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Family- and Neighborhood-Level Factors as Predictors of Conduct Problems in School among Young, Urban, Minority Children

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Abstract

Minority children attending schools in urban socioeconomically disadvantaged neighborhoods are at high risk for conduct problems. Although a number of family and neighborhood characteristics have been implicated in the onset and progression of conduct problems, there remains incomplete understanding of the unique contributions of poverty-related factors early in development. This prospective study of 298 black public school children considered family- and neighborhood-level predictors of teacher-reported conduct problems from pre-kindergarten through first grade. Results from multi-level analyses indicate that percentage of poor residents in a student's neighborhood made a robust independent contribution to the prediction of development of conduct problems, over and above family- and other neighborhood-level demographic factors. For children of single parents, the percentage of black residents in the neighborhood also predicted the development of conduct problems. School-based interventions to prevent conduct problems should consider impact for children at highest risk based on neighborhood poverty.

Keywords

behavioral problems; early childhood; neighborhood; poverty; urban schools

Conduct problems in early childhood, including physical aggression, behavioral dysregulation, and rule violations[1,2] are robust predictors of a range of costly public-health problems.[3] Early conduct problems increase risk for delinquency, tobacco and heavy alcohol use, early sexual intercourse, school dropout, and limited economic productivity.[3–8] Across development, conduct problems are more prevalent in urban, poor and minority-dense neighborhoods.[9–11] Low-income, urban neighborhoods are typically characterized by high rates of unemployment, crime, single parent households, and mobility, as well as limited cohesion and social support among residents.[12–16] The specific family and neighborhood characteristics related to the development of conduct problems among young urban minority children, however, are not yet well understood.[17–18] A more complete understanding of the unique contributions of family and neighborhood-level characteristics associated with

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conduct problems during early childhood is necessary for the design and implementation of elementary school-based interventions.

In examining the literature on older school-age children and adolescents, a host of poverty-related family (eg, single parent status, parent education, family size) and neighborhood indicators (eg, concentrated poverty, amount of ethnic diversity, density of single parent headed households) have been related to conduct problems and delinquency.[14,19–22] Also for older children and adolescents, neighborhood characteristics have been shown to predict conduct problems, even when controlling for family demographic characteristics such as income, parental education, and family size.[23–26] One study showed that the effect of neighborhood risk on teacher reported behavior was partially mediated through its effect on single parent status.[27] In addition, among older children, neighborhood disadvantage appears to be more strongly related to conduct problems for boys relative to girls.[28] Less is known, however, regarding how neighborhood and family characteristics interact to predict the development of conduct problems at school during early grades. If patterns are similar with younger children, and indicate that neighborhood characteristics interact with individual and family-level characteristics such that certain neighborhood factors interfere with behavior regulation and school functioning only among children with certain individual or family characteristics,[15,16] then such findings could help identify young high-risk populations (eg, boys of single mothers) to be targeted for prevention efforts.

This study aimed to: (1) examine concurrent and longitudinal relations between family and neighborhood poverty-related factors and conduct problem development in urban elementary schools over a two-year period (pre-kindergarten through first grade; ~ages 4 to 6); (2) identify the unique contributions of family demographic and neighborhood-level characteristics on conduct problems at school; and (3) examine interactions between key family-and neighborhood-level predictors in the prediction of conduct problems at school.

METHODS

Study Design

This study considers teacher ratings on conduct problems from a cluster randomized prevention trial in which public schools were randomly assigned to condition. Schools were eligible based on student poverty (>70% eligible for free lunch) and racial minority status (>80% black). The ten schools enrolled in the intervention trial had student populations that were 76% poor (eligible for free lunch), and 92% were black and 5% Latino/a. Students (four cohorts) were enrolled over four consecutive years (2005–2008). Children were examined longitudinally from pre-kindergarten (pre-k) (T1), kindergarten (T2), through first grade (T3). Teacher reports were collected in spring of each school year; the study was from 2005 through 2011. Children in five schools assigned to the control condition (n = 489) are considered in this study. Study procedures are described elsewhere[29] and were approved by the Institutional Review Boards of New York University Langone Medical Center and the New York City Department of Education.

Measures

Conduct Problems—Conduct problems at school were measured at T1, T2, and T3 via the teacher report version of the Behavior Assessment System for Children, 2nd Edition (BASC-2).[30] At each time point, the teacher rated student behavior on the externalizing behavior scale (16 items; eg, has poor self-control, teases others, bullies others, hits other children). The BASC-2 prompts teachers to consider the frequencies of these behaviors "in the last several months" on a Likert scale of 0 (never) through 3 (almost always). Internal validity was excellent across time points (T1 α = .94, T2 α = .95, T3 α = .95).

Family-Level Predictors—Demographic information was collected from parents at T1 regarding child's age and sex (0, boy; 1, girl) and parent marital status (0, not married nor cohabiting with a partner, "single"; 1, married or cohabiting with a partner), employment status (0, not employed; 1, employed part- or full-time), and whether they were born in the United States (US) (0, non-immigrant; 1, immigrant). Level of parental educational attainment was assessed through an ordinal scale of 1–10 (0, "Did not attend high school"; 10, "JD/ MD/PhD") and was recoded to match the US Census indicator of having less than a high school diploma (0, high school diploma or higher; 1, less than high school diploma). Parents were asked about their gross annual household income on an ordinal scale (1, "$4,900 or less"; 10, "$70,000 or more") and the number of children (including the study child, ≤17 years old) and adults (including the parent being surveyed, ≥18 years old) residing in their home. The US Census uses family size and income to determine poverty thresholds; however, since income was assessed through an ordinal item, a variable could not be computed to determine the poverty threshold for each family. Instead of utilizing a family size variable, a child-to-adult ratio variable was calculated to more accurately capture the distribution of time and resources within the home. A value greater than 1 indicates that more children than adults resided in the household.

Neighborhood-Level Predictors—Census 2009 data were geo-coded using each family's confirmed home addresses to obtain levels of socioeconomic status (SES) variables by neighborhood tract. This analysis focused on the following variables: percentage of poor residents (200% of the federal poverty threshold), percentage of unemployed adults (age ≥16 not in school or working), percentage of adults (age ≥25) who had earned less than a high school diploma, percentage of black residents (the primary racial minority group in study neighborhoods), percentage of foreign-born residents, and the aggregate ratio of children to adults living in the neighborhood. For neighborhood child-to-adult ratio, a higher percentage represents more children residing in the neighborhood. These variables were chosen, in part, to mirror family-level variables. It should be noted that all neighborhood percentages were analyzed as proportions (eg, 88% was examined as 0.88).

Data Analysis

Of the 489 children in the schools randomized to the control condition, 298 children had complete parent and teacher reports in pre-k (T1) and had a parent who self-identified as black (4% of black parents also identified as Latino). Of the 298 children in the analytic sample, 263 (88%) had data at T2 (87%) or T3 (65%). We examined the sample for potential systematic differences between the analytic sample (n = 298) and the rest of the sample who

were not included due to missing data or because parents did not identify as black (n = 191). We also assessed whether there were systematic differences with regard to attrition in the analytic sample. Parents who reported having not earned a high school diploma (~10%) were more likely to have missing data (p < .001) at T1; however, there were no systematic differences on missing data patterns by any key variable at any time point in the analytic sample.

We originally planned to include annual family income in the analyses; however, 65 (21.8%) parents did not provide this information. The 65 cases differed significantly from the final sample of 298 as they were less likely to be married (p = .012), employed (p = .021), or to have attained a high school diploma (p = .019), and more likely to be an immigrant (p = .044) and reside in a neighborhood with high rates of unemployment (p < .001). So as not to further reduce the sample size, we did not examine family income as a predictor of conduct problems in the primary analyses. We did, however, conduct supplemental analyses in the smaller sample to include income in the models.

Bivariable Associations among Predictors of Conduct Problems—Correlations were calculated to examine bivariable relations between key variables at T1. Pearson correlations were calculated when both variables were continuous; point-biserial correlations were calculated when variables were continuous and dichotomous, and phi coefficients were calculated when both variables were dichotomous. The full analytic sample (n = 298) was utilized to examine associations between family- and neighborhood-level predictors; correlations between neighborhood-level variables were examined at tract-level (n = 71 tracts). Families resided within 71 Census tracts; 31 tracts contained only one study family, 32 contained 2–9 study families, and 8 contained 10–22 study families. Bivariable analysis among study predictors were also conducted to ensure that multi-collinearity would not be present in the multilevel models.

Multilevel Models Examining Family- and Neighborhood-Level Predictors of Conduct Problems—This analysis sought to examine whether family- and neighborhood-level factors predict conduct problems at T1 and over a two-year period (T1-T3), adjusting for nesting of data. Adjusting for nesting is of particular importance because at T1, many pre-k students were rated by the same teachers within the 5 schools (Mean = 21, SD = 14, Median =19, Range = 3–48). Teachers in schools rating multiple students was less of a concern at T2 (Mean = 4, SD = 5, Median = 2, Range = 1–25) and at T3 (Mean = 3, SD = 3, Median = 2, Range = 1–12) as study children move into a greater number of kindergarten and first grade classrooms. Using Generalized Linear Mixed effects Models (GLMMs),[31] conduct problems at 3 time points were modeled as a linear function of time with random intercepts and slopes for individual children. In addition, to account for the clustering of children within schools, random effects for schools were also included. The outcome is a discrete variable counting the total frequency of behaviors; in the sample the maximum was 45. This was modeled using Poisson GLMM with log link and the reported estimates of regression coefficients for each covariate refer to that model for log(number). Under the assumption that follow-up data were missing at random (generally an untestable assumption, but one that was corroborated by the attrition analyses), these GLMMs allow unbiased

estimates of change over time in the presence of missing data. In addition to the basic model in which conduct problems is modeled only as a function of time (with no covariates), three additional models were considered: (a) Model 1, which includes individual/family-level predictors as main effects and interactions with time, (b) Model 2, which includes neighborhood-level predictors as main effects and interactions with time; and (c) Model 3, which contains both individual/family-level and neighborhood characteristics and their interaction with time. All continuous variables were grand mean centered. Statistical significance was determined at level $\alpha = 0.05$, 2-sided. PROC GLIMMIX in SAS® 9.3 (SAS Institute, Inc., Cary, NC, USA) was used to fit all models. For the outcome variable (conduct problem behavior), intra-class correlation coefficients (ICCs) associated with schools were as follows: T1 ICC = .139, T2 ICC = .014, and T3 ICC = .020.

Supplemental analyses were also conducted using the same models in the subsample (n = 233) with family income data. Specifically, indicators for reporting annual income of $30,000-$49,000 and ≥ $50,000 were entered into the models with < $30,000 as the comparison. Finally, we considered whether two family-level factors (ie, the child's sex and parents' marital status) interacted with two neighborhood-level factors (ie, percentage of poor residents and percentage of black residents) in the prediction of conduct problems in the full sample. To limit the number of interactions tested, and considering the intercorrelations among neighborhood variables, we chose to examine these variables based on the literature specifically linking these two factors to conduct problems (albeit in older youth). For these analyses the models contained only the family- and neighborhood-level variables of interest (either percent poor or percent black residents), and terms were added to examine two-way (eg, female × percent poor) and three-way interactions (eg, female × percent poor × time).

RESULTS

Sample Characteristics

Table 1 presents family-level demographic characteristics of the analytic study sample (n = 298). The majority of parents were immigrants (primarily of Caribbean heritage). The mean level of conduct problems reported by teachers was 4.56 (SD = 6.52), 6.35 (SD = 8.41) and 6.04 (SD = 8.22) at T1, T2, and T3, respectively.

Bivariable Associations

As shown in Table 2, most family-level predictors were not highly inter-related nor were they highly related to neighborhood-level variables. Married parents were more likely to be immigrants and have a high school diploma, and those with less than a diploma were less likely to be employed. Parents living in neighborhoods with a higher percentage of black or poor residents were less likely to be employed or to have attained a diploma. Girls also tended to reside in neighborhoods with a high percentage of black residents and were less likely to reside in neighborhoods with a high percentage of immigrants or those who had not attained a diploma.

There was a higher degree of inter-relation among neighborhood-level variables. Prevalence of black residents was positively correlated with prevalence of unemployed residents and prevalence of immigrants in a neighborhood. The average neighborhood ratio of children to adults was negatively associated with prevalence of black residents and prevalence of immigrants and positively associated with prevalence of poor residents. Prevalence of poor residents was positively associated with prevalence of unemployed residents and prevalence of those with less than high school education and was negatively correlated with the prevalence of immigrants. Prevalence of unemployed residents and prevalence of individuals with less than high school education were positively correlated.

Conduct problems in pre-k (T1) were higher for boys than for girls and higher for children of single parents than married parents. Conduct problems in pre-k were positively correlated with the average neighborhood child-to-adult ratio and negatively correlated with prevalence of black residents, prevalence of unemployed and prevalence of poor residents. It should be noted that since neighborhood variables consist of aggregate data that may represent numerous families within the same tract, associations may not be independent. Thus, multilevel models, rather than OLS regression, were employed to more adequately delineate associations.

Multilevel Associations

First, a model was fit for teacher reported conduct problems over time without controlling for any family- or neighborhood-level factor. The significant positive slope ($B = 1.15$, $p < .001$) indicates that conduct problems increased each school year from T1 to T3 (mean age 4.90 to 6.87). The variance components for both the intercept and slope were also significant, indicating substantial variation in both the starting levels and in rate of change from the end of pre-k through end of first grade.

Table 3 presents the results from GLMM modeling of conduct problems as a function of family-level factors (Model 1), neighborhood-level factors (Model 2), and both family- and neighborhood-level factors (Model 3). In Model 1, there were sex differences on conduct problems at T1 and over time. Specifically, with all other factors kept at the same levels, girls had a lower level of conduct problems relative to boys at T1 ($B = -0.63$, $p < .001$); this corresponds to a ratio of conduct problems for girls versus boys of exp(−0.63) = 0.52. With respect to the slope, (again all other factors kept at the same levels) conduct problems for boys increased each year ($B = 0.28$, p D .074); this corresponds to a marginally significant increase with a rate ratio of exp(0.28) = 1.32 compared to the previous year. For example, the ratio of the rates of conduct problems in first grade (2 years after pre-k) relative to pre-k is exp(2*0.28) = 1.75. The change over time for girls was significantly lower than for boys ($B = -0.36$, $p = .001$), resulting in a non-significant change per year for girls (0.28 – 0.36 = −0.08, *ns*).

According to Model 2, although there were no neighborhood-level factors associated with conduct problems at T1, the developmental trajectory of conduct problems varied by level of neighborhood poverty ($B = 1.78$, $p = .001$ for time-by-proportion of neighborhood poverty). Thus, the higher the neighborhood poverty, the higher the annual increase in conduct problems. For example, with everything else equal, children living in neighborhoods with

10% poverty would increase their rate of conduct problems every year exp (0.06 + 1.78*0.1) = 1.27 times, compared to the previous year; while for children from neighborhoods with 50% poverty, the rate would increase exp(0.06C 1.78*0.5) = 2.59 times, compared to the previous year. This constitutes exp(1.78*0.4) = 2.03 times higher increase of rate of conduct problems per year that is associated with the difference between neighborhoods' poverty levels of 40%. In supplemental analyses on the subsample with parent reported income data (n = 233), family income was not associated with conduct problems. Models 1 and 3 above were repeated for this subsample while controlling for income; results were essentially unchanged (details available from authors).

Figure 1 presents significant two- and three-way model interactions from the final model (Model 3), which examined family- and neighborhood-level predictors simultaneously. The sex differences at T1 and over time held and were similar to the patterns described above in Model 1 such that relative to girls, boys developed higher levels of conduct problems at a faster rate over time. Residing in a neighborhood with a high percentage of poor residents remained a risk factor (p = .001) for increasing conduct problems, while controlling for all other neighborhood and family factors. Similar to the pattern for boys relative to girls, children from poor neighborhoods developed higher levels of conduct problems at a faster rate than children from less poor neighborhoods. Finally, with respect to interactions that considered child sex, parent marital status, percentage of poor residents and percentage of black residents (not shown in table), there was one significant three-way interaction between marital status, percentage of black residents in the neighborhood and time (B = −2.70, p = .040). As shown, living in a neighborhood with a high percentage of black residents was a risk factor for increasing conduct problems over time only among children from single parent households. Conversely, being a child of a single parent was a risk factor for conduct problems only among families living in neighborhoods characterized by a high percentage of black residents.

DISCUSSION

This study examined family- and neighborhood-level factors as predictors of conduct problems at school during the early elementary school years. The sample of young black children attending pre-k programs in schools serving primarily poor and black students and was considered to be at elevated risk for conduct problems as they experienced a range of poverty-related family and neighborhood-level stressors. Families resided in 71 Census tracts (neighborhoods), allowing for the consideration of the unique prediction of family demographic characteristics and parallel neighborhood characteristics to conduct problems during pre-k and over two years. This study adds to the literature by demonstrating the importance of neighborhood poverty for the development of conduct problems during early school years.

Consistent with previous research,[19,32] relative to girls, boys had higher levels of conduct problems at school according to pre-k, kindergarten, and first grade teachers. Child sex predicted the development of conduct problems over time, even after controlling for other family-level and neighborhood-level factors. No family-level demographic factors predicted conduct problems.

Of all the neighborhood-level factors, the percentage of poor residents was a robust predictor of conduct problems. In the full model, being a boy and living in a neighborhood with a high percentage of poor residents each explained variance in growth in conduct problems over time. Accordingly, not only was neighborhood poverty a robust predictor of growth in conduct problems over and above family demographic factors and sex, but the impact of neighborhood poverty can be contrasted to the lack of impact of any family demographic risk factor.

In terms of interactions across domains, although studies of older children have found that neighborhood factors may be more influential for boys relative to girls,[28] this study of young children found significant and comparable risk for boys and girls. Similarly, risk conferred by neighborhood poverty was not modified by living in a single parent or two-parent household.

Among children living in single-parent families, percent of black residents (but not percent of poor residents) predicted conduct problems. It is not clear why percent black and not percent poor was a meaningful factor among single parents. As described by Roosa and colleagues,[33] for young children, parent perceptions of neighborhood as well as parenting behaviors are likely to mediate the impact of neighborhood factors on child outcomes. Perhaps single black mothers perceive and react to the percentage of black residents in the neighborhood in a manner that translates into differences in parenting practices and ultimately child behavior. This finding is consistent with the potential double disadvantage for children from single parent-headed households in minority-dense neighborhoods.[27] Additional studies are needed to replicate this unanticipated finding and potential mechanisms such as maternal perceptions about neighborhood composition (including percentage of married men) should be examined.

Findings need to be considered in the context of study limitations. Due to missing data and modest attrition, the study sample was limited to 61% of the full sample enrolled in the control schools in the larger study. It is possible that results were influenced by missing data or that attrition was not completely at random. Family income was not examined in the main models because nearly a quarter of parents did not provide this information. However, analyses were repeated including income on the 233 cases with family income data and results were unchanged. Finally, the study did not have adequate power to detect small interaction effects, and therefore findings of interactions need to be replicated in larger samples. Despite these limitations, this study considered a range of family and neighborhood demographic characteristics over an important developmental period for the onset of conduct problems at school in urban, black youth.

CONCLUSIONS

In conclusion, study findings suggest that young boys living in neighborhoods with a high percentage of poor residents are at increased risk for exhibiting conduct problems at school during the critical early grades. Stable conduct problems by first grade are robust predictors of a range of public health and educational problems including underachievement, school dropout and juvenile delinquency. Study findings can inform population-level school-based

approaches that attempt to prevent conduct problems in poor and minority-dense neighborhoods.[33]

There are millions of American minority children who are growing up in poor families living in disadvantaged neighborhoods and attending high-need and underperforming schools that aggregate poor children. When children with conduct problems are clustered together in classrooms, it becomes harder for teachers to teach and for students to learn. Conduct problems at school in the early grades will likely undermine development in other domains, including academic achievement, psychological well-being and physical health.[34]

Findings from the current study have implications for school-wide behavioral interventions, professional development and classroom support for teachers and parenting interventions aimed at preventing conduct problems among students attending schools in urban, neighborhoods. Importantly, for boys from the poorest neighborhoods, conduct problems identified by pre-k teachers did not resolve; instead they escalated during kindergarten and first grade. This suggests that comprehensive, multi-component interventions for high-risk children may be necessary in schools to prevent the escalation to serious conduct problems.[35] Furthermore, more targeted interventions for families and teachers of pre-k students might be combined with existing school-wide universal interventions to achieve broad impact. In addition, professional development for teachers could support family engagement activities with sensitivity to families living in the highest risk neighborhoods. Universal interventions that aim to prevent conduct problems could be offered by the school to all families of pre-k or kindergarten students in schools in poor, urban neighborhoods, where a large portion of children are expected to be at risk for increasing rates of conduct problems over time.

Brotman and colleagues have been evaluating a universal family-centered, school-based intervention for parents and teachers of students attending pre-k programs in schools in urban, disadvantaged neighborhoods. They have shown the feasibility of this population-level approach, engaging more than 80% of early childhood teachers and nearly 60% of families in a family intervention held at the school during early evening hours. Families at highest risk for conduct and school problems based on student, family and neighborhood-level factors attend the intervention at the same level as lower risk families. Positive outcomes in terms of conduct problems, academic achievement and health behaviors have been reported and suggest the promise of early family and school preventive intervention.[36–38] It is still not known, however, whether such a multi-component approach is sufficient to mitigate the risk of neighborhood disadvantage on trajectories of conduct problems and school success.

Despite the clear need for interventions to address child conduct problems, schools located in urban and impoverished neighborhoods often do not employ evidence-based programs focused on the social and behavioral context for learning.[39] Program implementation can be challenging, especially when the available programs were not designed to address the needs of students, families and schools in urban neighborhoods. Culturally-informed interventions that effectively reach and engage large populations of children and their families living in disadvantaged neighborhoods are clearly warranted.

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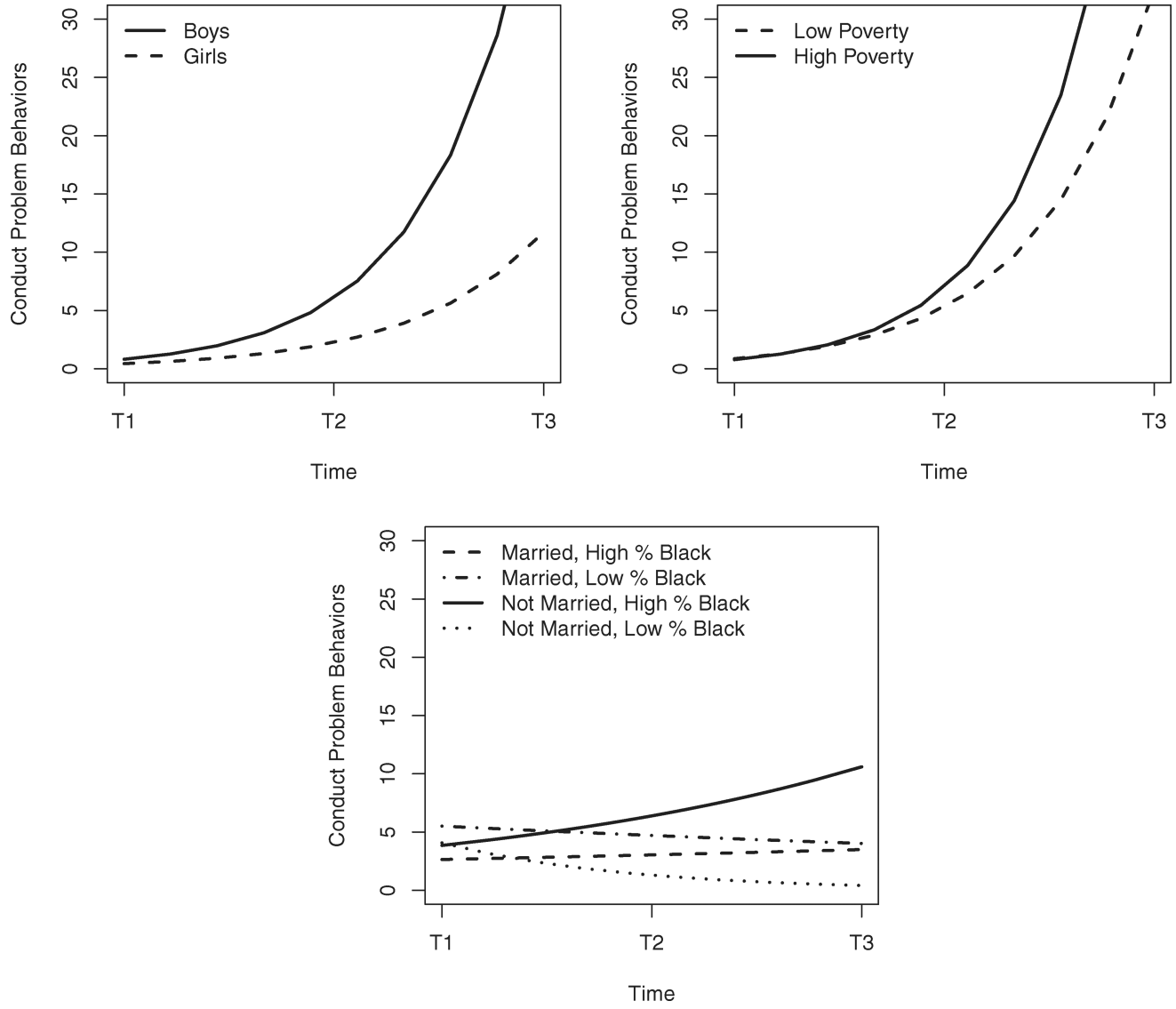

FIGURE 1.

Significant two- and three-way interactions. Upper Left: Conduct problem trajectories by sex (adjusted results). Upper right: Conduct problem trajectories by percent neighborhood poverty (adjusted results). Lower Center: Three-way interaction of conduct problem trajectories (marital status × percent of black residents in neighborhood × time). The cut-offs for low and high poverty in the figures were set to the 25th and 75th percentiles, respectively, and the low and high cut-offs for percentage black were set to the 50th and 100th percentiles because the data were negatively skewed (Mean = 88.1%, Median = 91%).

TABLE 1

Child and Family Demographic Characteristics at Time 1 ($N = 298$)

Characteristic	*n* (%)
Child	
Age, Mean (SD)	4.90 (0.29)
Female	149 (50.0%)
Parent Relationship to child	
Biological mother	264 (88.9%)
Other	34 (11.1%)
Immigrant	220 (73.8%)
Married/Cohabiting with partner	164 (55.0%)
Employed	189 (63.4%)
Educational attainment	
< High school diploma/GED	32 (10.7%)
High school diploma/GED	89 (29.9%)
Some college	120 (40.3%)
Bachelor's degree or higher	57 (19.1%)
Family annual household income	
< $30,000	76 (25.5%)
$30,000-$49,999	91 (30.5%)
> $50,000	66 (22.1%)
Missing/Refused to answer	65 (21.8%)
Child-to-adult ratio in home, Mean (SD)	1.20 (0.75)

TABLE 2

Correlations among Variables at Time 1

Variable	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Child female	0.50	0.50	1												
2. Parent married	0.55	0.50	−.03	1											
3. Parent employed	0.63	0.48	.09	−.04	1										
4. Parent education < High school	0.11	0.31	−.02	−.12*	− 19**	1									
5. Parent immigrant	0.74	0.44	−.12*	.15**	−.01	−.07	1								
6. Child-to-adult ratio in home	1.20	0.75	−.04	−.05	.06	.11	.01	1							
7.% Black residing in neighborhood	0.88	0.09	.15*	.05	−.16**	.07	−.09	.01	1						
8.% Poor in neighborhood	0.32	0.14	−.10	−.06	−.18**	.12*	.03	.03	−.15	1					
9.% Unemployed in neighborhood	0.09	0.04	.07	.01	−.06	.05	−.10	−.09	.26*	.26*	1				
10.% <High school in neighborhood	0.15	0.06	−.20**	−.04	−.05	−.04	.09	.01	−.12	.58***	.32**	1			
11.% Immigrants in neighborhood	0.49	0.07	−.13*	.01	−.02	.06	.03	.11	.46***	−.25*	.12	−.17	1		
12. Neighborhood child-to-adult ratio	0.18	0.05	.02	−.05	−.02	.03	.04	.02	−.46***	.36**	−.19	.13	−.29*	1	
13. Conduct problems	4.56	6.52	−.14*	−.13*	.10	.11	−.04	.07	−.22***	−.21***	− 23***	−.08	−.08	.12*	1

Note. % in neighborhood unemployed applies to individuals 16 or older; neighborhood child-to-adult ratio as per Census is defined as number of children ages 0–9/number of adults ages ≥21; family-level child-to-adult ratio is children ages 0–17/adults age ≥ 18.

* $p < .05$,

** $p < .01$,

*** $p < .001$.

TABLE 3

Family and Neighborhood Predictors of Conduct Problems over Time

	Model 1			Model 2			Model 3		
	Estimate	**SE**	***p***	**Estimate**	**SE**	***p***	**Estimate**	**SE**	***p***
Intercept	1.33	0.26	.007	1.06	1.16	.003	1.34	0.25	.006
Child female	−0.63	0.14	<.001				−0.62	0.15	<.001
Parent married	−0.22	0.14	.119				−0.22	0.14	.120
Parent employed	0.22	0.15	.149				0.18	0.15	.238
Parent education < High school	0.38	0.23	.092				0.41	0.23	.081
Parent immigrant	−0.02	0.16	.895				−0.03	0.16	.841
Child-to-adult ratio in home	0.05	0.09	.595				0.05	0.10	.593
% Black residing in neighborhood				−1.16	0.91	.210	−0.53	0.91	.558
% Neighborhood poverty 200% below				−0.09	0.77	.904	−0.45	0.75	.551
% Unemployed in neighborhood				−3.28	2.27	.150	−1.99	2.26	.381
% In neighborhood < High school				0.69	1.23	.575	−0.06	1.22	.964
% Immigrants in neighborhood				−0.34	1.12	.756	−1.12	1.10	.313
Neighborhood child-to-adult ratio				0.93	1.66	.574	1.65	1.62	.308
Time (slope)	0.28	0.15	.074	0.06	0.05	.270	0.20	0.15	.175
Child female	−0.36	0.11	.001				−0.36	0.11	.002
Parent married	−0.05	0.11	.650				−0.03	0.11	.753
Parent employed	−0.08	0.11	.504				0.04	0.12	.735
Parent education < High school	0.05	0.17	.774				0.00	0.16	.985
Parent immigrant	0.03	0.13	.786				0.03	0.12	.789
Child-to-adult ratio in home	0.10	0.07	.168				0.09	0.07	.204
% Black residing in neighborhood				0.55	0.62	.376	0.90	0.63	.156
% Neighborhood poverty 200% below				1.78	0.45	.001	1.57	0.46	.001
% Unemployed in neighborhood				1.82	1.54	.241	2.70	1.57	.087
% In neighborhood < High school				0.99	0.92	.284	0.40	0.94	.670
% Immigrants in neighborhood				0.96	0.79	.227	0.30	0.81	.716
Neighborhood child-to-adult ratio				−1.49	1.17	.204	−0.94	1.17	.426
−2 Res Log Pseudo-Likelihood		2884.35			2854.15			2842.95	

	Model 1			Model 2			Model 3		
	Estimate	**SE**	***p***	**Estimate**	**SE**	***p***	**Estimate**	**SE**	***p***
Generalized χ^2/df		1.69			1.70			1.70	