with which each behavior was observed. A more representative reliability measure for these codes is the average agreement among raters¹. On average, raters agreed on neglecting/distancing codes about 95% of the time. Raters agreed on encouraging independence codes an average of 80% of the time.

Descriptive statistics revealed that the neglecting/distancing code was used very infrequently during the interaction task. 94% of interactions were coded as "1" during the puzzle task on the neglecting/distancing code, indicating that no neglecting/distancing behaviors were observed. Because neglecting/distancing behaviors were so rarely observed in our sample, this code did not have variance robust enough to significantly relate to any other variable in our models. Consequently, we did not include neglecting/distancing parenting behaviors in our analyses.

Children's depressive symptoms. Levels of children's depressive symptoms were measured using both parent and child responses to two different instruments. First, children and parents completed child and parent versions of the Children's Depression Inventory, respectively (CDI: Kovacs, 1982; 1985). The CDI is a 27-item self-report

questionnaire designed to assess children's depressive symptoms. Each item contains three statements, scored 0, 1, and 2 in order of increasing severity. Psychometric studies of the CDI suggest that the measure has relatively high levels of internal consistency, test-retest reliability, and predictive, convergent and construct validity, especially in nonclinic populations (Carey, Faulstich, Gresham, Ruggiero & Enyart, 1987; Kazdin, French & Unis, 1983; Kazdin, French, Unis & Esveldt-Dawson, 1983; Kovacs, 1985; Lobovits & Handal, 1985; Mattison, Handford, Kales, Goodman & McLaughlin, 1990; Saylor, Finch, Spirito & Bennet, 1984; Smucker, Craighead, Craighead, & Green, 1986). In addition to the CDI, children and parents were interviewed using the Children's Depression Rating Scale-Revised (CDRS; Poznanski, Cook, & Carroll, 1979; Poznanski, Mokros, Grossman & Freeman, 1985), a structured clinical interview similar to the Hamilton Depression Rating Scale used with adults (Hamilton, 1960). Parents and children were asked about the frequency, duration, and severity of 15 depressive symptoms in children including sadness, fatigue, appetite, and sleep problems. Trained clinical interviewers gave a 1-7 rating for each symptom. Ratings for all symptoms were summed. A score of 40 or more on the CDRS-R generally indicates clinical depression (Poznanski, et al., 1984). Previous literature has demonstrated that two week test-retest reliability is high (Poznanski, et al., 1984) but inter-informant reliability is low (parent-child correlation=.38; Mokros, Poznanski, Grossman & Freeman, 1987).

Parent and child responses to the CDI and the CDRS produced four separate ratings of children's depressive symptoms: a CDI-P score, a parent-rated CDRS score, a CDI-C score, and a child-rated CDRS score. In order to create a single parent rating of depressive symptoms, the CDI-P score and the parent-rated CDRS score were converted

to standard scores and then summed. Similarly, a single child report measure of depressive symptoms was created by summing the standard scores of the CDI-C and the child-rated CDRS.

Control variables. Some analyses included prior levels of children's depressive symptoms as a control variable. Prior levels of children's depressive symptoms were measured with the CDI-C as part of the larger school-based study of cognitive risk for depression. The time lag between collection of prior levels of depression as measured by the CDI-C and data collection for the current study was approximately one year.

Some analyses included mothers' current ratings of their own depressive symptoms as a control variable. Mother's depressive symptoms were measured using the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Beck, Steer & Garbin, 1988), a widely used 21-item self-report measure of individuals' levels of depressive symptoms in the last two weeks. Each item contains four statements ranging in severity from 0 to 3, with 0 representing an absence of the symptom and 3 representing an extreme rating of the symptom. All 21 items were summed to create a single 0-63 rating of mothers' depressive symptoms.

Procedure

Parents of children identified as at either high or low cognitive risk for depression were sent a letter inviting them to participate in a study to take place in our laboratory. Transportation was provided when necessary. Those families who responded to the initial

letter were scheduled for visits. Families who did not respond to the initial letter were contacted by mail and by phone in order to give each family ample opportunity to participate. After families are scheduled, they received a reminder phone call 24 hours before their scheduled visit. Participants who did not arrive for scheduled visits were repeatedly rescheduled until data collection was successful.

When families arrived at the lab, they were informed of their rights as participants and asked to sign an informed consent/assent form. Parents and children were then moved into two separate rooms. A trained clinical interviewer interviewed parents regarding their child's depressive symptoms. As parents were being interviewed, research assistants administered paper-and-pencil questionnaires to children. Next, parents and children reunited for the puzzle task and a short break in which a snack was served. Parents and children were then separated again as children were interviewed regarding depressive symptoms and parents completed paper-and-pencil questionnaires. Before families left, they were given an envelope containing seventy-five dollars in cash and a list of mental health referrals to consult if the visit revealed any difficulties families wish to address.

CHAPTER III

RESULTS

Preliminary Analyses

Correlations between multiple measures of depression from the same informant were significant and moderately large. Children's ratings of their own depressive symptoms on the CDI-C were significantly correlated with their ratings of their own depressive symptoms on the CDRS ($r = .532, p < .01$). Similarly, parents' ratings of their child's depressive symptoms on the CDI were significantly correlated with their ratings of their child's depressive symptoms on the CDRS ($r = .524, p < .01$). To avoid problems with multicollinearity in subsequent path analyses, we formed composite variables. To create a parent-reported depressive symptoms composite, we standardized parent CDRS scores and CDI-P scores and summed them, thus giving equal weight to interview and questionnaire data in the composites. We did the same to form the child self-reported depressive symptoms composite. Parent and child composites were not combined because correlations between parent and child ratings of child depressive symptoms were either nonsignificant (i.e., $r = .183$ between CDI-P and CDI-C) or significant but small (i.e., $r = .266, p < .01$ between CDI-P and child-rated CDRS). Table 1 presents the correlations, means, and standard deviations of the resulting composite variables and the other variables of interest.

Table 1. Correlations, Means, and Standard Deviations.

Variable	1.	2.	3.	4.	5.	6.	7.
1. Income-to-needs ratio	1.00						
2. Hostility ^a	-.436**	1.00					
3. Warmth ^a	.394**	-.395**	1.00				
4.. Encouraging independence ^a	.286**	-.253**	.438**	1.00			
5.. Intrusiveness ^a	-.353**	.540**	-.192	-.339**	1.00		
6. Parent-rated depressive symptoms	-.073	-.024	-.212*	-.062	-.080	1.00	
7. Child-rated depressive symptoms	-.043	.085	-.098	-.059	.082	.331**	1.00
<i>M</i>	1.42	3.70	3.54	1.95	5.31	-.04	.00
<i>SD</i>	1.14	2.23	1.66	1.59	2.41	1.74	1.75

Participants were initially recruited for the study based on their cognitive risk for depression (as measured by their score on the CTI, the SPPC, or the CASI). Of the 100 children who eventually participated, 51 children were identified as being “high cognitive risk for depression” and 49 were identified as being “low cognitive risk for depression.” In order to detect mean differences between high risk and low risk groups on all the variables included in analyses, a series of t-tests were conducted. As expected, participants who were initially identified as being at high cognitive risk for depression had significantly higher parent-rated and child-rated depression composites ($p < .01$) than children in the low risk group. In addition, high and low risk groups significantly differed on mean income-to-needs ratio, with families of children in the high risk group having significantly lower income-to-needs ratios than children in the low risk group ($p < .01$). Overall, families in the high risk group made an average of \$11,662 less per year than families in the low risk group. Groups did not significantly differ on three of the four parenting variables included in analyses: warmth, encouraging independence, and intrusiveness; however, parents of children in the high risk group were rated significantly more hostile during interaction task than children in the low risk group ($p < .05$).

Correlations between our dependent variables and various demographics (age, gender, family size, single-parent household) were nonsignificant and ranged from $r = -.080$ to $r = .105$. Results of ANOVA indicated significant differences between ethnic groups, $F(3, 91) = 3.46$, $p < .05$. Follow-up t tests revealed that the “Hispanic” group had significantly higher mean parent-rated depressive symptoms than all other groups. Further investigation revealed that the significant differences were due to an outlier. The one child identified as “Hispanic” in the sample had a high parent-rated depression score,

resulting in the “Hispanic” ethnic group mean being much higher than the other ethnic group means. When the one Hispanic child was removed from the sample, the parent rated depressive symptoms group means did not significantly differ. Consequently, we elected not to control for ethnicity in subsequent analyses.

Tests of Hypotheses

Using various path analytic methods (AMOS; Arbuckle & Wothke, 1999), we examined the degree to which the four parenting behaviors mediated the relation between income-to-needs ratio and depressive symptoms. This mediation model was tested twice; once with children’s reports and once with parents’ reports of depressive symptoms as the dependent variable. As a result, each model included income-to-needs ratio as the independent variable, the four parenting variables as mediators, and either child-reported or parent-reported depressive symptoms as the outcome variable.

Before examining primary hypotheses, each model was tested for group differences. First, we tested for differences between the group at high cognitive risk for depression and the group at low cognitive risk for depression. Two two-group analyses (one with child-reported depressive symptoms and one with parent-reported depressive symptoms as the dependent variable) were run in which all paths in each of the two models were constrained to be equal across high and low risk groups. To test for group differences, we looked at the change in χ^2 from the unconstrained model to the model in which all paths were constrained to be equal across groups. The change in χ^2 was not significant, indicating that the model fit did not vary significantly according to risk level in either the model with child-reported depressive symptoms as the outcome variable

($\Delta\chi^2(9) = 5.47, p > .05$) or the model with parent-reported depressive symptoms as the outcome variable ($\Delta\chi^2(9) = 12.16, p > .05$). The results suggest that parenting does not mediate between poverty and depressive symptoms differently for children at differing cognitive risks for depression. As a result, high and low risk groups were combined for all subsequent analyses. Second, we tested for group differences between girls and boys in the same two-group fashion, comparing an unconstrained model to one in which all paths are constrained to be equal for girls and boys. Again, the model fit did not significantly vary by group (child-reported depressive symptoms analysis: $\Delta\chi^2(9) = 7.343, p > .05$; parent-reported depressive symptoms analysis: $\Delta\chi^2(9) = 14.890, p > .05$), indicating that boys and girls could safely be considered together in subsequent analyses. Third, we tested for group differences between children in 3rd grade and children in 5th grade. In these analyses, model fit differences were detected in the model with child reported depressive symptoms as the outcome variable ($\Delta\chi^2(9) = 22.75, p < .01$). Grade differences were nonsignificant for the model with parent-reported depressive symptoms as the dependent variable ($\Delta\chi^2(9) = 8.916, p > .05$).² Because grade differences were detected for the model with child-reported depressive symptoms model, 3rd and 5th graders were considered separately in subsequent analyses. Table 2 contains descriptive information on all the variables included in the model by grade level.

Table 2. Descriptive statistics for all variables included in the models, by grade level.

Variable	Third Grade		Fifth Grade	
	Mean	SD	Mean	SD
Income-to-needs ratio	1.34	1.12	1.51	1.17
Hostility ^a	4.38*	2.13	2.99*	2.12
Warmth ^a	3.54	1.80	3.54	1.52
Encouraging independence ^a	1.78	1.50	2.12	1.67
Intrusiveness ^a	5.89*	2.00	4.72*	2.66
Child-reported depressive symptoms	-.23	1.81	-.22	1.68
Parent-reported depressive symptoms	-.13	1.72	.05	1.78

In order to test the first and second hypotheses, that parenting mediates part of the relation between poverty and depressive symptoms in children yet leaves a direct relation between poverty and depressive symptoms, we conducted the path analyses shown in Figures 1 and 2. Figure 1 depicts the model with child-reported depressive symptoms as the dependent variable, tested separately for 3rd and 5th graders. Figure 2 depicts the model with parent-reported depressive symptoms as the dependent variable, also tested separately for 3rd and 5th graders.

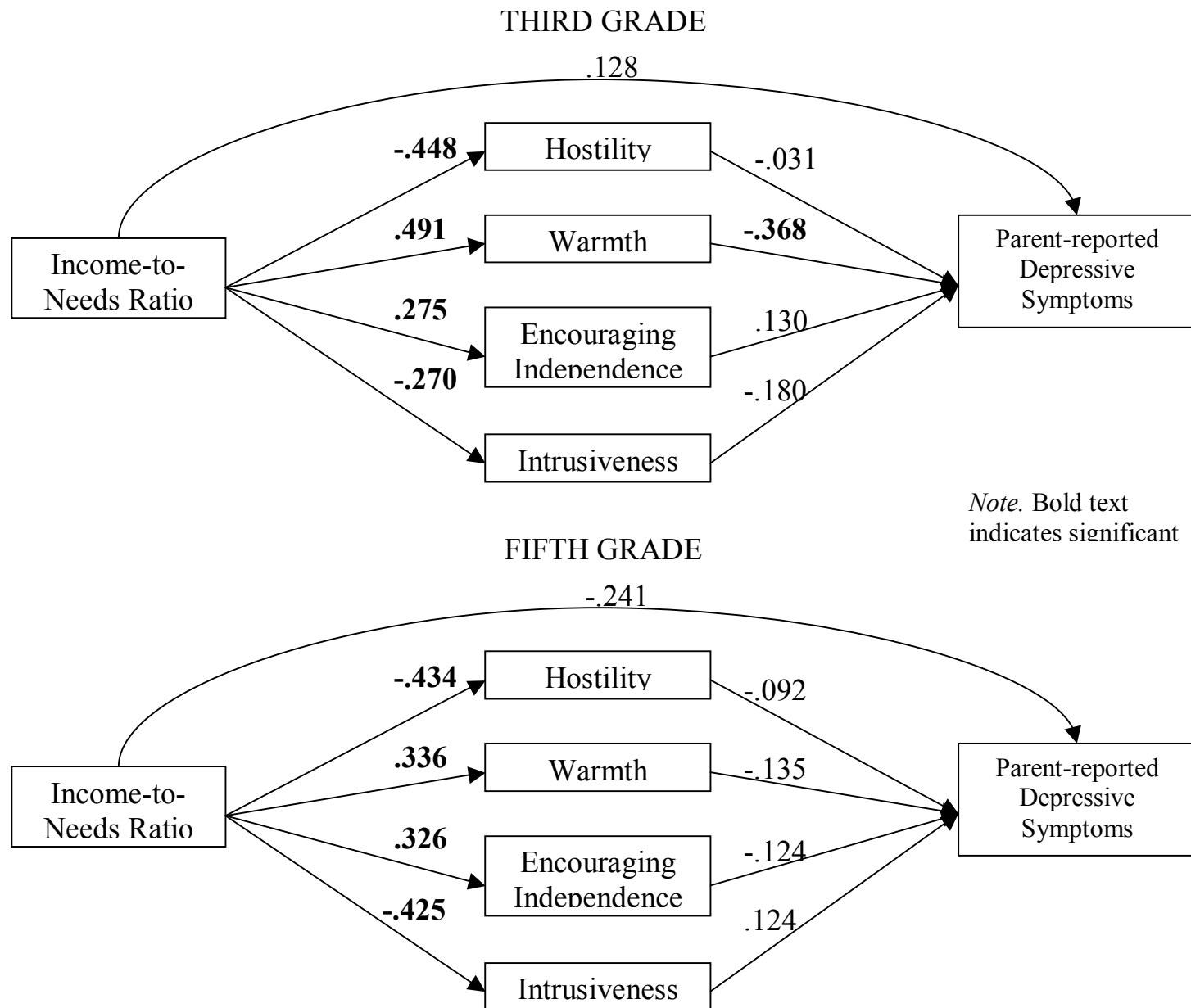


Figure 1. Mediational models with parent-rated depressive symptoms as dependent variable.

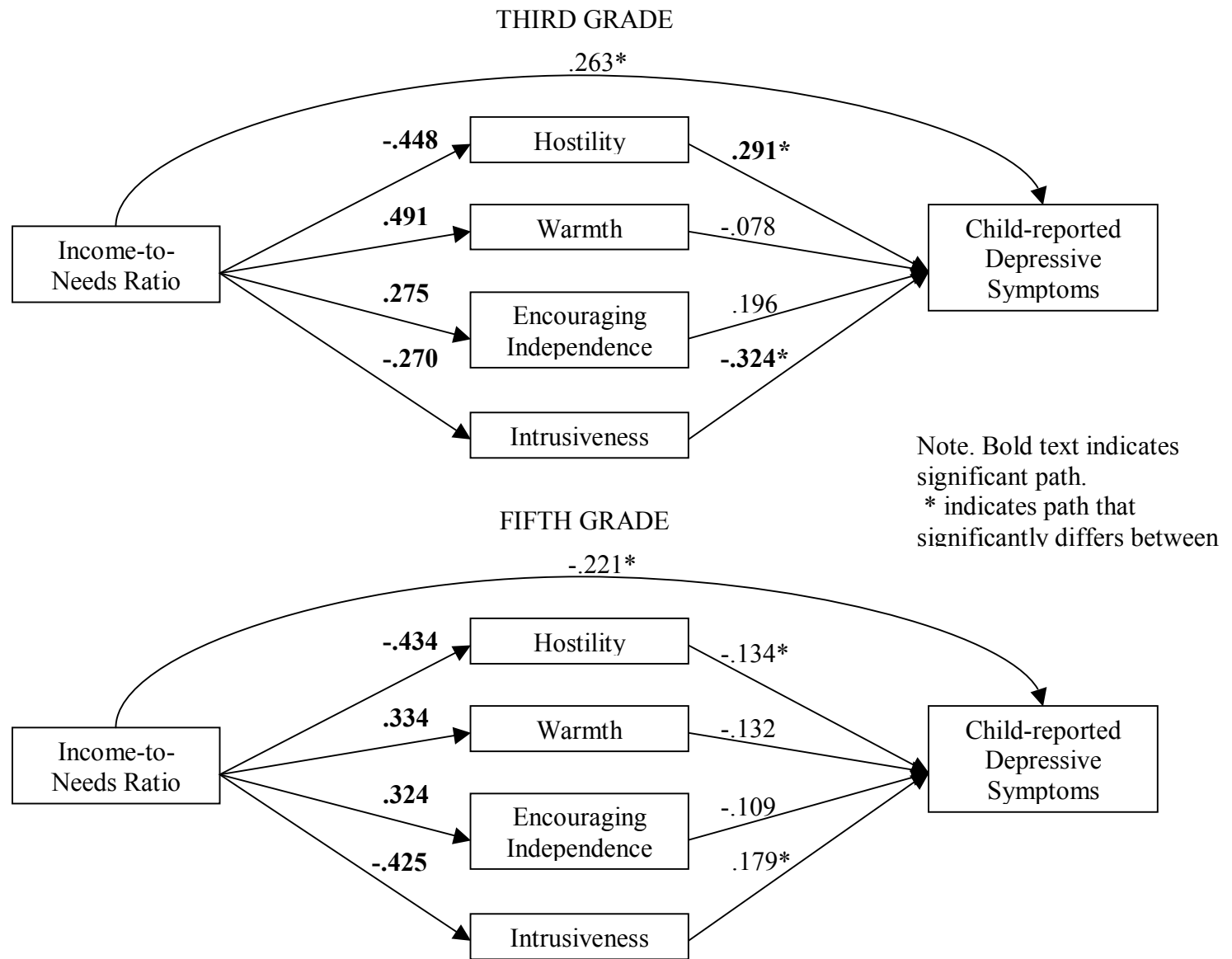


Figure 2. Mediational models with child-rated depressive symptoms as dependent variable.

Three conditions must be met to show evidence of mediation (Baron & Kenny, 1986). First, poverty must have a significant relation with one or more parenting variables. This condition was met in each of the models presented in Figures 1 and 2; income-to-needs ratio was significantly positively related to parental warmth and encouraging independence and significantly negatively related to hostility and intrusiveness. Second, parenting must have a significant relation with depressive symptoms after accounting for poverty. This condition was not consistently met in our models. Hostility and intrusiveness were significantly related to child-reported depression, and warmth was significantly related to parent-reported depression in 3rd graders; however, parenting behaviors were not significantly related to either child-reported or parent-reported depression in 5th graders. Third, there must be a significant drop in the relation between poverty and depressive symptoms after controlling for parenting. A series of Sobel's tests (Sobel, 1990) were conducted to test the indirect effect of poverty on depressive symptoms after controlling for parenting. All four parenting variables were considered as a mediator between poverty and either parent-reported or child-reported depressive symptoms. None of the indirect relations between poverty and depressive symptoms were significant at either grade level.

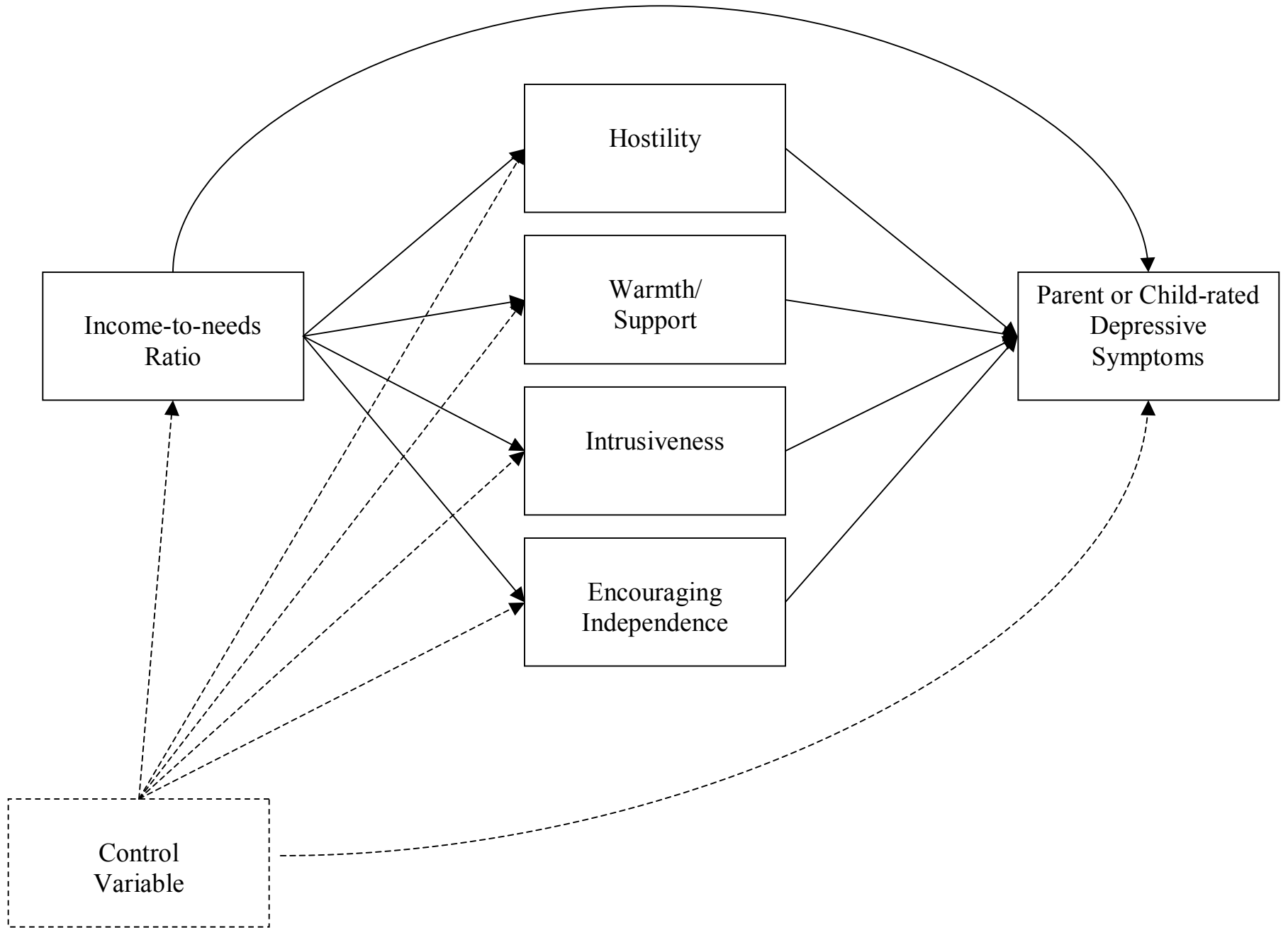


Figure 3. Model used to test for influence of control variables.

Our third hypothesis proposed that the direct and indirect effects of poverty on depressive symptoms would exist even after controlling for control variables. To test this hypothesis, we conducted a series of models in which the control variables predicted every variable in the model (see Figure 3). The first control variable was prior level of depressive symptoms, as measured by CDI scores obtained approximately one year before the current study. In the model in which parent-reported depressive symptoms was the outcome variable, prior CDI scores were not related to any other variable in the model. In addition, inclusion of prior CDI scores did not affect any of the other paths in the model. In the model in which child-reported depressive symptoms was the outcome variable, prior CDI scores were significantly related to child-reported depressive symptoms in third graders ($\beta = .332, p < .01$) and in fifth graders ($\beta = .759, p < .001$). Inclusion of prior CDI scores also affected some key variables in the model with child-reported depressive symptoms as the outcome variable. Among 3rd graders, the inclusion of prior depressive symptoms as a control variable in the model resulted in the path between hostility and child-reported depressive symptoms, which was significant, to become nonsignificant. All other paths remained similar to the model without prior CDI scores as a control variable. Among 5th graders, the path between warmth and child-reported depressive symptoms became significant after controlling for prior depressive symptoms ($\beta = -.199, p < .05$). All other paths remained similar to the model without prior CDI scores as a control variable.

We also tested a series of models including parental levels of depressive symptoms, as measured by parental BDI scores, as a control variable. In these analyses, BDI scores predicted all variables in the models (see Figure 3). In the model with parent-

reported depressive symptoms as the outcome variable, BDI scores were significantly related to parent-reported child depressive symptoms among 3rd graders ($\beta = .276, p < .05$) and significantly related to income-to-needs ratio ($\beta = -.475, p < .001$) and warmth ($\beta = .310, p < .05$) among 5th graders. In the model with child-reported depressive symptoms as the outcome variable, BDI scores were not significantly related to any other variable in the model. Although the inclusion of parental depressive symptoms as a control variable did not result in any changes in the primary paths of interest in the 3rd grade models, two changes were observed in the 5th grade models. In the model with child-reported depressive symptoms and the model with parent-reported depressive symptoms as the outcome variable, the path between income-to-needs ratio and warmth as well as the path between income-to-needs ratio and encouraging independence became nonsignificant when BDI scores were included as a control variable.

In addition to including prior CDI scores and BDI scores as control variables, we further challenged the models by including risk status as a control variable (see Figure 3). Among 3rd graders, risk status was significantly positively related to hostility and to parent-reported depressive symptoms. Among 5th graders, risk status was significantly negatively related to poverty and significantly positively related to both child-reported and parent-reported depressive symptoms. The inclusion of risk status as a control variable did not significantly affect the mediating paths of interest among 5th graders; however, it did significantly change the paths of interest in both 3rd grade models. When risk status was included in the model with parent-reported depressive symptoms as the outcome variable, the path between income-to-needs ratio and intrusiveness and the path between income-to-needs ratio and encouraging independence became nonsignificant.

When risk status was included in the model with child-reported depressive symptoms as the outcome variable, the path between income-to-needs ratio and intrusiveness, the path between income-to-needs ratio and encouraging independence, and the path between hostility and child-reported depressive symptoms all became nonsignificant.

CHAPTER IV

DISCUSSION

Five major findings derived from this investigation. First, poverty was significantly positively related to parental warmth and encouraging independence and significantly negatively related to parental hostility and intrusiveness on the observed interaction task. These significant relations were consistent among 3rd and 5th graders. Second, we found mixed evidence for the relation between parenting behaviors and children's depressive symptoms. Although none of the parenting behaviors were significantly related to depressive symptoms among 5th graders, among 3rd graders hostility and intrusiveness were significantly related to child reported depressive symptoms and warmth was significantly related to parent-reported depressive symptoms. Third, evidence for parenting as a mediator between poverty and depressive symptoms was mixed. Among third graders, the paths between poverty and parenting variables were significant and the paths between some parenting variables and depressive symptoms were significant, suggesting a mediating relation exists; however, Sobel's tests of the indirect relations of poverty to depressive symptoms through parenting behaviors were nonsignificant. Fourth, poverty did not have a significant direct relation with either child-reported or parent-reported depressive symptoms. And fifth, we found some evidence for the mediating paths remaining significant even after controlling for children's prior levels of depressive symptoms, parental depression, and risk status. We elaborate upon each of these findings below.

First, poverty was significantly positively related to parental warmth and encouraging independence and significantly negatively related to parental hostility and intrusiveness. The relations were significant in both 3rd and 5th graders. Our findings contribute to the previous literature indicating that economic pressure can have deleterious effects on parenting (Bornstein & Bralby, 2003; Elder, 1974; Elder, Nguyen & Caspi, 1985; Conger, Wallace, Sun, Simons, McLoyd, & Brody, 2002; McLoyd et al., 1994; Sampson & Laub, 1994). Although studies have been conducted that utilize racially and economically heterogeneous samples, income-to-needs ratio as a measure of economic status, or observed parenting behaviors exist in the previous literature, this is the first study to include all of these factors. Previous research has identified warmth and hostility as parenting behaviors significantly related to poverty, but our research has provided two additional parenting variables that are also significantly affected by economic status: intrusiveness and encouraging independence.

Second, the evidence for the relation between parenting and children's depressive symptoms was mixed. Among 3rd graders, there were three significant relations between parenting and depressive symptoms. One, higher levels of hostile parenting behavior during the puzzle task were associated with higher levels of child-reported depressive symptoms. This result provides evidence for the expected mediation relation. In understanding why hostility might be associated with depressive symptoms for 3rd graders but not for 5th graders, we look to descriptive information of the variables (Table 2). Parents of 3rd graders displayed significantly more hostility during the puzzle task than parents of 5th graders. As a result, there was less mean level hostility among 5th graders to be associated with outcome. Two, higher levels of intrusiveness were

associated with lower levels of child-reported depressive symptoms. In order to understand this unexpected finding, we speculate that third graders were not negatively affected by their parents' intrusive behavior because they interpreted that behavior as helpful and involved rather than critical. Three, as expected, higher levels of warmth were associated with lower levels of parent-reported depressive symptoms. Notably, this result was not replicated in the model with child-reported depressive symptoms as the outcome variable. The discrepancy between these findings may be the result of a reporting bias on the part of some parents. Parents who display high levels of warm behaviors in a lab setting may also rate their children in a more positive fashion.

Third, we found evidence for the expected mediation relation in two places: first, in the significant indirect paths between poverty, hostility, and child-reported depressive symptoms among 3rd graders; second, in the significant indirect paths between poverty, warmth, and parent-reported depressive symptoms among 3rd graders. Although Sobel's tests of these indirect relations were not significant, some statisticians argue that the essential tests for establishing mediation are (a) the significance of the relation between the independent variable and the mediating variable, and (b) the significance of the relation between the mediating variable and the dependent variable (Kenny, Kashy, & Bolger, 1998). Because both paths are significant in our examples, we have evidence that among the younger children in our sample, hostility mediates between poverty and child-reported depressive symptoms and warmth mediates between poverty and parent-reported depressive symptoms in our sample.

Fourth, contrary to our hypotheses, we did not find a significant direct relation between poverty and parent-reported or child-reported depressive symptoms. The

absence of a direct relation is particularly surprising when compared to a recent meta-analysis demonstrating the direct effect of poverty on internalizing symptoms even after controlling for negative parenting (Grant et al., 2003). Several aspects of the current study are distinct from many of those included in the meta-analysis in important ways that may contribute to the discrepancy in findings. We measured economic status by comparing actual income to the U.S. government's poverty thresholds, thereby providing a fairly objective measure of poverty. Much of the previous work in the field has focused on parents' subjective reports of their perception of economic pressure. Subjective measures of economic pressure can be problematic for a number of reasons. One, depressive symptoms are often measured using parental reports, creating a mono-method bias that might artificially inflate the direct relation between economic pressure and depressive symptoms. Two, perceptions of economic pressure are not necessarily congruous with poverty. For example, only 10% of the sample utilized in Conger and colleagues' research (arguably the most expansive and rigorous in field) were actually poor. Parents perceived economic pressure as a result of the economic changes in farming communities during the 1980s, but by and large they remained economically middle class. By contrast, 47% of families in our sample lived below the poverty threshold. Although we did not collect data on the chronicity of poverty, we have no reason to expect systematic changes in the economic status of our sample. The lack of direct relations between poverty and depressive symptoms may reflect the environmental perceptions of the elementary school children in our sample. Because the children had not experienced changes in economic conditions, they did not experience the negative socio-emotional affects of poverty.

Another possible reason for the absence of a direct relation between poverty and depressive symptoms in our study may be related to the age of children in our sample. Whereas much of the existing research has focused on middle-school children and adolescents, our sample included children in 3rd and 5th grades. Although little has been done to investigate children's perceptions of their family's economic situation, one study showed that poor children aged 8-12 did not perceive their family as having financial difficulties (Schmitz, Wagner, & Menke, 2001). The lack of awareness of the economic situation of the family may serve as a protective factor against depressive symptoms. Future research is needed on children's perception of poverty is needed to more fully explore this hypothesis.

Fifth, the inclusion of control variables into the models affected the mediating relations of interest in some instances. When children's prior levels of depressive symptoms were included in the model, one mediating chain was disrupted, one remained significant, and one new mediating chain became significant. Among 3rd graders, the previously significant relation between hostility and child-reported depressive symptoms became nonsignificant. This relation was particularly important because it was the second path in the mediation chain between poverty and child-reported depressive symptoms. Contrary to our hypothesis, the significant mediating role of hostility in the relation between poverty and child-reported depressive symptoms did not remain significant after controlling for prior depressive symptoms. The inclusion of prior depressive symptoms did not have the same deleterious effect on the indirect path between poverty, warmth, and parent-reported depressive symptoms. This significant mediation path remained even after controlling for prior depressive symptoms. Among 5th graders, the previously

nonsignificant relation between warmth and child-reported depressive symptoms became significant after controlling for children's prior depressive symptoms. Whereas we did not find support for warmth as a mediator in the relation between poverty and child-reported depressive symptoms among 5th graders in our original model, the inclusion of the control variable actually supported the mediation hypothesis.

When parental depression was included as a control variable in the model, the analyses with 3rd graders did not change. The significant indirect relations between poverty, warmth, and parent-reported depressive symptoms and between poverty, hostility, and child-reported depressive symptoms exist even after controlling for parental depression. These results lend support to our hypothesis that mediation relations exist even after controlling for parental depression. In contrast, among 5th graders, the mediating paths of interest changed somewhat with the inclusion of parental depression as a control variable. In particular, the paths between income-to-needs ratio and two parenting variables, warmth and encouraging independence, became nonsignificant after controlling for parental depression. The changes in significance were observed in both the parent-reported and child-reported depressive symptoms models. We looked to zero order correlations for understanding as to why BDI scores affected relations between poverty and positive parenting behaviors but not negative parenting behaviors. BDI scores were significantly negatively correlated with both warmth and encouraging independence but not significantly correlated with hostility or intrusiveness. Because BDI scores accounted for a significant amount of the variance in positive parenting, less variance was left over to be explained by poverty.

When children's status as either high or low cognitive risk for depression was included as a control variable in the model, the analysis with 5th graders did not change. The significant relations between poverty and all four parenting variables remained significant. In the analysis with 3rd graders, the indirect relation between poverty, warmth, and parent-reported depressive symptoms remained significant even after controlling for risk status. In contrast, several paths in the analyses with child-reported depressive symptoms became nonsignificant after controlling for risk status. These changes had a particularly dramatic effect on the mediating relations of interest in the model. Originally, we found evidence for the mediating role of hostility in the relation between poverty and child-reported depressive symptoms among 3rd graders. Contrary to our hypothesis, the mediating relations did not remain after controlling for risk status.

Several aspects of the current study suggest avenues for future research. First, children in this study were selected from a school-based community population. Half the sample was identified as being high risk for depression and was therefore expected to have an increased level of depressive symptoms; however, the sample was still community-based and therefore the incidence of Major Depressive Disorder was very low (1 of the 100 children). Future research with clinical samples might help us to better understand the relations between poverty, parenting, and depression in children. Second, our analyses were based on a relatively low sample size. Because we tested each model separately for 3rd and 5th graders, the total sample size was essentially cut in half for each analysis. Despite these limitations, we detected small/medium to medium/large effects, suggesting that our analyses had the power necessary to detect true relations between variables. Third, our study was cross-sectional. A longitudinal design is necessary to

make rigorous inferences about the causal relations between poverty, parenting, and depressive symptoms (Cole & Maxwell, 2003).

In sum, several aspects of our study significantly contribute to the literature on poverty, parenting, and depressive symptoms in children. Using a multi-method design and an ethnically and economically heterogeneous sample, we found that poverty was significantly related to hostility, warmth, intrusiveness, and encouraging independence in both 3rd and 5th graders. We also found some evidence for parenting as a mediator between poverty and depressive symptoms among 3rd graders. In particular, poverty was indirectly related to child-reported depressive symptoms through hostility; these indirect relations remained significant even after controlling for parental depression. Poverty was also indirectly related to parent-reported depressive symptoms through warmth. The indirect path between poverty, warmth, and parent-reported depressive symptoms remained significant even after controlling for prior depressive symptoms, parental depression, and cognitive risk for depression.

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