

CHAPTER 18

*Cognitive and Emotional
Outcomes for Children in Poverty*R. GABRIELA BARAJAS, NINA PHILIPSEN, AND
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For all its wealth, the United States has one of the highest rates of childhood poverty among industrialized nations. In fact, the average child in the United States is poorer than the average child in 12 of the 14 most developed nations (Rainwater & Smeeding, 2003). Today, roughly one in five of America's children are raised in poverty (DeNavas-Walt, Proctor, & Lee, 2005). Although the poverty rate fell between 1993 and 2000, current trends in the nation's poverty rate are not encouraging. Since 2000, the percentage of Americans living in poverty has increased from 11.3% to 12.7% (U.S. Census Bureau, 2004). Of the 37 million Americans living in poverty, children constitute a disproportionately vulnerable group; they compose 25.2% of the total population, yet they represent 35.2% of the people in poverty (DeNavas-Walt et al., 2005). Although white children constitute the majority of the poor in absolute numbers, Hispanic and African American children are overrepresented: 35% of African American

children and 28% of Hispanic children live below the poverty line compared with 10% of white children. The percentage of young children (age 5 and younger) living in poverty is higher than the percentage of older children (age 6 to 17) living in poverty: 20.5% versus 17%.

A child living in poverty lacks goods and services considered essential to human well-being (Betson & Michael, 1997). Not surprisingly, being raised in poverty has been linked with unfavorable early cognitive, verbal, and behavioral outcomes for young children (Aber, Bennett, Conley & Li, 1997; Brooks-Gunn & Duncan, 1997; Dearing, McCartney, & Taylor, 2001; Smith, Brooks-Gunn, & Klebanov, 1997). By age 2, differences on cognitive measures between children in and out of poverty tend to appear and such differences are of equal or greater size by age 5 (Duncan, Brooks-Gunn, & Klebanov, 1994; Klebanov, Brooks-Gunn, McCarton, & McCormick, 1998; Smith et al., 1997). Such delays in the preschool years increase the

likelihood of lower achievement in school, grade retention, and school dropout (Brooks-Gunn, 2003; Brooks-Gunn, Guo, & Furstenberg, 1993; Campbell & Ramey, 1994; Patterson, Kupersmidt, & Vaden, 1990; Rouse, Brooks-Gunn, & McLanahan, 2005). Similarly, early behavior problems are associated with subsequent emotional problems, such as poor peer relations, conduct disorder, depression, and delinquency (Baydar, Brooks-Gunn, & Furstenberg, 1993; Dodge, Pettit, & Bates, 1994; Sampson & Laub, 1994). Moreover, studies have shown that the earlier poverty strikes in the developmental process, the more deleterious and long-lasting its effects (Duncan, Yeung, Brooks-Gunn, & Smith, 1998).

This chapter will explore the cognitive and emotional consequences of growing up poor, and examine how these effects are revealed during the preschool, elementary school, and, to a lesser extent, the high school years. First, we review the complexities of measuring poverty and isolating its effects on child well-being. Second, findings from key large-scale studies on direct associations between poverty and child's verbal, behavioral, and cognitive outcomes are reviewed. The extent to which the timing, depth, and persistence of poverty influence these associations will also be considered. Third, we consider the potential pathways, as illustrated by the family stress model and the investment model, through which poverty may influence child well-being. Finally, we consider the role of public policy in the lives of children growing up in poverty.

Defining Poverty

The official poverty measure used in the United States is a monetary threshold known as the federal poverty level (FPL). Created in the 1960s, the federal poverty threshold represents the minimum standard of economic resources for families. Grounded in the assumption that food costs constitute one-third

of a family's budget (or did in the late 1950s and early 1960s), the threshold is based on anticipated food expenditures (thrifty food basket), and multiplied by three (Citro & Michael, 1995). The threshold varies according to the size of a family and the age of its members and is adjusted annually for the cost of living based on the consumer price index. In 2004, the poverty threshold for a family of four (two adults and two children) was \$19,157 (U.S. Census Bureau, 2004).

Although having a defined federal poverty level allows annual comparisons to be made, there are several criticisms of this measure. The first major criticism is that the measure is outdated: The changing face of the American economy and American family no longer falls in line with the measure that was created over four decades ago. As such, the measure does not accurately reflect differences in poverty across population groups and across time, nor does it account for the different needs of families in which parents do and do not work outside the home (parents who work outside the home have transportation, clothing, and child-care costs). Moreover, it does not consider the varied geographic differences in the cost of living, nor does it reflect the effects of policy initiatives (i.e., Earned Income Tax Credit [EITC] and health care) that significantly alter families' disposable income (Citro & Michael, 1995).

The second major criticism of the threshold is that it does not distinguish the degree of poverty a family is experiencing. Although the FPL allows for a dichotomous distinction between poor and nonpoor families, it underestimates the severity of poverty, as variations below the poverty line are extreme (Duncan & Brooks-Gunn, 1997). For example, nearly half of poor, young children live in households with incomes less than one half of the poverty line; in other countries, poor families are clustered more tightly around the line. This lack of sensitivity potentially underestimates material hardship (i.e., difficulty affording food and paying

rent) for families (i.e., Mayer & Jencks, 1989). Moreover, many families are “near poor”—they have incomes between 100 and 200% of the poverty line. Because they may be ineligible for certain government programs (the cut-off for federal programs differs; Currie, 1997) the near-poor, despite having higher incomes, may have difficulty in making ends meet (Edin & Lein, 1997; Leventhal & Brooks-Gunn, 2002).

Finally, the U.S. poverty line is based on an absolute (an income cut-off defined in 1960 and carried forward with cost of living increases). Other countries use a line based on a percentage of median income. As overall income in a country increases, so does the poverty threshold. These changes over time reflect alterations in living standards. A measure that incorporates aspects of a relative threshold has been proposed by the National Academy of Sciences (Citro & Michael, 1995).

Policy scholars sometimes use the income-to-needs ratio, which is calculated by dividing a household's income by the poverty threshold for that particular family. An income-to-needs ratio of 1.0 indicates that the family is living at the poverty threshold. Using this method, five different income-to-needs groups are identified: deep poverty (< .5), poverty (.5 to 1), near poor (1 to 2.0), lower-middle class (2.0 to 3.0), middle class (3.0 to 4.0), and affluent (4.0 and higher). Another measure involves calculating income quintiles; in general, the bottom quintile is poor, the second quintile is near poor. In either representation, about 40% of all children are poor or near-poor in the United States.

Relative poverty, the extent to which a household's financial resources fall below an average income (i.e., the median or mean income of all households in the United States), has been used as another marker of risk (Hernandez, 1997). Using this threshold, other families' incomes can change a family's poverty status, even if their income is relatively stable over time. Use of a relative poverty threshold gives a better picture of the

uneven distribution of national wealth: Although living standards and real incomes have grown because of higher employment and sustained economic growth over recent years, gains in wealth have been unevenly distributed across populations. It is estimated that not until a family of four reaches twice the FPL (\$40,000) can it adequately provide the basic necessities such as housing, food, and health care (National Center for Children in Poverty, 2005). Although 18% of children are technically poor (living at less than 100% of the FPL), another 22% (16 million) live in low-income households (household income between 100 and 200% of the FPL).

A family's economic situation changes over time: Job loss may push a family into poverty; an additional family member working may pull a family out of poverty. Such variation in families' economic histories has called for the need to also examine the timing, persistence, and depth of poverty in relation to child outcomes (McLeod & Shanahan, 1993). Persistence of poverty, measured via the number of years a family lives in poverty and whether a family cycles in and out of poverty, and depth of poverty (how far below the poverty threshold a family's income falls) have also been considered as moderators between poverty and child outcomes (Duncan & Brooks-Gunn, 1997).

Several mechanisms are driving today's poverty rates. Mainly, the rise in child poverty during the last 40 years is seen as resulting from changes in marriage and divorce rates, nonmarital fertility rates, and unemployment rates (Hernandez, 1997). The increase in number of single parents, both those who have children outside of marriage and those who experience divorce, is one of the most important causes of the rise in number of poor children: children in single-mother households are more likely to be poor than are those in two-parent households (McLanahan, 1997; McLanahan, 2004; McLanahan & Sandefur, 1994). For example among single-mother families,

poverty rates for Hispanic, African American, and white families in 2004 were 39.3, 39.5, and 21.7%, respectively. The corresponding proportions for children in two-parent families were 21.2, 23.7, and 6.5%, respectively (DeNavas-Walt et al., 2005).

Does Poverty Matter?

A consistent concern in studying the effects of poverty is that the estimated effect of income might be spurious. That is, unmeasured factors may in fact be responsible for the association between parental income and child outcomes (or at least a large part of the association). For example, perhaps parental mental health is the critical element in children's success. Researchers have attempted to disentangle this question and have found that poverty has a major effect on some child psychiatric disorders beyond family characteristics (Costello, Compton, Keeler, & Angold, 2003). In the Great Smokey Mountains study, a representative population sample of 1,420 rural children ages 9 to 13 years were given annual psychiatric assessments for 8 years. Halfway through that study, a casino opening on the Indian reservation gave every American Indian an income supplement that moved 14% of the study families out of poverty. Before the casino opened, persistently poor and ex-poor children had more psychiatric symptoms (4.38 and 4.28 respectively) than the never-poor children (2.75). After the opening of the casino, however, levels among the ex-poor fell to those of the never-poor children, whereas levels among those who were persistently poor remained high. Similar results were found in non-Indian children whose families moved out of poverty during the same period. If the reason for the association between poverty and child psychopathology was the poor mental health of families in poverty, relieving the poverty would have left the association intact. But this did not happen. Instead, this natural experiment found that removal from poverty

brought children's psychopathology levels to the level of children who'd never been poor.

Using non-experimental data, researchers do find that income effects are smaller when a large number of other family characteristics are controlled (Blau, 1999; Klebanov, Brooks-Gunn, Chase-Landsdale, & Gordon, 1997; Mayer, 1997). Conventional methods probably overestimate the "true" effect of income by not controlling for the effect of all observed and unobserved parental characteristics (Mayer, 1997).

In an attempt to isolate the effects of poverty on children's development, more recent large-scale research initiatives have frequently over-sampled low-income families as well as included measures of these other known correlates to child development. The use of large, longitudinal studies such as the Infant Health and Development Program (IHDP), the Panel Study of Income Dynamics (PSID), the National Longitudinal Survey of Youth (NLSY), the National Institute of Child Health and Human Development's Study of Early Child Care (NICHD SECC) and the Early Childhood Longitudinal Study (ECLS-K) have remedied many methodological problems as they include adequate assessments of child development and families' economic status (Brooks-Gunn, Berlin, Leventhal, & Fuligni, 2000). These studies find significant income effects, although they are not as large as some of the earlier studies suggested (see also Duncan et al., 1998, for an example of a sibling-comparison model).

LINKS BETWEEN POVERTY AND CHILDREN'S DEVELOPMENT

Early Childhood

Cognitive Outcomes. The emotional, physical, and intellectual environment that a child is exposed to in the early years of life affects early learning, self-regulation, and perhaps brain organization (Carnegie Corporation,

1994; Shonkoff & Phillips, 2000). Consequently, young children may be more vulnerable to developmental problems should their environment prove especially impoverished. For example, children living below the poverty threshold are more than 1.3 times as likely as nonpoor children to experience learning disabilities and developmental delays (Brooks-Gunn & Duncan, 1997).

Measures of cognitive development include children's intelligence, verbal and reasoning skills, and scholastic achievement or, for young children, school readiness. Until recently, most poverty research comparing outcomes such as cognition, school achievement, and behavior problems in the poor and nonpoor has focused on older children and adolescents, rather than on young children, partly because most longitudinal data sets target adolescents and young adults (Brooks-Gunn et al., 2000; Brooks-Gunn, Duncan, et al., 1995; Brooks-Gunn, Klebanov, & Liaw, 1995).

Negative associations between family poverty and children's cognitive outcomes tend to emerge at age 2 years (Klebanov et al., 1998; Smith et al., 1997). Using the IHDP, a multi-site, randomized intervention for almost 1,000 premature and low birth weight infants, Klebanov and colleagues (1998) tested the link between family poverty (defined as family income at or below 150% of the FPL) and child IQ scores measured at ages 1, 2, and 3 years. Family risk factors associated with poverty, such as single parenthood and low maternal education, were found to have a negative effect on age 1 IQ scores, whereas income itself did not. At age 2, however, both family risk and income predicted lower scores, with poor children's scores averaging 4.4 points lower than those of nonpoor children.

In addition to emerging at age 2, the negative effects of poverty on children's cognitive outcomes continue and may even increase throughout early childhood. Findings from the ECLS-K study found that during kindergarten, low socioeconomic status (SES) children caught up to their peers in basic

reading skills (i.e., letter recitation) but became even further behind their classmates on more complex skills (i.e., reading words; Denton, West, & Watson, 2003). Such results suggest that starting around age 2, children reared in poverty generally score between 15% and 40% of a standard deviation lower on standardized cognitive assessments compared with their nonpoor peers. These effects are sustained when children reach school age and are accompanied by lower levels of school achievement, higher levels of grade retention, and eventual dropout among poor children and adolescents (Aber et al., 1997; Brooks-Gunn & Duncan, 1997).

Behavioral Outcomes. The first years of life herald the development of capacity to form trusting relationships, which set the foundation for emotional regulation and subsequent relationships (Siegel, 1999). Although the link is not as strong as with cognitive outcomes, existing research indicates that young children living in poverty are more likely than nonpoor children to display emotional or behavioral problems (Lipman, Offord, & Boyle, 1994; Pagani, Boulerice, & Tremblay, 1997). Young children's social and emotional development is often measured through parental report of the child's behavior. These behaviors are often grouped along two dimensions: internalizing behaviors such as anxiety, withdrawal, and depression and externalizing behaviors such as aggression, fighting, and acting out (Brooks-Gunn & Duncan, 1997; McLeod & Shanahan, 1993). Three-year-olds in deep poverty displayed more internalizing behavior symptoms than did less poor children. Additionally, the gap between the groups widened by the time the children were 5 years old (Brooks-Gunn, Leventhal, & Duncan, 1999).

Childhood and Adolescence

Cognitive Outcomes. Cognitive measures in childhood and adolescence are assessed via a

child's school achievement, years of schooling, receipt of special education, grade failure, and general engagement in school. Although research on children's test scores at age 8 found that the effects of income on these scores were similar in size to those reported for 3-year-olds (Smith et al., 1997), few studies link long-term family income to cognitive ability and achievement measured during the school years (Brooks-Gunn & Duncan, 1997). The research that has related family income measured during adolescence on cognitive ability has found modest effects (Peters & Mullis, 1997), consistent with literature showing relatively small effects of income on school attainment. It should be noted, however, that such studies' measurement of parental income is restricted to the child's adolescent years, potentially biasing the findings.

To test the importance of timing on income effects, Duncan and colleagues (1998) estimated completed schooling models using three income measures: average parental income between birth and age 5, average income between ages 6 and 10, and average income between ages 11 and 15. The only stage for which parents' income significantly predicted high school graduation was early childhood. These findings suggest that the primary reason that parents' income during middle childhood or adolescence predicts completed schooling is that income during those periods is correlated with income in early childhood.

Other studies using the PSID and the NLSY have also found that poverty status has a small negative impact on years of schooling obtained (Haveman & Wolfe, 1994; Teachman, Paasch, Day, & Carver, 1997). Much of the observed association between income and schooling appears to be the result of confounding variables such as parent education, family structure, and neighborhood characteristics. In general, the links between poverty and school achievement in childhood and adolescence are likely to be statistically significant, yet small

(Brooks-Gunn & Duncan, 1997). For example, a recent study of the NICHD did find that children experiencing poverty later (ages 4–9 years) had less favorable developmental outcomes than those experiencing poverty in infancy (NICHD Early Child Care Research Network, 2005).

Research with other data sets examining measures of adolescent achievement and aspiration (such as high school rank and the number of courses taken) has also concluded that the effect of adolescent poverty on educational attainment appears to be limited. For example, the effect of poverty on continuation to postsecondary schooling in the Wisconsin Longitudinal Study (WLS) fell by 8% upon controlling for mental ability (Hauser & Sweeney, 1997).

Behavioral Outcomes. Social and emotional problems in late childhood are usually measured by teacher and parental reports, and focus on outcomes such as self-efficacy, self-esteem, depression, anxiety, and aggression. During the school years, economic circumstances seem to be important, but it is unclear whether behavior problems during this time merely reflect the continuation of problems that began in early childhood (Tremblay, Pihl, Vitaro, & Dobkin, 1994).

Studies looking at older children have found correlations between family income and number of behavior problems (Costello et al., 2003). In the Great Smokey Mountains study mentioned previously, an overall negative correlation was observed between family income and number of behavioral problems (i.e., depression, anxiety, conduct disorder, and oppositional defiance) in children ages 9 to 13. In the same sample, persistence of poverty was found to have varying effects on internalizing and externalizing behaviors. The children in this study who experienced an increase in income as a result of the introduction of a casino demonstrated a reduction in externalizing symptoms. Interestingly, their

internalizing symptoms were unaffected by the change (Costello et al., 2003). Similar trends were observed in the internalizing symptoms of a subsample in the NLSY experiencing changes in family income. It is hypothesized that internalizing symptoms persist because income increases do not influence changes in the kinds of experiences that tie poverty to depressive symptoms (McLeod & Shanahan, 1996).

Gender differences have been reported in some but not most studies. Analyses from the Charlottesville Longitudinal Study on 8- to 10-year-olds revealed that the relationship between poverty and externalizing behavior was stronger for the boys than it was for the girls. Moreover, among children experiencing persistent poverty, the internalizing behaviors seemed to decrease over time for girls and increase over time for boys (Bolger, Patterson, Thompson, & Kupersmidt, 1995).

Few studies have focused on the behavioral outcomes for adolescents as they relate to income levels. However, some evidence indicates that adolescents' perception of family economic hardship predicts both increased levels of anxiety and decreased levels of self-esteem (McLoyd, Jayaratne, Ceballo, & Borquez, 1994).

In sum, the association between poverty and child development is observed more so in cognitive measures during the early years and in behavioral measures later in childhood and adolescence. We next consider the extent to which the depth, persistence, and timing of poverty influence these associations.

DEPTH, PERSISTENCE, AND TIMING OF POVERTY

Depth of Poverty

Links between income and child cognitive outcomes seem to be nonlinear because income has consistently been found to have a greater

influence on child cognitive outcomes for those at the lowest end of the income distribution (Dearing et al., 2001; Duncan et al., 1998). For example, a comparison of the cognitive scores of 3- to 6-year-old children in six different income-to-needs groups: deep poverty (< .5), poverty (.5 to 1), near poor (1 to 1.5), lower-middle class (1.5 to 2), middle class (2 to 3), and affluent (> 3), found the largest cognitive deficits (8 to 12 points) for children living in deep poverty in comparison with those who were not poor (Smith et al., 1997). Similarly, another study comparing poor and middle-class children 3 years and older found that children living below the poverty line scored about 9 to 10 percentage points lower on math and verbal subtests than did children living at three times the poverty threshold. Children from families with incomes closer to, but still below, the poverty line also did worse than children in higher-income families, though the differences were smaller (Korenman, Miller, & Sjaastad, 1995). Such differences are significant because a 6- to 13-point difference might mean the difference between being placed in a special education class or not (Brooks-Gunn & Duncan, 1997).

The association between depth of poverty and behavioral outcomes is similar to effects on children's cognitive scores—the deeper the poverty, the stronger the negative impact on behavioral outcomes. Analyses from the IHDP revealed that 3-year-olds in deep poverty displayed more internalizing behavior symptoms than did less poor children, with an even greater difference between the groups at age 5 (Brooks-Gunn et al., 1999).

Such findings indicate that income may matter more at deeper levels of poverty and also suggest that the development of children in poverty may be more sensitive to changes in income than the development among nonpoor children (Duncan et al., 1998; Ryan, Fauth, & Brooks-Gunn, 2006). To test such a hypothesis, Dearing and colleagues (2001) used the NICHD Study of Early Child Care to model

the associations between changes in income-to-needs and 36-month child outcomes, and found that when children from poor families experienced increases in income-to-needs that were at least 1 standard deviation (about 70%) higher than the mean change for poor families, they displayed outcomes similar to their nonpoor peers. Interestingly, similar changes in income-to-needs for children from nonpoor families proved to be of little importance, suggesting that poorer families benefit more from an increase in income than do nonpoor families. Analogous trends have been found between income and completed years of schooling (Duncan & Brooks-Gunn, 1997; Smith et al., 1997).

Persistence of Poverty

Persistent poverty is consistently linked with more adverse effects on preschool children's cognitive development than is transitory poverty, with children experiencing either type of poverty scoring lower than never-poor children (Duncan et al., 1994; Korenman et al., 1995; Smith et al., 1997). Effect sizes are substantial. For instance, children in the IHDP who lived in poverty 4 of their first 5 years had IQ scores that were on average 9 points lower than those of nonpoor children (about three-quarters of a standard deviation). Children living in poverty for some but not all of the 4 years had IQ scores only about four points lower (less than a third of a standard deviation) than those of nonpoor children (Duncan et al., 1994). Smith and colleagues found similar results for children in the IHDP and NLSY datasets—children who experienced consistent poverty during the first 5 years had lower scores on all assessments compared with children who had been poor for transient periods (Smith et al., 1997). Such findings suggest that children who experience longer durations of poverty will lag behind nonpoor or temporarily poor classmates.

Persistence of poverty also has important associations with child behavioral development. In the IHDP, children who were persistently poor were more likely to display both internalizing and externalizing behavior problems when compared with never poor children (Duncan et al., 1994). Interestingly, children who experience persistent poverty did not display the same frequency or the same kind of behavioral problems as did children who experience short-term poverty. For example, 4- to 11-year-old children in the NLSY displayed more internalizing symptoms when persistent poverty was experienced and a higher presence of externalizing behaviors when current poverty was experienced. The different associations between behavior type and length of poverty suggests that persistent poverty evokes feelings of dependence, unhappiness, and anxiety, but current poverty has a larger influence on disruptive behaviors and peer conflict (McLeod & Shanahan, 1993; however, these findings are not consistently found). A second study using the NLSY data from children ages 3 to 11 also found that on average, children living in long-term poverty fared worse on behavioral outcomes, ranking 3 to 7 percentile points higher on behavior problems than did nonpoor children. However, children in long-term poverty experience fewer behavioral problems than did children who experienced only 1 year of poverty (Korenman et al., 1995).

Timing of Poverty

Previous research has resulted in conflicting conclusions on the importance of timing of poverty on child cognitive and behavioral outcomes. Some findings suggest that poverty in infancy is more deleterious to long-term behavioral and achievement outcomes than is poverty in early childhood or adolescence (Duncan & Brooks-Gunn, 2000), but others suggest that children experiencing poverty later (ages 4–9 years) have less favorable

developmental outcomes. Data from the NICHD Study of Early Child Care and Youth Development (SECCYD) were analyzed to determine the relationship between the duration and timing of poverty to children's cognitive and social development by comparing children who were never poor, poor during infancy (0–3 years of age), poor only after infancy (4–9 years of age), and chronically poor on measures of language and school readiness skills (NICHD Early Child Care Research Network, 2005). Where differences between early and late childhood occurred, children who experienced poverty after infancy had less favorable outcomes. Consistent with previous research, children in persistently poor families had the lowest levels of performance of the four groups on cognitive language skill measures, and their scores were significantly different from those in families that experienced shorter-term poverty. Moreover, the chronically poor families were more seriously and consistently disadvantaged than were those in transitory poverty on almost every indicator measured. Differences in the conclusions of these studies may be the result of differences in the study designs. Duncan and colleagues (1998) used sibling comparison, but the NICHD study (2005) did not, resulting in a stronger design that controlled for family variables caused by sibling design.

In sum, there exists an abundance of evidence indicating that family income can substantially influence child well-being. The association between income and child outcomes is particularly complex when one considers the effects of depth, persistence, and timing of poverty. Family income seems to be more strongly associated with children's ability and achievement-related outcomes than to emotional outcomes. In addition, the links are particularly pronounced for those who live in extreme poverty (< .5 FPL) and for children who live below the poverty line for multiple years. Although income effects on outcomes

such as depression and antisocial behavior are smaller than those on IQ, early poverty may put children at a disadvantage that does not abate even if families leave poverty. The frequency and type of behavioral problems experienced may depend on the persistence of the poverty. The next two sections describe processes through which poverty may cause these outcomes and the roles public policy can play in moderating these links.

POVERTY PATHWAYS AND PROCESSES

The literature reviewed thus far highlights the cognitive and behavioral difficulties that poor children face but has not focused on the processes by which income might influence child development. In this section, a set of processes or "pathways" is discussed. By implication, each pathway is linked to both family income and one or more child outcomes (Brooks-Gunn & Duncan, 1997).

Economic deprivation may be negatively linked with parents' psychological health, parenting skills, the amount of time spent with the child, the social capital available to the family, the home environment, and parent-child interactions (Boisjoly, Duncan, & Hofferth, 1995; Dodge et al., 1994; McLoyd, 1990; Sampson & Laub, 1994). Consequently, most research examining potential pathways focuses on the family, home, and other aspects of a child's environment. Here, we will concentrate on two main theories relating poverty and family processes to child development: the "family stress theory," which focuses on the relationships and interactions within the family (Conger & Elder, 1994; Elder, 1999; Elder & Caspi, 1988), and the "investment model," which emphasizes the role of income in parents' ability to provide material goods, services, and experiences as well as human capital and home environment (Haveman &

Wolfe, 1994; Mayer, 1997). Disruptions in any of these areas have been linked to less than optimal child development both in the social and behavioral (Conger et al., 1992; Conger, Patterson, & Ge, 1995; Dodge et al., 1994; McLoyd, 1990; Sampson & Laub, 1994) as well as cognitive domains (Jackson, Brooks-Gunn, Huang, & Glassman, 2000; Linver, Brooks-Gunn, & Kohen, 2002; Yeung, Linver, & Brooks-Gunn, 2002).

The Family Stress Model

Children show the healthiest outcomes when they experience parenting characterized by warm parent-child interactions, cognitive stimulation, clear limit setting, and adequate monitoring (Bornstein, 1995). In contrast, parenting that is erratic and harsh or emotionally detached has been linked to insecure infant-mother attachments, with potentially long-lasting effects on socio-emotional, behavioral, and cognitive outcomes (Shonkoff & Phillips, 2000). Research examining financial pressure and income deprivation has found that both seem to undermine parents' psychological and emotional resources, thereby disrupting parenting styles, parent-child interactions, and, consequently, child development (Conger & Conger, 2000; Conger & Elder, 1994; Dodge et al., 1994).

The family stress model was developed to examine how emotional distress and marital conflict, brought about by the demands of economic pressure, affect adolescent adjustment (Conger, Rueter, & Conger, 2000; McLoyd, 1989). Research on financial loss (resulting from unstable work, varying income levels, and unemployment) is distinct from poverty studies, in that the former examines how declines in income alter family dynamics, rather than how persistent deprivation shapes them (Ryan et al., 2006). This phenomenon was studied by Elder (1999), who found that parental emotional distress caused by income loss during the Great Depression led

to marital conflict and punitive parenting, especially by fathers. The children in this study, particularly the boys, who experienced the punitive and erratic parenting tended to have poorer adolescent adjustment and academic outcomes (Elder, 1999). Conger and colleagues found similar associations among families from rural farming communities in the Midwest (Conger et al., 1992), where economic pressure triggered maternal depression and marital conflict, decreasing nurturant parenting and resulting in a greater number of adjustment problems for children in their teenage years. Such findings indicate that a family's economic loss may influence child development indirectly through its emotional impact on parents.

The family stress model has been extended to address the effects of poverty on parents and children. Like families who experience income loss, parents in persistent poverty also struggle to supply food, shelter, safety, and clothing to their families. These struggles have been correlated with higher levels of depression and anxiety, which has been negatively associated with warm parenting (McLoyd, 1990). In fact, the association between parent stress and negative parenting is thought to be stronger for families with lower incomes because maternal depression and poor parenting practices appear to exert a stronger influence over the developmental outcomes of low-income children than of nonpoor children (Pettersen & Albers, 2001). Additionally, the association between parenting and child outcomes is more pronounced for families with young children. This might be because infants and toddlers are more dependent on nurturance from parents than are older children (Elder & Caspi, 1988).

Parental stress caused by economic circumstance can influence a variety of parenting behaviors. For example, poverty has been linked to harsh parenting and physical disciplining practices (Dodge et al., 1994; Linver et al., 2002). This link might occur because

parents resort to physical punishment to keep their children from engaging in dangerous or health-threatening activities, or as a direct result of increased parental stress. A second parent behavior influenced by poverty is parental supportiveness and warmth. Parent stress may lead parents to be less attentive and less responsive to the needs of their child (Dodge et al., 1994; Jackson et al., 2000; Smith, Brooks-Gunn, Kohen, & McCarton, 2001). Levels of parent supportiveness toward children may also be lower because poor parents often don't receive much social support themselves, which, when received, can mitigate parental stress (Jackson et al., 2000).

How parents adapt to the stress of poverty may influence how family poverty will influence children. If parents are able to maintain positive parenting behaviors, despite added stress, the negative effects of poverty might be buffered for the child. Families living in poverty with parents who develop positive and supportive relationships with children, create an environment that can reduce the developmental risks that are normally associated with economic deprivation for children (Cowen, Wyman, Work, & Parker, 1990; McLoyd, 1990). For example, fathers who experienced the economic effect of the Great Depression, but were able to maintain emotional stability despite financial losses, also experienced less marital conflict and were able to practice consistent parenting. These parental behaviors were most likely to influence the self-esteem and achievement among the children in the study (Elder & Caspi, 1988). Similarly, a more recent study found that for families in an economically depressed community, those that were able to remain nurturing and involved in parenting had children who were more likely to do well in school, have positive peer relationships, have more self-confidence, and exhibit less emotional distress (Conger & Conger, 2000).

Mothers who have stable emotional support are less likely than are mothers without

social ties to report parenting in coercive and punitive ways (McLoyd, 1997). Although parents' resources somewhat determine the availability of social support, public policy initiatives such as social services and early intervention can help provide this kind of assistance. The roles of policies and programs in this regard are addressed in a later section.

The Investment Model

Although the family stress model focuses on the association between economic deprivation and children's socio-emotional environment, the investment model focuses on the link between poverty and children's resources. Resources include money with which the family can purchase material goods, services, and experiences as well as other resources such as parental time, social capital, and the home environment. The most detrimental outcomes occur for families experiencing deficits in many of the resource categories considered under the investment model. The independent influences of these resources as mediating pathways are considered here. As with parenting behaviors, these pathways can serve as either protective or risk factors.

Limited income can influence the amount of cognitively stimulating materials found in a child's environment as well as the learning opportunities a child experiences. Data from the NLSY indicate that children of all ages from economically impoverished families have limited access to a variety of learning materials and experiences. These children are less likely to go to museums, experience the performing arts, or participate in lessons aimed at enhancing their skills (Bradley, Corwyn, Burchinal, McAdoo, & Coll, 2001). Researchers have found that if children are exposed to cognitively stimulating toys, books, and games, the negative effects of poverty on behavioral and cognitive child outcomes diminish (Yeung et al., 2002).

Moreover, the number of learning materials and stimulating experiences provided to a child explain a significant amount of variation in IQ scores during the preschool years (Duncan et al., 1994; Linver et al., 2002; Yeung et al., 2002). However, for young children, the value of learning materials and experiences is often mediated through capable adults or peers (Saegert & Winkel, 1990). Learning materials and activities can also provide opportunity for social exchanges, often engaging both the child and an adult and resulting in generally productive time spent together (Bradley & Corwyn, 2002).

The time a parent spends with his or her child is, in itself, a valuable commodity. Under the investment model, parental employment is both positive, because it increases income, and negative, because it decreases the amount of time spent on stimulating activities with the child. The challenge of balancing monetary and time-related resources is especially pronounced for low-income families, for although slight changes in income matter more for children in poverty than children at higher income levels (Dearing et al., 2001), low-income parents who work sacrifice time with their children without gaining much buying power in exchange (Ryan et al., 2006).

Social capital is another pathway through which poverty may be operating on children's outcomes. In short, social capital refers to help and support from family and friends in the form of both time and money (Boisjoly et al., 1995). Social support can help parents maintain emotional health and positive parenting in the face of economic adversity (Cowen et al., 1990). Mothers who receive social support may feel less isolated and less overwhelmed by their economic situation and therefore practice better parenting (McLoyd et al., 1994). When support comes in the form of financial assistance to the family, some of the economic strain and the negative outcomes associated with it may be relieved (Jackson et al., 2000).

The physical home environments of children in poverty play an important role in both cognitive and behavioral outcomes (Yeung et al., 2002). A study using data from the NLSY found that the physical environments of families in poverty are generally less safe, less clean, darker, and more cluttered than are those of nonpoor families. The same study found that these differences were the greatest during early childhood years, when poverty may have the greatest influence on child outcomes (Bradley et al., 2001).

Child health and nutrition is also influenced by parental income. Poor children suffer worse health than do middle-income children, who fare worse than the affluent (Case, Lubotsky, & Paxson, 2002). Poor children experience increased rates of low birth weight and elevated blood levels compared with nonpoor children (Brooks-Gunn & Duncan, 1997). These conditions have been associated with reduced performance on cognitive measures. In particular, low birth weight babies experience increased rates of learning disabilities and classroom behavior problems compared with those born of normal weight (Klebanov, Brooks-Gunn, & McCormick, 1994). Children in poverty also experience higher rates of growth stunting (low height for age), which is negatively linked with cognitive test scores and substantial short term memory impairment (Korenman et al., 1995).

The neighborhoods that families live in can also be considered an additional investment made by parents, as residence in impoverished neighborhoods has implications for child-care settings, schools, and peer groups (Mayer & Jencks, 1989; NICHD Early Child Care Research Network, 1997). A growing body of research suggests that the concentrations of poor and affluent neighbors have differential influences on child and adolescent development (Brooks-Gunn, Duncan, & Aber, 1997; Jencks & Mayer, 1990; Leventhal & Brooks-Gunn, 2000). For example, residence in

neighborhoods with mean incomes greater than \$30,000, compared with less affluent neighborhoods (mean incomes \$10,000–\$30,000) has been positively associated with 3-year-olds' IQ scores (Brooks-Gunn, Duncan, Klebanov, & Sealand, 1993). This positive association was sustained when children entered school 2 years later (Duncan et al., 1994). Conversely, studies have documented a negative association between neighborhood poverty and early school-aged children's math and verbal achievement (Chase-Lansdale, Gordon, Brooks-Gunn, & Klebanov, 1997). Neighborhood SES has also been positively associated with behavior problems, particularly internalizing symptoms (Chase-Lansdale et al., 1997).

Community analyses suggest that the structural and demographic features of neighborhoods and communities are likely to affect child and adolescent outcomes indirectly, through community level social and cultural processes such as community monitoring, the number and quality of social ties, organizational participation and value consensus. For example, neighbors may serve as role models and exercise social control, helping young people to internalize social norms and learn the boundaries of acceptable behavior (Gephart, 1997; Jencks & Mayer, 1990; Xue, Leventhal, Brooks-Gunn, & Earls, 2005).

Child Care

In addition to the home environment and neighborhood, parents make investment in their children by placing them in nonmaternal child care. Research on child care suggests that children's experience in care can affect their cognitive and social development in early childhood. The size and direction of these effects, however, depend on age of entry into care, quality of care, and parents' poverty status (Brooks-Gunn, Han, & Waldfogel, 2002; NICHD Early Child Care Research Network, 2002). For an in-depth review of the effects of

child care on developmental outcomes, please refer to Chapter 6 by Johnson, Tarrant, & Brooks-Gunn, also in this book.

In conclusion, the family stress and investment models have overlapping pathways through which poverty influences child outcomes. The impact of poverty on parents' mental health is one way in which children are negatively affected by economic impoverishment. A second way is via the limitations poverty places on a family's ability to obtain resources of varying kinds. These two models may work independently or may work concurrently while interacting with one another. Both models provide processes in which policy can intervene to improve the lives of poor children and their families. Such policies will be discussed in the next section.

POLICY IMPLICATIONS

Based on evidence reviewed in the present chapter and elsewhere, little doubt should remain regarding the deleterious impact that growing up in poverty, especially deep, persistent poverty, can have on young children and their development. Because childhood is a period of both great opportunity and great vulnerability, several mechanisms for effective intervention have garnered increased attention in recent years. Of particular interest to those concerned with the well-being of children reared in poverty has been the initiation of income policies and in-kind support programs, which have both been shown to have an immediate impact on the number of children living in poverty and on the circumstances in which they live (Brooks-Gunn & Duncan, 1997). Given what is known about the pathways through which poverty affects early development, and specifically the mediating role that family stress and investment can play, social policies that increase family income and parental employment (cash or income transfer programs),

and that provide in-kind services (such as nutrition, health care, and education) may mitigate the negative effects of poverty on development.

Here, we briefly consider several strands of cash transfer programs and in-kind services as modes for intervening in the lives of poor children by attempting to diminish family stress while increasing investments in children and improving overall family income. In particular, early intervention programs; welfare policies; the EITC; Women, Infants, and Children (WIC); food stamps; and free school lunch are mechanisms through which the negative effects of poverty on child outcomes may be limited.

Early Intervention

Early intervention programs are a promising way to facilitate favorable outcomes among low-income children (Brooks-Gunn, 1993). Early intervention is a broad term that encompasses many ideas and programs, but usually refers to programs that target families with young children and provides some sort of center-based care, sometimes in conjunction with home visits, to improve both cognitive and behavioral outcomes for children. Early interventions target young children, sometimes starting during pregnancy, to increase the effect on outcomes before the child enters school. They operate under the theory that learning is cumulative, and that once a trajectory is set, it becomes increasingly difficult to change it over time.

Many early intervention programs have been evaluated for their short-term effects (before or at age 5) and long-term effects. The short-term findings from experimental studies on early intervention for at-risk children are consistent: “child focused” early care that provides an enriching learning environment can enhance disadvantaged children’s cognitive, communication, and language skills (Barnett, 1995; Brooks-Gunn et al., 1994). Specifically, these programs

have been shown to arrest or reduce declines in poor children’s IQ scores relative to non-poor children during the preschool years.

The Abecedarian Project began in the 1970s and has since served as an exemplar of early childhood programs. A randomized, controlled trial, the study included 111 children and involved an intensive, cognitive, language, and socio-emotional enhancing curriculum for the first 5 years of life (Burchinal, Campbell, Bryant, Wasik, & Ramey, 1997; Committee on Ways and Means, 2000). Short-term effects indicated elevated reading and math abilities for program children when compared with treatment children, and long-term assessments demonstrated sustained gains in IQ, math, and reading for program children through age 12; positive effects for reading continued to be found when program children were 15 (Campbell, Pungello, Miller-Johnson, Burchinal, & Ramey, 2001; Campbell & Ramey, 1994, 1995).

Studies such as Project CARE and IHDP have both shown substantial short-term gains in IQ and language skills. Both interventions used high-quality center care as part of their program models (Barnett, 1995; Brooks-Gunn, Klebanov, Liaw, & Spiker, 1993; Committee on Ways and Means, 2000). Long-term effects from IHDP have experienced “fade out” for the lighter low birth weight children from the sample; however, the heavier low birth weight children are still experiencing benefits from the intervention at age 18 (McCormick et al., 2006).

More recently, an experimental study of Early Head Start reported positive increases in children’s cognitive outcomes at age three. The program also positively affected children’s engagement with their parents, attentiveness during play, and decreased aggressive behavior (Love et al., 2002). In addition, long-term impact studies with Head Start participants have found higher scores on vocabulary tests, less grade repetition, and more years of completed schooling (Currie & Thomas, 1995; Garces, Duncan, & Currie, 2002).

Program evaluations that have examined long-term links between early intervention and children's behavior problems have mixed results. Participants in the Perry Preschool Program in Michigan, a model preschool program that emerged from the 1960s War on Poverty, experienced reductions in delinquent behavior in early adolescence and less involvement in the criminal justice system at 27 years of age compared with the children who did not participate in the intervention program (Schweinhart, Barnes, Weikart, Barnett, & Epstein, 1993). Similar findings, however, have not been found in other programs. For example, an examination of the long-term behavioral effects for Abecedarian children (after age 15) found no significant results (Campbell et al., 2001).

Although long-term effects have varied across studies, the short-term impact findings from experimental studies on early intervention for at-risk children suggest that early intervention programs can help close the achievement gap between poor and nonpoor children before they enter school. By providing a safe and enriching environment where children can play with learning materials, be read to, and go on field trips, center-based intervention programs influence processes within the family stress model as well as the investment model. Parents can improve their parenting skills by participating in parent involvement activities and by sharing information with center teachers and caregivers. In addition, for programs that also offer a home visiting component, home visitors often focus directly on teaching parents new skills. Home visiting may also result in parents feeling as though they have social support, thus potentially decreasing feelings of isolation and stress (Barnett, 1995; Brooks-Gunn, Duncan, et al., 1997; Shonkoff & Phillips, 2000).

Welfare Reform

A second form of intervention is income supplementation or welfare. The Personal

Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) marked the repeal of Aid to Families with Dependent Children (AFDC), and the creation of its present substitute, Temporary Assistance for Needy Families (TANF). Funded through block grants, TANF was designed to provide states with greater flexibility in determining eligibility and benefit levels. In addition, sanctions can be used by states to reduce or eliminate cash welfare benefits when recipients do not comply with work requirements or other program rules (Reichman, Teitler, & Curtis, 2005). Its purpose is fourfold: (1) to provide assistance to families in poverty so that children can remain in their homes, (2) to promote job training, work, and marriage, (3) to prevent childbirth outside of marriage, and (4) to encourage the formation of two-parent families (Greenberg et al., 2002).

The reform provisions that may have the largest impact on child outcomes include the work mandates, income supplements, time limits, and noncompliance sanctions (Duncan & Brooks-Gunn, 2000). Under TANF, recipients are required to work after 2 years of cash assistance or else face sanctions or other penalties. In addition, welfare is limited to a total of 60 months (consecutive or not) for any recipient. These changes as well as many others will affect the amount of income available to children living in poverty. Sanctions and restrictions are likely to lead to denial of benefits for the families with the youngest children if those children are born toward the end of the 5-year time limit of receipt for the family (Duncan & Brooks-Gunn, 2000). Researchers recommend that states consider exempting families with young children from time limits, sanctions, and restrictions. Evidence that this may give incentive for some mothers to continue bearing children to receive more welfare is weak (Duncan & Brooks-Gunn, 2000).

The literature regarding the impact of welfare receipt on children is mixed. One study found that welfare receipt at age 1 was

negatively associated with age 3 IQ scores; scores were especially low for children who left AFDC by age 3 without leaving poverty (Smith et al., 2001). Other studies have found unemployment to be positively associated with children's behavior problems (Smith, Brooks-Gunn, Klebanov & Lee, 2000) regardless of welfare receipt, suggesting that low-income rather than welfare status could be driving negative effects on children. Inconclusive results with older children have also been documented. Some studies have found negative associations between family participation in a welfare program that mandated employment and provided earning supplements and 11-year-olds' achievement scores (Morris, Duncan, Clark-Kauffman, 2003), whereas other studies have found favorable school outcomes among preadolescent boys whose families participated in similar programs (Mistry, Crosby, Huston, Casey, & Ripke, 2001). These results suggest that the impact of altering parental investments in children in terms of time and money may vary given the context and population to whom the program is offered.

Welfare to work policies that impose recipient time limits have had differing effects on children based on the risk of welfare dependency of the family. In general, children may not benefit from parents' increased employment if it is not accompanied by sufficient increases in income to lift families out of poverty (Morris, Bloom, Kemple, & Hendra, 2003). Moreover, a small but growing literature on the effects of welfare sanctioning under PRWORA indicates that compared with non-sanctioned mothers, those who are sanctioned are at a high risk for food insecurity, utility shutoff, financial hardship, and homelessness or eviction (Reichman et al., 2005).

In addition to welfare benefits, other promising social policy programs aim to supplement the incomes of working families with children. Most notably, the EITC, a tax reduction and wage supplement for low- and moderate-income working families, lifts

more than 4 million families and 2 million children out of poverty every year—making it the nation's most effective antipoverty program for working families (Nagle & Johnson, 2006). Additionally, in-kind programs like WIC, food stamps, and reduced price or free lunch and breakfast are services that seek to offer poor children additional supports that their families cannot afford.

CONCLUSION

Although increasing family income and improving financial stability would likely lead to short- and long-term benefits in child cognitive and social development, and cash-benefit programs like recent welfare initiatives have the ability to contribute to family income in a meaningful way, policymakers must guarantee that such social policies enhance rather than limit children's healthy development. Recent findings on welfare benefit administration sound an alarming call to those concerned with child well-being; although welfare caseloads have fallen in the 10 years since the passage of the reform legislation in 1996, only 40 to 50% of mothers who have left the welfare rolls have secured full-time employment. Of those former welfare recipients who are now employed, their average yearly salary of \$16,000 is not enough to keep a single mother of two children above the poverty level (Besharov, 2006). Without much-needed support and intervention, and the provision of services and benefits that truly pull families out of poverty, young children born into economically disadvantaged families will continue to fall behind their more advantaged peers in school and in later life experiences. However, with income supplementation, early intervention, and the implementation of well-researched and sound support systems, we can improve poor children's chances for life and school success.

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