

**Off with Hollingshead:  
Socioeconomic Resources, Parenting, and Child Development**

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## **Off with Hollingshead: Socioeconomic Resources, Family Processes, and Child Development**

### **INTRODUCTION**

Family socioeconomic status (SES) is an amorphous concept used in different ways by different social science disciplines. Parental education, occupational status and family income are the most common markers for SES; developmentalists combine education and occupation in the widely used Hollingshead SES scale.<sup>1</sup> Although there are often substantial correlations between these SES measures, parenting practices, and children's health, ability, and behavior, the causal impacts of these components are less clear, as are the processes by which SES affects development.

We argue that developmental research is ill served by aggregated, simplified, and/or superficial treatment of SES. In 1998, some 360,000 American families headed by a college graduate were poor (U.S. Census Bureau, 2000). Is their SES high or low? With both schooling levels and poverty increasing over the past quarter century, should we consider trends in the socioeconomic status of Americans to be positive or negative? What is the occupation-based SES of the families of the many teen mothers who have virtually no work experience? If a highly educated, stay-at-home mother divorces and finds her family income fall by one-half, has her SES fallen as well? Does the SES of the family of a mid-career professional who is downsized from his or her job remain high during the subsequent spell of unemployment?

Volatility in income and family circumstances is surprisingly common among American families (Duncan, 1988), which belies the presumption that SES is a permanent characteristic of families. It is ironic that developmental research often takes great care in measuring the temporal vagaries of developmental trajectories and their microsystem correlates but usually ignores fluctuations in the components of family SES.

Disregarding changes in income, employment, and even occasionally education has been motivated by the argument that these changes are idiosyncratic and can be relegated to our models' error terms. That is, these fluctuations may constitute anomalies of little lasting consequence for children's wellbeing. Accordingly, many researchers have used measures of SES that mask or reduce the relative contribution of the individual components of education, employment, occupation, and education in favor of a more reliable measure. However, research we review suggests that changes in the components of SES systematically and differentially

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<sup>1</sup> The four-factor Hollingshead scale uses marital status and gender as well as education and occupation (Hollingshead, 1975). Hollingshead's occupational index was based on his work in New Haven, Connecticut during the 1960s, and has been criticized by social stratification scholars for its lack of validity and practicality. Hauser and Warren (1997) argue that the relative rank of particular professions seemed to be a "combination of his rating of specific individuals in New Haven and of his perception of the general social standing of occupations" (p. 197). Haug (1977) characterizes Hollingshead's classification of occupations as both outdated and incomplete because only occupations reported by his New Haven sample were included on his occupational ranking lists.

affect parenting and children's outcomes. Components of SES do act in concert to affect children's lives, but each has distinct impacts and is not interchangeable with the others. Consequently, combining components of SES is dangerous unless and until we better understand their individual effects.

Similarly ill served are the policy lessons that might come out of SES-based developmental research. There are no "treatments" for enhancing overall SES; policies abound for enhancing specific components of SES. Imposing immigrant restrictions on eligibility for the Food Stamp program or expanding the Earned Income Tax Credit for working families has a direct, short-run impact on the financial but no other SES component of affected families. Policies designed to promote high-school completion or community-college enrollment affect completed schooling, although they may eventually improve occupational standing and income as well. Forecasting the differential impacts on children of imposing job- or schooling-related welfare reforms requires knowledge of their separate causal impacts on development.

We begin with an explanation of how economic, educational and occupational components of SES each constitute distinct constructs with distinct theoretical linkages to developmental outcomes. All are related in some way to a broadly-defined conception of family's resources, but each is distinct in ways that may be consequential for parenting practices and child outcomes. Its relative neglect in the psychological literature leads us to feature the economic component of SES in this discussion.

We next review evidence on trends in SES indicators for children and find both encouraging and discouraging developments. Most encouraging is that the average schooling level of parents of young children has increased substantially over the past several decades. Income inequality has increased as well, simultaneously producing more affluent and more poor children.

Evidence on the causal connections between these SES components, parenting, and child outcomes is summarized in the next section. We first address the issue of whether SES differences merely reflect differential genetic endowments and argue that they do much more than that. In the case of income, the literature suggests that the causal impact of economic deprivation on children's development is overstated by simple comparisons of poor and non-poor children. But economic resources do matter, and poverty early in childhood appears to be more detrimental to long-run development than poverty later in childhood. The strong correlations between parental education levels, parenting, and child development reflect an uncertain combination of genetic factors, concrete skills acquired by parents in school, and personality traits that lead parents both to acquire more schooling and to raise children who are healthier and more successful. Similarly, the modest correlations between parental occupation and parenting probably reflect both the direct influences of the job characteristics on parents as well as characteristics of the parents' personal endowments that affect both their occupational attainment, parenting practices, and their children's outcomes.

We end with a discussion of some of the potential data-collection and analytic implications of taking SES more seriously in developmental research.

## **DEFINITIONS AND THEORIES OF SES-BASED RESOURCES**

At the heart of the possible linkages between SES and children's development are the differing resources available to families at different socioeconomic levels (Haveman and Wolfe, 1994; Brooks-Gunn et al., 1995). We first review conceptions of economic resources and then turn to education and occupation.

Economic models of child development (e.g., Becker, 1981) view families with higher economic resources as being better able to purchase or produce important "inputs" into their children's development - for example, nutritious meals; enriched home learning environments and childcare settings outside the home; safe and stimulating neighborhood environments; and, with older children, higher-quality schools and college education. The degree to which these inputs are purchased is presumed to vary with their cost, household income, and parents' preferences for purchases that meet their own needs. The efficiency with which parents and children are able to translate inputs into positive developmental outcomes is presumed to vary with both their innate and their acquired (e.g., formal schooling) abilities.

Distinctive among a household's economic resources are the following:

Household income. Household income is the sum of income from all sources received by all members of the household over some time period, typically a calendar year or month. When combined with a measure of household wealth (see below), a household's income measures its ability to provide its children with food, shelter, a quality home or childcare environment, and a safe and stimulating community setting. Adjustments for the inclusion of "near-cash" sources of income such as Food Stamps and payments from the Earned Income Tax Credit, and subtraction of taxes paid, produce a better approximation of a household's disposable income. Division of household income by household size or, better yet, a poverty threshold based on household size produces a more refined measure of its per capita command over resources referred to as an income-to-needs ratio.

Contrary to popular belief, and in comparison to other SES-based measures, family income is quite volatile across a family's life cycle in general, and a child's childhood, in particular (Duncan et al., 1998). On average, family incomes increase as children age, but average patterns conceal a great deal of year-to-year volatility, making it important to measure economic resources during the particular childhood stage in which income-based SES influences are sought. This income instability makes a single year's measure of household income a somewhat erroneous measure of a household's "permanent" income, and suggests that data collections consider some combination of multi-year income measurement, or measurement of wealth, occupation or other correlates of permanent income.

Wealth. Wealth is the point-in-time "stock" of a household's financial assets, including both "liquid" forms such as money in a savings account as well as "illiquid" forms such the net equity tied up in an owned home. Wealth is the net amount held in accounts and assets -- the difference between the market value of that asset and whatever remaining debt the household owes on that asset. In contrast to income, which consists of a flow of resources over some time period, wealth is a "stock" concept and makes sense only at a distinct point in time. Income and wealth are positively correlated but distinct, as can be seen in the case of a divorced, home-owning mother with a low cash income but substantial wealth in the form of net equity tied up in the home.

Hourly earnings. This is earnings per hour worked, usually obtained by dividing labor-market earnings received over some time period by the total number of hours worked during that

time. Workers paid by the hour have an hourly wage rate that may differ between regular and overtime hours.

Perhaps surprisingly, some economists would nominate the hourly wage rate as THE best summary measure of SES. This is because they conceive of the hourly wage as a good measure of an individual's stock of broadly-defined skills – the productivity of his or her time either at work or at home.<sup>2</sup> How an individual chooses to allocate time between market work and childcare and other “home production” activities depends on a host of idiosyncratic factors such as family structure and local-area employment conditions. But the product of the hourly wage and 16 waking hours measures the total value of those waking hours, regardless of how they happen to be divided between paid and unpaid work.

Poverty. Social scientists have proposed many household-income-based definitions of economic deprivation (Citro and Michael, 1995). The official U.S. definition of poverty is based on a comparison of a household's income with a threshold level of income that varies with family size and inflation. In 1999, the respective thresholds for two-, three-, and four-person families were \$11,214, \$13,290, and \$17,029 (U.S. Bureau of the Census, 2000). Households with incomes below these thresholds are considered poor, whereas households with incomes above the thresholds are considered not poor. A household's poverty status is assumed to apply to each household member. Thresholds are adjusted each year for inflation, but not for changes in living standards of the general population.

According to opinion polls, official poverty thresholds are lower than the amounts of money – typically around \$20,000 - judged by Americans as necessary to “get along in their community,” to “live decently” or to avoid hardship (Vaughn, 1993). A detailed ethnographic study of family budgets by Edin and Lein (1995) identified \$16,500 as the approximate income level that enables a thrifty three-person family to live without severe hardship.

How persistent is poverty? We speak easily of “the poor” as if they were an ever-present and unchanging group. Indeed, the way we conceptualize the “poverty problem” or the “underclass problem” seems to presume the permanent existence of well-defined economic groups within American society. In fact, as already noted, longitudinal data have always revealed a great deal of turnover among the poor, as events like unemployment and divorce push families into poverty, and reemployment, marriage and career gains pull them out (Duncan et al., 1984). More than one-quarter of the individuals living in poverty in one year report incomes above the poverty line in the next, and considerably less than one-half of those who experience poverty remain persistently poor over many years. A clear majority of poverty spells are short (60% last less than three years). A substantial but small subset of poor families experience longer-run poverty (14% of poverty spells last eight or more years; Bane and Ellwood, 1986). As with all poverty, persistent poverty is not evenly distributed across ethnic groups. Long-term poverty rates for minority children are especially high, with nearly one-quarter of African American children living in persistent poverty (U.S. Department of Health and Human Services, 1997).

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<sup>2</sup> It is unlikely that productivity at home and at work is identical for all individuals. However, factors that determine such productivity (e.g., formal skills and age-related experience) are similar in both settings (Michael, 1972). Although individuals not currently working have zero labor-market earnings, they still have a positive wage rate – the amount per hour they could earn if they did work.

Human capital. Human capital constitutes a second form of SES-based family resources, and includes the collection of parental skills acquired in both formal and informal ways that have value either in the labor market or at home (Becker, 1975). Formal schooling is the most familiar and most studied form of human capital, although it is not the only form. A large body of literature has attempted to gauge the labor-market value of the skills acquired through additional years of schooling (Mincer, 1974) but less is known about the non-pecuniary returns to schooling (Michael, 1982). An individual's hourly earnings are presumed by economists to correspond to the value of the human capital that an individual brings to the labor market.

Parents' formal education may well influence children's well being by shaping parent-child interactions. When compared to less educated parents, parents who have acquired more formal schooling tend to provide a more cognitively stimulating home learning environment and have a more verbal and supportive teaching style. These differences are considered very consequential in explaining why children of less-educated parents perform less well on measures of cognitive development than children of more highly educated parents (Harris, Terrel and Allen, 1999). Although most developmental researchers have pointed to parent-child interactions as the primary mediator of parental education's effects on children (e.g., Laosa, 1983), the skills acquired through formal education may enhance parents' abilities to organize their daily routines and resources in a way that enables them to effectively accomplish their parenting goals (Michael, 1972).

Human capital also refers to a much broader set of skills than those learned through formal education. Skills such as intellectual flexibility, verbal communication, and decision-making accumulate throughout a lifetime. In the 1960s and 1970s social psychologists and sociologists sought to describe how occupations and job characteristics contribute to and detract from human capital through the life course (Kohn, 1959; 1969; 1973).

Occupations are a much-studied component of socioeconomic status, with higher-status occupations typically conferring higher earnings, more control, and more prestige on workers holding them (Jencks, Perman and Rainwater, 1988). Research has focused on occupations as an important aspect of SES because they are closely related to education and earnings and, compared with single-year income, may better measure a family's "permanent" economic position. However, research on occupational transitions throughout the life course suggests that career mobility patterns are dynamic (Featherman and Selbee, 1988).

Of greatest interest is the fact that research has found that job conditions appear to shape workers' values and personalities (Kohn, 1959, 1969, 1972, 1982). Characteristics of high prestige jobs such as highly complex tasks and autonomy are associated with an orientation toward self-direction and intellectual flexibility, whereas low complexity jobs are associated with an orientation toward conformity. Based on correlational evidence, researchers have argued that job conditions determine worker's personality and values. Workers acquire values and skills on the job and generalize them to other areas of life (Kohn and Schooler, 1982). More recent work has also suggested that job characteristics shape employees cognitive skills, rather than or in addition to their personalities (Parcel and Menaghan, 1994; Menaghan and Parcel, 1991). In particular, low-prestige jobs with low autonomy, routinized tasks, and little opportunity for "substantively complex work" may erode parents' cognitive skills, whereas high-prestige jobs promote initiative, thought, and decision-making skills.

Much of the motivation for studying occupational influences on human capital was to better understand the intergenerational transmission of social inequality. Therefore, from the very beginning researchers argued that acquired values, orientations, or cognitive skills were passed on to children through parenting practices. For example in the case of values, class differences in the value of autonomy have been linked to class differences in parental goals, and subsequently parenting practices (Kohn, 1969; Luster et al., 1989). Higher SES parents are more likely than lower SES parents to use shame, guilt and reasoning as disciplinary strategies, strategies that emphasize a child's autonomy, and less likely to use commands and imperatives, strategies that emphasize children's conformity (Kohn, 1969). In the case of cognitive skills, theory suggests that characteristics of parent's jobs influence children primarily through the home learning environment, because parents with lower cognitive skills provide a less cognitively stimulating home learning environment (Menaghan and Parcel, 1991).

### TRENDS IN SES INDICATORS

Different components of SES have exhibited divergent trends in the United States. As compared with 25 years ago, young children today are more likely to have better-educated parents, live in families with incomes either below or well above the poverty line, and live with one parent (Shonkoff and Phillips, 2000).

Family poverty and affluence. As of 1999, some 17% of U.S. children were poor, a figure that is several percentage points lower than in the early 1990s, but still higher than 25 years before (U.S. Bureau of the Census, 2001). Poverty is considerably more prevalent among children now than 25 years ago; in 1974, 15% of children were poor. This rate changed little during the remainder of the 1970s, jumped to 22% by 1984, and fell back below 20% only in 1997. Poverty rates were much higher in 1999 for Black (33%) and Hispanic (30%) than white (13%) children, in part because poverty increased much more for minority children. To the extent that low incomes prevent parents from buying things that promote healthy development, these trends do not bode well for the development of children, especially minority children. However, the number of affluent children also increased between 1974 (5%) and 1997 (14%). Thus in 1997, when compared with 1974, the United States was home to both more poor and more affluent children.

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Parental schooling. Educational attainment of the parents of young children increased substantially between 1975 and 1998 (Table 1, adapted from Shonkoff and Phillips, 2000, Figure 10-3). The proportion of children whose mothers had not graduated from high school dropped nearly by nearly half, from 30% to 17%, although the proportion whose mothers had graduated from college nearly doubled, from 13% to 24%. Trends in fathers' schooling also show increases in attainment, although not quite as dramatic. To the extent that parental education influences the "quality" of parenting and children's home environments as well as enhances parental careers and earnings, these trends bode well for the healthy development of young children.

Changes in parental schooling levels among young black children were even more favorable than among white children, although in 1998 racial and ethnic inequalities in educational attainment were still evident. A much larger fractions of black (21%) than white (8%) children had mothers who had not completed high school, and nearly half (45%) of young

Hispanic children had mothers who lacked a high school degree. The low schooling levels of Hispanic immigrant parents largely explain the low maternal schooling levels for Hispanic children as a whole.

Parental employment. Increases in paid maternal employment over the past quarter century are one of the most dramatic – and best-known – social trends. Between 1974 and 1997, the proportion of young children with mothers working full-time, year-round nearly tripled, from 11% to 30% (Table 1). At between 36% and 41%, the proportion of young children with a mother working part-time changed relatively little over that period. A much larger share of young Hispanic (48%) than white (29%) or black (29%) children lived with mothers who did not work for pay in 1997.

In contrast, paternal employment among children living with their fathers changed relatively little between 1974 and 1997, with modest increases (73% to 81%) in full-time work and corresponding decreases in part-time work. Over the 25-year period, very small (4% to 7%) and relatively constant fractions of fathers living with their young children were not working.

### **DOES SES MATTER FOR CHILDREN’S DEVELOPMENT?**

Many studies, books, and reports have reported correlations between children’s SES and various measures of child achievement, health, and behavior. In the case of poverty, for example, the risk for poor in comparison to nonpoor children is: 2.0 times as high for grade repetition and high school dropout; 1.4 times for learning disability; 1.3 times for a parent-reported emotional or behavior problems; 3.1 times for a teenage out-of-wedlock birth; 6.8 times for reported cases of child abuse and neglect; and 2.2 times for experiencing violent crime (Brooks-Gunn and Duncan, 1997, Table 1).

These kinds of correlations say little about the true causal connections between SES and child outcomes. As compared with nonpoor children, for example, poor children have a much higher risk of low school achievement, but that fact does not mean that increasing the incomes of poor parents would automatically improve children’s school achievement. Here we review evidence on the causal impacts of the components of SES on child development, beginning with the challenge from behavioral geneticists that there is virtually no causal impact of any SES components in the “normal range” of SES (e.g., Scarr, 1992; Rowe and Rodgers, 1997).

The challenge of behavioral genetics. Behavioral geneticists raise two distinct challenges to the view that SES resources affect children’s development. First, they argue that since socioeconomic status is, in part, caused by parents’ genetic endowments, an analysis relating children’s family SES to their achievement that does not somehow adjust for parent and child genetic endowments risks overattributing to SES causation that ought to be attributed to genetic influences (e.g., Rowe, 1994). This argument has merit and adds genetic influences to a long list of potentially important factors that deserve attention in studies that seek estimates of the causal effects of SES components on children’s development.

Some compelling data on the independent role of SES come from a recent adoption study that compared the pre- vs. post-adoption IQs of children adopted into low-, middle- and high-SES families (Duyme et al., 1999). All of the adopted children had low IQs (in the 60-86 range) prior to adoption and were adopted between ages 4 and 6. IQ growth was strikingly different by SES (defined by father’s occupation), with the gains associated with adoption into high- and

middle-SES families much larger than the IQ gains for children adopted into low-SES families. Furthermore, the authors were able to discount differential selection as a possible cause of the differences. Thus, the evidence suggests that something about SES -- unrelated to genetic endowment -- was responsible for the differential gains.

Phillips et al. (1999) take a somewhat more direct approach to gauging the extent to which the apparent effects on children's achievement of a broad set of SES measures are biased by the omission of a measure of cognitive genotype. They construct a "cognitive genotype index" based on data from the National Longitudinal Survey of Youth – Children Sample that combined the mother's score on the extensive battery of Armed Forces Qualifying Tests, class rank in high school and an interviewer's assessment of the mother's understanding of the interview. They also construct a SES index based on a host of education, income, occupation and other background factors.

The simple correlation between children's test scores and their SES index was .62. Regression controls for maternal cognitive genotype dropped the SES correlation to .46 – a 26% reduction. This reduction is in line with that found in more specialized studies comparing mother-child IQ correlations between biological and adoptive families (Loelin, Horn and Willerman, 1989; Scarr and Weinberg, 1976). Although far from trivial, this reduction indicates that genetic factors do not account for the bulk of the association between SES and children's achievement.

A second challenge from behavioral genetics is based on the fact that the correlations in abilities and personalities of twins and other siblings reared apart are almost as large as correlations of siblings who grow up together. Indeed, in this accounting, children's "shared environments" account for very little (almost always less than 10%, usually less than 5%) of the variability of ability and personality found in the population (Bouchard et al., 1990). Some have concluded from this evidence that the developmental consequences of persistent family environmental influences such as socioeconomic status or parenting are remarkably small. Scarr (1992, p.15), for example, argues that family environments in the "normal developmental range" have little or no effect on children's development.

An alternative view is that the nature and effects of family socioeconomic influences vary sufficiently across time and among siblings that SES resources are more properly conceived as "nonshared" environmental influences. Only if a family's economic status were constant across the childhoods of siblings would the economic component of SES be "shared" by all siblings. Previously mentioned longitudinal studies based on nationally-representative data have shown that family income is quite volatile (Duncan, 1988); Duncan et al. (1998) show that siblings several years apart in age often experience quite different childhood incomes.

Moreover, it is quite possible that the effects on child development of SES components such as economic conditions and single-parent family structure depend on the stage of childhood in which they are experienced. For example, both divorce and economic deprivation may be more detrimental if they occur in childhood rather than adolescence, although the "stigma" that may accompany parental welfare receipt may be felt more by older than younger children. If so, then the extent to which siblings share SES conditions shrinks and the extent to which SES influences are better conceived as part of the "nonshared" family environment grows.

One way of assessing the merits of this argument is to ask to what degree sibling differences in development can be accounted for by sibling differences in childhood-stage-

specific SES conditions. If SES conditions were constant across childhood, or if the effects of fluctuating SES conditions did not depend upon when during childhood they occurred, then sibling differences in SES should not be unable to account for any of the variation in sibling achievement differences. The study by Teachman and colleagues (forthcoming) of the completed schooling of siblings in a national sample found that childhood-stage-specific differences in just one SES component -- family income -- accounted for around 17% of the variation in differences in the completed schooling of siblings. Thus, SES contributes to both the “shared” and the “nonshared” environments of children.

Experimental studies of family resources and children’s development. Much of the literature on the causal effects of household income on parenting practices children has methodological shortcomings. Family income is not reported in many data sources that contain crucial information about child outcomes. Even in data sets containing measures of income, parenting, and developmental outcomes, it is usually the case that the income measurement covers only a portion of childhood, often adolescence. Moreover, even when the required data are available the analyses of such data rarely go beyond using correlational techniques to estimate causal impacts.<sup>3</sup>

Experimental designs involving manipulation of family incomes, which might better establish the causal nature of associations between household income and child well-being, are extremely rare. In four income-maintenance experiments in the 1960s and 1970s, treatment families received an income supplement that varied with the family’s income from work and other sources. Impacts on preschool children and parenting practices were not assessed. School performance and attendance were affected positively in some sites for elementary-school-age children, but not for high-school-age adolescents. In two sites reporting high-school completion and advanced education, these were higher for the experimental group (Institute for Research on Poverty, 1976; Kershaw and Fair, 1976; U.S. Department of Health and Human Services, 1983; Salkind and Haskins, 1982).

A number of experiments begun in the early to mid-1990s implemented various packages of welfare-to-work programs, some of which augmented family economic resources and others did not, and whose evaluations tracked family process and child well-being (Morris et al., 2001). In all cases, participants were randomly assigned to a “treatment group” that received the welfare-reform package or to a “control group” that continued to live under the old AFDC rules.

The synthetic evidence compiled by Morris et al. (2001) comes from five experiments: i) the National Evaluation of Welfare to Work Strategies (NEWWS), which evaluated child impacts of both labor-force attachment and human-capital development treatments in Atlanta, Grand Rapids, and Riverside (Hamilton, 2000; McGroder et al, 2000); ii) the Minnesota Family Investment Program, which combined participation mandates, “make-work-pay” incentives, and services in a way that constitutes a somewhat more generous version of Minnesota’s current TANF program (Gennetian and Miller, 2000); iii) the Canadian Self-Sufficiency Project, which, by offering a very generous but temporary (three-year) earnings supplement for full-time work, is a pure “make-work-pay” approach (Morris and Michalopolous, 2000); iv) Milwaukee’s New

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<sup>3</sup> Although developmental researchers generally agree that inferring causality is only possible with experimental study design, the conclusions based on findings from nonexperimental studies are often filled with terms such as “impacts” and “effects,” and with policy conclusions that presume causation has been established. We believe that a preferred strategy for using nonexperimental data is to aspire to a causal analysis through careful attention to the various threats of spurious causal attribution (Duncan, Magnuson and Ludwig, 2000).

Hope Project, which combined various “make-work-pay” strategies with some employment services (Bos et al., 1999); and v) Florida’s Family Transition Program (FTP), which offered a small earnings supplement, a participation mandate and fairly intensive case management.

Comparable analyses of these data by Morris et al. (2001) revealed that welfare reforms that both increased work and provided financial supports for working families generally promoted children’s achievement and positive behavior. In contrast, welfare reforms that mandated work but did not support it financially had few impacts -- positive or negative -- on children. Also of interest is the lack of consistent experimental impacts across all types of programs with respect to parents’ reports of parenting practices across a range of measures such as warmth and monitoring.

Welfare reform impacts on children depended crucially on the ages of the children studied. Elementary-school children were helped by the reforms that increased family resources and, for the most part, not harmed by unsupportive ones. For adolescents, more limited evidence suggested that even generous reforms that promoted maternal employment may have caused detrimental increases in school problems and risky behavior.

Nonexperimental evidence on the impact of poverty on child outcomes. Despite these experiments, whether family resources affect child development remains a controversial issue that has generated a large nonexperimental literature (Haveman and Wolfe, 1995; Mayer, 1997; Brooks-Gunn and Duncan, 1997; Blau, 1999). Duncan and Brooks-Gunn (1997) provide a recent look at links between poverty and development by coordinating analyses of 12 groups of researchers working with 10 different developmental data sets. Most of these datasets offer longitudinal measurement of parental family income as well as measurements of the achievement, behavior and health of individuals at various points in life. Bias is reduced, but almost certainly not eliminated, with controls for parental education, family structure, age of the mother at the birth of the child and several other demographic measures.

On the whole, the results suggest that family income may have substantial but decidedly selective associations with children's attainments. The selective nature of effects included the following: i) family income had much larger associations with measures of children's ability and achievement than with measures of behavior, mental health and physical health; ii) family economic conditions in early childhood appeared to be more important for shaping ability and achievement than did economic conditions during adolescence; and iii) the association between income and achievement appeared to be non-linear, with the biggest impacts at the lowest levels of income.

Concerned that including measured covariates is an insufficient correction for potential biases associated with the omission of unmeasured factors such as parental ability or mental health, a few recent empirical studies linking income and child development have employed more sophisticated techniques. Using the Panel Study of Income Dynamics and the National Longitudinal Survey of Youth, Mayer (1997) provides a set of tests for omitted-variable bias, including the addition of measures of parental income after the measurement of the child outcome as well as using only those components of parental income that are fairly independent of the actions of the family. In both cases, Mayer finds large reductions in the estimated impact of parental income, leading her to conclude that much of the estimated effect of income in the literature is spurious.

As Mayer herself points out, these arguments have some potential flaws. If families anticipate future income changes and adjust their consumption accordingly, and the consumption changes benefit or hurt children, then future income does indeed play a causal role. The likely measurement error in income sources such as dividends and interest will impart a downward bias in their coefficients. Moreover, since interest and dividends are almost universally absent from the income packages of families at or below the poverty line, these exogenous income sources are not useful for estimating the impact of income increments to low-income families.

Blau (1999) uses data from the National Longitudinal Survey of Youth to estimate a number of models relating income and other aspects of parental family background to children's ability and achievement test scores as well as behavior problems. These outcomes are assessed for most children in middle childhood. Among his approaches are family fixed-effect models that relate within-family differences in test scores to within-family differences in the income histories of the individual children. He employs two alternative measures of income: income (and, for some models, wage rates) during the calendar year prior to the developmental assessment, and average household income of the mother over all years from 1979 to 1991 in which the data were available. In general, he finds small and insignificant effects of current income and larger (though still modest) effects of long-run income.

Although Blau attempts to address the omitted variable bias and endogeneity issues, his measures of income fail to recognize the possibility that the timing of parental income during childhood may be important. He implicitly assumes that families can smooth their consumption perfectly and that parental income during early childhood is equivalent (in terms of affecting child development) to income received in other stages of childhood.

Duncan et al. (1998) use data from the Panel Study of Income Dynamics to relate completed schooling and non-marital childbearing to average household incomes in early and middle childhood and adolescence. Their models allow for differential effects of income according to the childhood stage in which it is received and are motivated by the hypothesis that the malleability of young children's development and the overwhelming importance of the family (as opposed to school or peer) context prior to school entry make economic conditions in early childhood more consequential for shaping children's ability and achievement than conditions later in childhood. Their models estimate the effects of income in early childhood, controlling for income in middle childhood and adolescence. These kinds of controls should go a long way in producing the kinds of omitted-variable adjustments Mayer and Blau strive for.

As hypothesized, early childhood emerges as the stage in which income appears to matter most. For example, controlling for income later in childhood as well as for demographic characteristics of households, Duncan et al. (1998) estimate that a \$10,000 increment to income averaged over the first five years of life for children in low-income families is associated with a 2.8-fold increase in the odds of finishing high school. This estimated effect was much larger than the corresponding estimated effects of increases in income measured later in childhood.

In summary, although previous correlational research has found consistent and substantial links between parental income and child well-being, the causal nature of the association has not been well established. Studies that manipulate families' economic resources experimentally support the hypothesis of a causal role. In recent non-experimental research, researchers have employed a wide variety of ways to correct for some of the potential for omitted variable biases in their study designs. However, the potential differences of income's effect with

respect to timing during childhood, and the greater importance of increases to income at the lower end of the income distribution suggest that prior research has not adequately answered the question of whether increasing parents' incomes would affect children's development.

Parental schooling. Substantively large and statistically significant positive correlations between parental schooling levels, parent teaching styles, home learning environment, and children's achievement and behavior are among the most replicated results from developmental studies. Haveman and Wolfe's (1995) review of published studies suggests that maternal educational attainment is more closely related to children's academic performance than fathers' educational attainment. Furthermore, parents' completion of high school or a year or two of post-secondary education appears to have a larger effect than additional years of post secondary education beyond that level.

Nevertheless, surprisingly little is known about the causal nature of these associations (Mercy and Steelman, 1982). Most work in this area does not establish that these findings are attributable to mothers' relative schooling per se, as opposed to genetic differences or other characteristics that differentiate individuals who acquire different levels of schooling. In fact, there is a long list of spurious factors that could be driving the maternal education-child development correlation. Most obvious among these factors is some measure of cognitive ability. For example, Borduin and Henggeler (1981) argue that differences in parent-child interactions typically attributed to education or social-class are due to mother and children's verbal IQ rather than SES. Few studies attempt to statistically control for maternal cognitive ability and the many other factors that might bias non-experimental estimation strategies, but those that do find that these control reduce the association between maternal education and children's outcomes (e.g., Rosenzweig and Wolpin, 1994; Yeates et al., 1983).

We know of only one study of the impacts of mothers' schooling on children's development that involves experimental manipulation of mothers' schooling. Magnuson and McGroder (2001) exploit that fact that the National Evaluation of Welfare to Work Strategies Child Outcome Study randomly assigned welfare recipients with young children to either an education or work focused program group or to a control group that received no additional assistance. Magnuson and McGroder take advantage of the experimental design by using an Instrumental Variable (IV) approach to estimate the affect of maternal schooling on five- to seven-year old children's academic school readiness. They estimate that an additional nine months of schooling causes a quarter of a standard deviation increase on a test of children's academic school readiness.

Two additional studies have taken advantage of the fact that young mothers often acquire more formal schooling between the births of first and subsequent children to estimate whether achievement and behavior differences between earlier- and later-born siblings are related to increases in mother's formal schooling. Kaestner and Corman (1995) used this approach in an analysis of scores on the Peabody Individual Achievement Tests (PIATs) and found no consistent effect of increased maternal education on children's achievement scores.

In contrast, Rosenweig and Wolpin (1994) found that an additional year of maternal schooling did have a modestly positive and marginally significant effect on children's PIAT scores. Interestingly, they found that mothers' enrollment during a child's first three years had a significant and large positive effect on children's scores on the Peabody Picture Vocabulary Test (PPVT), a measure of receptive vocabulary.

Occupation. Despite modest associations between occupation, values, and parenting practices we have found no convincing evidence that these associations are causal. Furthermore, much of this work has stopped short of relating parenting values and parenting practices to children's developmental outcomes (e.g., Harwood, 1992; Holden, 1995; Sigel et al., 1992).

Like research on the connections between child outcomes and both education and income, much of this work is correlational and likely suffers from biases owing to omitted variables and reverse causality. Researchers often overlook important confounding conditions that might be driving both a parent's selection of a job and parenting behavior. For example, because of their educational experiences, a highly educated parent may be both more likely to obtain prestigious jobs and to value self-direction. An example of reverse causality is that the value of self-direction may be driving both job selection and parenting values. For example, a parent who is self-directed may seek out a high autonomy job and employ parenting practices that emphasize autonomy.

In an effort to reduce these biases, some researchers have included important baseline covariates in their estimation models (e.g., Parcel and Menaghan, 1994) and modeled reciprocal effects of job characteristics on parental values, cognitive skills or personality traits (Kohn and Schooler, 1982). These efforts suggest that job characteristics have a substantively small yet statistically significant association with workers' values, orientations, and cognitive skills, and that personalities and skills of workers have substantial associations with job conditions. In addition, some research has suggested that class based differences in values have declined over time, and that differences may be more the result of education than occupation (Alwin, 1984; Wright and Wright, 1976). These findings suggest that the rather small effects of job characteristics on parents may not be as consequential for parenting practices as previously thought and brings into question the causal nature of the associations between job characteristics, parenting practices and child outcomes. Without more convincing evidence, we have little way of evaluating whether the modest differences in parental values or cognitive skills that may be causally associated with job characteristics have any meaningful influence on children's development.

A broader view of SES. There is a long list of additional dimensions of SES that may influence parenting practices and children's development. For example, the quality of parents' schooling may be as important for parenting and family management as its quantity. To the extent that social class, racism or cultural differences persist across generations, grandparental characteristics may matter as well, even after accounting for whatever advantages or disadvantages parents may have acquired from those grandparents. Neighborhood conditions may affect children independently of family conditions.

Phillips et al. (1999) use nationally representative data on children born to younger mothers to assess the comparative importance of some of these additional dimensions. Their developmental outcome, measured at ages 5 or 6, is the child's score on the Peabody Picture Vocabulary Test, a test of receptive vocabulary. They found that, when combined with the child's age, gender and race, parental schooling levels accounted for 29% of the variation in test scores. The addition of measures of the quality of the mother's schooling increased this explained variance to 32%; and a set of grandparental measures boosted the explained variance to 36%. Thus, parental schooling levels capture most, but not all, of the explanatory power of a broader set of SES measures.

## IMPLICATIONS

We have argued that developmental studies that seek to study directly, control for, or stratify by socioeconomic status are ill served by the traditional Hollingshead-based approach. SES is too multi-faceted to be captured by a single index or even a multi-factor index. Furthermore, latent-factor logic is not useful here. Household income, parental education and occupational standing are distinct theoretical constructs, with distinct impacts on children's development and subject to manipulation through very different policy interventions.

How to do justice to the multi-faceted nature of SES in empirical studies? Entwistle and Astone (1994) and Hauser (1994) provide excellent summaries of how sociologists conceive of socioeconomic status, with explicit recommendations for survey questions and coding. In the case of schooling, their recommendation is for two questions, the first on highest educational degree attained and the second, asked only of high-school dropouts, on highest grade in school completed.

In the case of occupation, the recommendation is for a handful of questions regarding labor-force status and a description of the occupation and industry of the usual job. An elaborate classification of occupations and industries has been developed over the years by sociologists in academia and the U.S. Census Bureau (U.S. Bureau of the Census, 1992a, 1992b).

We take issue with their modest recommendations regarding income questions and their characterization of such questions as always subject to high levels of nonresponse. Duncan and Peterson (2001) contend that this conventional wisdom regarding survey questions on economic characteristics is wrong. They point to many examples of successful surveys that gather high-quality income data without suffering unduly from high rates of either item or case nonresponse. Their analysis highlights the need to motivate both respondents and interviewers, probe reluctant respondents with easier-to-answer follow-on questions, and ask questions that do not overburden respondents' memories. They present a series of recommendations regarding both very short and longer sequences of survey questions on household income, hourly earnings and wealth.

All told, these recommendations perhaps add between about two and five minutes of questions for survey-based studies that seek to gather adequate information about SES. Ten minutes of questions would gather much richer information about the components of income and/or household wealth.

It is worth gathering the needed information? We hope that our arguments convince readers that it is, particularly for studies that aspire to estimating the causal role played by SES in affecting the developmental outcomes of interest.

But what about developmental research that merely seeks to control for SES in its pursuit of other analytic goals, or that needs a simple division of a sample on SES in order to estimate its moderational role? Here too there is a compelling need for adequate measurement of the components of SES. Turning the problem on its head, suppose that an economic or sociological study of children sought to control for or stratify by maternal self-esteem. Would developmentalists be convinced if that study attempted to do so with a three or four item self-esteem scale or, worse yet, a more general summary index of maternal mental health that captured some but not all of the variance of a more complete scale? Attention to important

constructs requires careful measurement, and the components of socioeconomic status are no exception.

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Figure 1 Demographic data on parental schooling, income and maternal employment for young children [adapted from Shonkoff and Phillips, 2000, Figure 10-3]

