Income Level, Gender, Ethnicity, and Household Composition as Predictors of Children's School-based Competence

Charlotte J. Patterson, Janis B. Kupersmidt, and Nancy A. Vaden

University of Virginia

PATTERSON, CHARLOTTE J.; KUPERSMIDT, JANIS B.; and VADEN, NANCY A. *Income Level, Gender, Ethnicity, and Household Composition as Predictors of Children's School-Based Competence.* CHILD DEVELOPMENT, 1990, **61**, 485–494. In the United States, being black, male, or growing up in a low-income and/or single-parent household have all been identified as risk factors for maladjustment during childhood. Interpretation of these findings is, however, often difficult because of the well-known associations among these variables. In the present study, we compared predictions of 3 different forms of children's competence from each of these 4 variables. In a sample of 868 black and white elementary school children from 2-parent and mother-headed 1-parent homes, we studied 3 aspects of school-based competence: conduct, peer relations, and academic achievement. Results showed that although the independent variables accounted for different amounts of variance in each domain of competence, income level and gender were better overall predictors of children's competence in conduct and peer relations than were ethnicity or household composition. Income level and ethnicity were better overall predictors of academic achievement than were gender or household composition, although each of the 4 variables made a significant contribution. Overall, income level and gender were thus the strongest predictors of children's competence. Black children were, however, more likely than white children to live in low-income homes. Our results thus highlighted some correlates of the unequal distribution of economic resources among black and white children growing up in the United States today.

Competence among children may be assessed in schools, neighborhoods, churches, and/or other community settings (Bronfenbrenner, 1979; Bronfenbrenner, Moen, & Garbarino, 1984). Especially for children who are members of minority groups, effective functioning in some settings such as their homes and neighborhoods may require different skills than effective functioning in other settings, such as their schools (Holliday, 1985; Ogbu, 1981, 1985). In the present study, we focus on predictors of children's school-based competence.

We view competence as the achievement by appropriate means of successful outcomes in particular domains. In the current study, we focus attention on three especially important domains of children's competence at school: peer relations, behavior or conduct, and academic achievement. Because children's competence in each of these domains has been linked to probability of subsequent school dropout, delinquency, and psychopathology (Parker & Asher, 1987; Rutter & Garmezy, 1983), there is reason to believe that each is an important domain of children's competence.

Poverty, gender, ethnicity, and household composition have all been associated with various indices of school-based competence among American children. Being male, of minority ethnic status, and growing up in low-income, single-parent homes have all been identified as heightening the risk of disturbances in peer relations (Coie, Dodge, & Kupersmidt, in press; Hallinan, 1981; Patterson, Vaden, & Kupersmidt, 1989). Each of these factors has also been associated with higher incidence of behavior problems and psychological disorders (Rutter & Garmezy, 1983) and, except for gender, with lower academic achievement in school (Alexander &

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Entwisle, 1988; Bronfenbrenner et al., 1984; Entwisle & Hayduk, 1982; Neisser, 1986).

One of the difficulties in interpretation of such associations is the well-known fact that for American children, poverty, ethnicity, and the likelihood of growing up in single-parent homes are themselves interrelated (Edelman, 1985, 1987; Glick, 1988; Laosa, 1988; Slaughter, 1988). Of children under 18 years of age in the United States today, about one in five lives in a home that is below the federally defined poverty line; of black children, however, almost half live in poverty. Similarly, female-headed households are disproportionately represented among the poor; almost half of female-headed families are below the poverty line. In 1982, over 70% of black, female-headed households in this country were poor (Edelman, 1985). Black children are also more likely than white children to grow up in female-headed homes; for example, about half of all black children are born to single mothers (Laosa, 1988). In short, black children in this country are more likely than white children to grow up in low-income, mother-headed, single-parent homes (Edelman, 1985, 1987; Glick, 1988; Laosa, 1988; Slaughter, 1988; Wilson & Tolson, 1988).

Univariate analyses assessing the predictive value of any one of these variables are thus very likely to be confounded by the effects of the other variables as well. For example, the association of minority ethnic group membership and sociometric status in the study of children's peer relations (Hallinan, 1981) could in some cases be attributable at least in part to the effects of growing up in low-income and/or single-parent homes. Likewise, the greater incidence of behavior problems among children living in single-parent homes (Rutter & Garmezy, 1983) could result at least in part from the fact that many mother-headed single-parent families have low incomes (Emery, 1988). To assess the predictive value of these variables relative to one another, a multivariate approach is clearly needed.

In addition to the influence of family income, ethnicity, and household composition, another important predictor of at least some aspects of childhood competence is gender. Sex differences in behavior problems have been widely reported, with boys exhibiting more behavior problems during the childhood years (Rutter & Garmezy, 1983). Boys are also more likely than girls to show serious disturbances of peer relations during childhood (Coie, Dodge, & Coppotelli, 1982; Hartup, 1983). In addition, boys appear to suffer more adverse effects of economic deprivation and single-parent rearing than do girls (Elder, 1979; Hetherington, Camara, & Featherman, 1981).

Concern has recently been voiced about development among black males in particular. Noting low school achievement and high behavior problems shown by black male children and youth, Hare and Castenell (1985) have argued that black boys should be seen as an at-risk group. It is not yet clear, however, to what extent the difficulties of black boys may be associated with economic hardship rather than, or in addition to, ethnicity as such. Spencer, Dobbs, and Phillips (1988) recently reported that poverty had more deleterious effects for black boys than it did for black girls. Because there were no white children in their sample, however, the possible influence of ethnicity could not be assessed. Research is needed to disentangle the contributions of gender, ethnicity, income, and household composition (Hofferth, 1985).

The present study was conducted to evaluate income level, gender, ethnicity, and household composition as predictors of children's competence at school. We used data from a large community sample of elementary school children that included significant numbers of black and white children growing up in both one- and two-parent homes that were or were not described by teachers as having low incomes. We studied three different indices of competence: peer relations, assessed via sociometric nominations; conduct, assessed via teacher ratings of classroom behavior; and academic achievement, assessed via scores on standardized achievement tests. In this way, we sought to explore the relations of the four independent variables to different aspects of school-based competence among elementary school children.

Method

Subjects.—The subjects were 868 children in grades 2 through 4, enrolled in the six public elementary schools of a small Southern city. The sample is described in greater detail below.

Materials.—Teacher ratings of classroom behavior were collected using a reduced version of the Classroom Adjustment Rating Scales (CARS—Lorion, Cowen, & Caldwell, 1975). The CARS was developed as an instrument for assessing school behavior problems of elementary school aged children. We administered subscales for Acting Out and for

Shy Anxious behavior. Teachers rated the severity of each child's behavior problems on 5-point scales (1 = not a problem, 5 = a serious problem).

Factor analysis of responses failed to replicate the factor structure reported by Lorion et al. (1975), and hence further factor-analytic work was undertaken. Reduced versions of each of the two scales proved to have more satisfactory psychometric properties (i.e., all items loading above .50 on their own and below .40 on the other subscale), and these were used in the present study.

The five items on the reduced Acting Out subscale were (1) overly aggressive to peers, (2) constantly seeks attention, (3) disruptive in class, (4) fidgety, hyperactive, can't stay in seat, (5) talks out of turn, disturbs others. The four items on the reduced Shy Anxious subscale were (1) shy, timid, (2) anxious, (3) depressed, and (4) lacks self-confidence. A total Behavior Problems score was obtained by summing each child's scores on the two reduced subscales, and it was used in all further analyses as the measure of children's conduct at school (range of scores was from 9 to 41).

Family income (coded dichotomously as "low" versus "not low") was assessed as part of a teacher checklist of family background variables. Teachers were asked to indicate those children who came from families characterized by economic difficulty, which was defined as whether or not the family received public assistance (i.e., the child had free or reduced price lunches at school and/or the child's family lived in subsidized housing). Children who were identified in this way were coded as living in low-income homes. No further information about family incomes was available to us, and so all others were simply coded as "not low income."

Procedure.—Group sociometric testing was conducted in each classroom by an adult experimenter and one or two aides according to the procedures adopted by Coie et al. (1982). Children were presented with an alphabetized list of peers in their grade (for third and fourth graders) or in their class (for second graders) and were asked to nominate three children whom they liked most and three whom they liked least.

While the sociometric testing was conducted in his or her classroom, each teacher was individually interviewed in a separate room. The interviewer read each item aloud and recorded the teacher's responses. Teachers were provided with class rosters to aid their memories, and were asked to report the answers which, in their experience, were most appropriate for each child.

Information about each child's gender, ethnicity, and household composition was collected from school records. Ethnicity was coded as white, black, or other; since there were too few children in the other category (n = 30) to allow statistical analyses in the present framework, they were dropped from these analyses. Household composition was coded as living with both parents, with mother only, or other; again, since there were too few children in the other category (n = 35), they were dropped from the sample for these analyses. All analyses were conducted using the remaining sample of 868 children.

SRA achievement tests had been administered to all children the month before we conducted the classroom assessments and teacher interviews. We used each child's composite (reading/math/language) national percentile score, also collected from school records, as an index of academic achievement. The scores covered the full range, from the first to the ninety-ninth percentile.

Coding of the sociometric nomination data was accomplished using the criteria and procedures developed by Coie and his colleagues (1982). Standardized liked-most and liked-least scores were computed to derive values for a child's social preference among peers (the difference between standardized liked-most and standardized liked-least nominations). These were then restandardized to yield the social preference scores used here (see Coie et al., 1982).

Reliability of teacher reports.—Because each child had only one classroom teacher, interrater reliability of teacher ratings of behavior problems could not be assessed. The fact that siblings share the same home environment did, however, suggest a method for assessing the reliability of teacher reports about low income homes. Sibling pairs were identified in the sample by locating pairs of children who shared the same last name, same parent name, and same home address in the school records. Teacher reports of low income were then compared for the two siblings. Since none of the sibling pairs were in the same classroom, these two reports were always provided by two different teachers.

There were 73 sibling pairs for whom teacher checklist information about low family income was available; of these 61, or 84%,

TABLE 1

NUMBERS OF CHILDREN IN THE SAMPLE AS A FUNCTION OF INCOME LEVEL, GENDER, ETHNICITY, AND HOUSEHOLD COMPOSITION

	LOW INCOME				NOT LOW INCOME				
	2 Parent		1 Parent		2 Parent		1 Parent		
	Black	White	Black	White	Black	White	Black	White	TOTALS
Girls	25	17	82	41	35	174	31	46	451
Boys	14	25	90	31	32	165	31	29	417
Totals	39	42	172	72	67	339	62	75	868

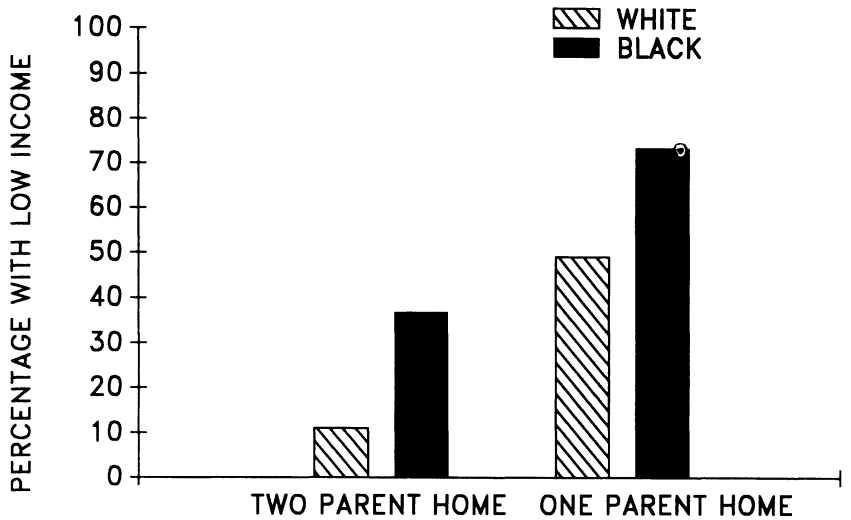

FIG. 1.—Percentage of children from low-income homes as a function of ethnicity and household composition.

had the same score (kappa = .67). Thus, the teacher reports about family income showed satisfactory reliability.

Results

Sample characteristics and intercorrelations among variables.—The numbers of children in the sample in each category of income level, gender, ethnicity, and household composition are shown in Table 1. Although the distribution of children was uneven across categories, there were sufficient numbers of children in each of the major categories to allow analysis (see Table 1).

As expected on the basis of national figures, household composition, income level, and ethnicity were strongly related in this sample. For example, children from single-parent homes were three times as likely as those from two-parent homes, and black children were twice as likely as white children, to come from low-income homes. In addition, black children were twice as likely as white children to live with only one parent. The net result of these trends is shown in Figure 1, which shows that the probability of low income in this sample ranged from 11% for white children growing up in two-parent homes to 73.5% for black children growing up in one-parent homes.

The intercorrelations of all variables are shown in Table 2. As expected, both the independent and the dependent variables were intercorrelated to some degree. The relatively high correlations among ethnicity, household composition, and income level were, of course, consistent with the frequencies of children in each category presented above. Consistent with earlier findings (Green, Forehand, Beck, & Vosk, 1980), correlations among the three measures of competence were significant (see Table 2), accounting on average for about 10% of the variance. Thus,

TABLE 2

INTERCORRELATIONS OF VARIABLES

Variables	1	2	3	4	5	6
1. Income level		.414***	.462***	−.147***	.183***	.391***
2. Ethnicity	.402***		.333***	−.050	.046	.340***
3. Household composition	.513***	.479***		−.101*	.129**	.257***
4. Conduct	−.298***	−.240***	−.279***		−.276***	−.325***
5. Peer relations	.220***	.039	.153***	−.328***		.241***
6. Achievement	.409***	.411***	.356***	−.416***	.238***	

NOTE.—Low income, black, male, and one parent were coded as 0; not low income, white, female, and two-parent homes were coded as 1. The measure of conduct was the total number of behavior problems; of peer relations, it was standardized social preference scores; and of achievement, it was national percentile scores for composite reading/math/language achievement (see text). Correlations for girls are shown above and those for boys below the diagonal.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

although there was a significant tendency for children who were highly competent in one domain to be competent in others, there was also considerable variability.

Prediction of child competence in three domains.—Taking into account the intercorrelations among independent variables, our major questions focused on the relative contributions of each of the four predictor variables to prediction of child competence. To examine this issue, a series of simultaneous (standard) regression analyses were conducted, using income level, gender, ethnicity, household composition, and their interactions as independent variables. In these analyses, the dependent measure for peer relations was each child's standardized social preference score; for conduct, it was total score for teacher-rated behavior problems; and for academic achievement, it was the national percentile score for composite reading/math/language achievement. Significant results of the regression analyses are summarized in Table 3.

Overall, the predictors accounted for 20% of the variance in scores for conduct. As can be seen in Table 3, there were four main effects, which revealed that, as expected, boys, those from low-income families, those from one-parent homes, and black children were rated as having more behavior problems at school.

These main effects were, however, qualified by significant interactions. The income × gender interaction resulted from the fact that, although the basic findings were similar and statistically significant for both sexes, income level was more strongly related to conduct scores for boys than for girls (standardized regression coefficients = −.19 and −.11, respectively, both p's < .05). Boys from low-income families showed more behavior problems (mean = 18.7) than boys from other families (mean = 14.3); the same effect was also present, though smaller in size, for girls (means = 12.9 and 11.7, for low-income versus other families, respectively).

Examination of the ethnicity × household composition interaction revealed that household composition had a significant effect on conduct for white children (standard regression coefficient = −.19, $p < .001$); white children from one-parent homes had more behavior problems (mean = 14.7) than white children from two-parent homes (mean = 12.7). For black children, there were no differences in conduct as a function of household composition (standard regression coefficient = −.01, N.S.; means = 15.6 and 14.1 for black children from one- and from two-parent homes, respectively).

The two-way ethnicity × household composition interaction was, however, itself qualified by a three-way interaction involving ethnicity, household composition, and income level. The three-way interaction revealed that income level was significantly related to behavior problems in three of the four ethnicity × household composition subgroups. Children from low-income families were rated as showing more behavior problems than children from other (i.e., middle-income) families in white one-parent (means = 16.2 and 13.2), black one-parent (means = 16.2 and 14.2), and black two-parent (means = 15.5 and 13.4) homes (standardized regression coefficients = −.22, −.12, and −.24, respectively; all p's < .05). Only among white children from two-parent homes did income level fail to predict behavior problems at a

TABLE 3

SUMMARY OF SIMULTANEOUS MULTIPLE REGRESSION ANALYSES FOR PREDICTION OF CHILD COMPETENCE IN CONDUCT, PEER RELATIONS, AND ACADEMIC ACHIEVEMENT

PREDICTOR VARIABLES	DOMAIN OF COMPETENCE		
	Conduct	Peer Relations	Academic Achievement
Gender (G)	−2.42***	.14***	4.60***
Income (I)	−1.03***	.19***	7.78***
Household (H)	−.62**	.07	2.30*
Ethnicity (E)	−.55*	−.06	7.21***
G × I	.56*	−.04	.22
G × H	.22	.00	−.22
G × E	.42	.03	−.35
I × E	.21	.05	1.22
I × H	.15	.02	.59
E × H	.56*	.04	1.78
G × I × H	.34	−.06	−.24
G × I × E	−.14	−.06	−.09
G × H × E	.25	.05	.42
I × H × E	.48*	−.04	−1.61
G × I × H × E	−.02	.00	−1.74
Overall R^2	.20	.07	.25

NOTE.—Because standardized regression coefficients are constrained by the dichotomous nature of the predictor variables, only unstandardized regression coefficients are shown here.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

significant level, and even in this case, the results were in the same direction (means = 13.4 and 12.6 for children from low-income and middle-income homes, respectively; standardized regression coefficient = −.03, N.S.). Compared to other variables we studied, then, these results underline the relative generality of family income level as a predictor of children's conduct at school.

Overall, the predictors accounted for 7% of the variance in peer relations. Income level was the best predictor, followed by gender; there were no significant interactions. Boys and children from low-income homes were less well liked by their peers at school than were other children.

Overall, the predictors accounted for 25% of the variance in academic achievement. The best predictors were income level and ethnicity, followed by gender and household composition. Children from low-income homes, black children, boys, and those from single-parent homes scored lower on tests of achievement.

In summary, although the independent variables accounted for different amounts of variance in each domain of competence, income level and gender emerged as the best overall predictors. Gender was the strongest predictor of competence in conduct, and income level was the strongest predictor of competence in achievement and in peer relations. As in previous research, ethnicity was a strong predictor of academic achievement test scores in this sample. For conduct and for peer relations, however, results of the regression analyses showed that ethnicity was overshadowed by other predictors of children's competence at school.

Discussion

There were four major findings. First, income level and gender were better overall predictors of children's conduct and peer relations than were ethnicity or household composition. Boys and children from low-income homes were less likely than other children to be competent across domains. Second, income level and ethnicity were the best predictors of academic achievement; blacks and those from low-income homes received lower scores. Third, prediction was better for some domains of competence than others. The pre-

dictors accounted for more of the variance in measures of children's conduct and academic achievement than they did in measures of peer relations. Finally, and consistent with national figures, there were strong associations among all of the predictor variables except gender; black children were more likely than white children to live in low-income and/or single-parent homes. Thus, although income and gender were the strongest overall predictors of competence at school, some domains of competence were predicted better than others, and black children were more likely than white children to live in low-income homes.

These results can be seen as generally consistent with what Edelman (1987) has called the "social class view" of black families. From this standpoint, poverty is the most important variable accounting for observed differences in functioning between black and white children. This perspective suggests both that discrimination and economic inequities suffered by blacks result in their increased likelihood of living in poverty, and that problems engendered by economic stress have a negative impact on child competence at school. If their families were provided with equal economic circumstances and compensation for past inequities, black children would be expected from this viewpoint to perform as well at school as white children (Edelman, 1987).

From the standpoint of the social class view, a number of possible pathways from economic stress to low child competence might be suggested (see Rubin, LeMare, & Lollis, in press). As we have reported elsewhere, there was a significant association in this sample between family background and the likelihood that children had recently experienced stressful life events (Patterson et al., 1989). The direct effects of such stressors on children might include lowered mood, reduced attention span, and/or emotional distress. Effects of stress on parents might also have adverse consequences for children through reduced parental involvement in their schooling (Stevenson & Baker, 1987) and/or reduced parental monitoring and attention (Patterson, 1986). Investigation of such possibilities is an important task for future research.

Although consistent with different versions of the social class view just described, our results by no means establish the causal patterns suggested by this hypothesis. Many other explanatory frameworks would be equally consistent with the present data. For example, some (e.g., Scarr, 1981) have entertained the possibility that differences in genetic endowments might account for variations in both family income and child competence. Others (Ogbu, 1981, 1985) have emphasized the degree to which black children in poverty grow up in a cultural environment that devalues academic achievement and other types of school-related success. The present study was not designed to evaluate these alternative explanations of ethnic group differences.

As a matter of fact, an interesting aspect of our results is the rather limited extent to which ethnic differences in competence emerged at all. Although ethnicity was an important predictor of academic achievement test scores, it contributed only modestly to prediction of conduct or peer relations. Particularly for conduct and for peer relations, ethnicity was overshadowed by income and gender as predictors of competence.

Although income contributed significantly to prediction of achievement and peer relations for both sexes, it contributed more to prediction of behavior problems for boys than for girls. Boys from low-income homes were rated as showing more behavior problems than boys from other homes, and this was true both for blacks and for whites. Although a greater proportion of black than white children in our sample suffered economic disadvantage, it was apparently low income rather than ethnicity that was most strongly associated with behavior problems among boys. These results suggest that concerns about black boys such as those expressed by Hare and Castenell (1985) should probably be extended to economic as well as ethnic issues.

As a predictor of behavior problems at school, however, income was a more important predictor for black than for white children of both sexes. Regardless of whether they lived with one parent or with two, black children from low-income families had more behavior problems than other black children. Among white children from one-parent families, those with low incomes also showed more behavior problems. Among white children from two-parent homes, however, there was no significant correlation between income level and behavior problems. In addition to its main effects on achievement and peer relations, then, family income was thus also a significant predictor of children's conduct in three of four race × household composition subgroups.

Although low income and gender were generally stronger predictors than ethnicity or household composition in this study, much of the variance in child competence remained unexplained. For instance, no combination of the predictors accounted for as much as a third of the variance in any domain of child competence. In addition to revealing the importance of the demographic variables relative to one another, then, our results also provide estimates of the absolute size of their associations with child competence. As these estimates make clear, many other variables must be considered before a complete understanding of children's school-based competence will emerge.

In this research, we sampled three domains of children's school-based competence. We did not study other forms of competence relevant in school, such as skill in music, art, or athletics; nor did we examine aspects of child competence primarily associated with activities in nonschool settings such as homes, churches, or neighborhoods. Given the heterogeneity of children's levels of competence across three school-based domains, it seems likely that even greater variability will become apparent as competence in other domains is also examined.

The sex differences in competence that we observed are consistent with those reported in the literature (Rutter & Garmezy, 1983) for children at this age. Gender contributed most to prediction in the area of conduct, but it was also a significant predictor for achievement and for peer relations. In each case, girls showed greater competence. Although boys show more adjustment problems than girls during childhood, the trend apparently reverses in adolescence (Rutter & Garmezy, 1983). In future work, it will be interesting to compare gender effects in early adolescence.

From a methodological standpoint, concerns might be raised about the reliability of school records that we used to assess household composition. Although household composition was probably quite stable from month to month for most families represented in this sample, it may be that, for some families, it was more volatile. To the extent that any recent changes in household composition were not reflected in the official school records, their impact would not be evident in the cross-sectional data we have presented here. Concerns about this issue could be addressed by longitudinal research that takes such changes in household composition over time into account. In the context of the present study, however, the contributions of changes in household composition over time cannot be evaluated.

Another interpretive issue relates to the partial nonindependence of data sources employed in the present study. Although information about children's competence in the academic and peer domains was obtained independently of teacher reports about income level, this was not the case for our assessments of children's behavior problems. For this reason, the possibility of negative teacher bias with respect to the conduct of low-income children cannot be ruled out, nor can the possibility that some teachers may regard low income as a factor in children's behavior problems at school. As a result, some caution should be exercised when considering conclusions about the relations of income level and behavior problems, based on our current data. In future work, it would be preferable to obtain information from entirely independent sources.

In summary, this study was conducted to compare the strength of four demographic predictors of children's school-based competence in three domains. Results showed that, although ethnicity was a strong predictor of achievement test scores, low income and gender were stronger overall predictors of children's competence across domains than ethnicity or household composition. The likelihood of children living in a low-income home was, however, itself strongly linked to ethnicity and to household composition; black children were more likely to live in single-parent and/or low-income homes. Our results thus highlighted some correlates of the unequal distribution of economic resources among black and white children growing up in the United States today.

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