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The Influence of Female-Headed Households on Black Achievement

Na’im Madyun¹ and Moo Sung Lee²

Abstract
This study attempts to go beyond the individual-level factors that explain the underachievement of the Black male student and specifically focuses on the enormous growth of female-headed households. To this end, 2,849 middle school students in a large Midwestern school district in the United States were used. It was found that there is a significant association between the proportion of female-headed households and the achievement of Black male students only, in contrast to that of Black female and White students. Specifically, as the proportion of female-headed households in neighborhoods increases, Black male students tend to show poorer outcomes. Implications for the finding are reviewed.

Keywords
Black male adolescents, female-headed households, social disorganization, achievement gap

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Introduction

The purpose of this study was to examine the effects of female-headed households as a key neighborhood condition on academic achievement. In particular, we aimed to investigate whether there were different effects of female-headed households on Black male adolescents’ achievement compared with other student groups by race and gender. The primary reason why we focused particularly on the issue of female-headed households related to Black male adolescents reflects the current demographic trend of household structures in the United States. This trend at the macro level has been underresearched in the educational literature.

According to the U.S. Census Bureau, in 2006 approximately one third of the nation’s children below the age of 18 lived in nontraditional or single-parent households (U.S. Census Bureau News, 2007). As far as Black households are concerned, this statistic is more concerning. From 1960 to 2000, the proportion of Black children living with a single parent jumped from 22% to 53.3% (Cantave & Harrison, 2001). Even though single-parent households do not mean exactly female-headed households, a majority of Black single-parent households are managed by women—that is, 92% of all Black single-parent households were female-headed households as of 2000 (Cantave & Harrison, 2001).

Furthermore, from a nationally representative sample, a recent Pew Research Center survey (2007) reported that Blacks regard the number of births to unwed mothers in their neighborhood as a more serious problem (50% of the respondents) than Whites do (33% of the respondents). Based on the 2005 Census Bureau data, the Pew report went on to delineate the disproportionate rate of unmarried mothers between Blacks and Whites by education level as follows:

- Among women who did not complete high school, 53% of White births and 85% of Black births were to unmarried mothers. Among high school graduates, 25% White births and 66% of Black births were to unmarried women. Among college graduates, 4% of White births and 28% of Black births were to unmarried women. (Pew Research Center, 2007, p. 11)

This disproportionate sociodemographic pattern requires a different lens for examining the issue of female-headed households in the educational context.

Notably, the issue of “broken” families facing Black education has been a persistent social concern since the publication of The Negro Family: The
Case for National Action (commonly referred to as the Moynihan Report) in 1965. The Moynihan Report noted that the number of fatherless homes was increasing at an alarming rate, and much of the variance in school achievement could be explained by this household structure. If a father was present at home, there were significantly higher I.Q. scores and fewer grades repeated among Black children (Moynihan, 1965). Although a few studies (e.g., Gans, 1967) reported no particular association between fatherless homes and Blacks’ school performance (cited in Battle & Scott, 2000) and the concept of the “broken” Black family is still debatable, in general, research has shown certain negative linkages in line with the Moynihan Report. For example, a conference report titled Turning the Corner on Father Absence in Black America, cosponsored by the Morehouse Research Institute and the Institute for American Values (1999), captured how Black children who do not live with their fathers are faced with school difficulties. Rodney and Mupier (1999) also found that 46% of father-absent Black adolescents repeated at least one grade compared to only 24% of father-present Black adolescents by examining 433 Black adolescents residing in a Midwestern city.

Reflecting this demographic reality of Black household structure and its educational implications as our foundation, we examined how female-headed households as a community risk factor influence the academic achievement of Black male adolescents when controlling other important community as well as individual risk factors.

Literature Review

In this section, we briefly review prior neighborhood effect research based mostly on social disorganization theory. Identifying neighborhood risk factors traces back more than half a century ago. In their classical research of social disorganization, Shaw and McKay (1942) identified a lack of social control in Chicago neighborhoods as stemming from several community risk factors such as high crime, high poverty, and a high degree of racial diversity. They found that such risk factors undermine a community’s ability to pool the resources necessary to enforce social control (i.e., control the community messages, norms, and expectations).

Social Disorganization Theory

Specifically, neighborhood crime itself is the best index of social disorganization in the sense that it typically reflects the amount of control a community has over events within their neighborhood. With respect to the effect of
neighborhood crime on academic achievement, Madyun and Lee’s (2008) recent research found that neighborhood crime is negatively associated with the academic achievement of White students with emotional and behavioral disorders. Another important factor in Shaw and McKay’s theory was neighborhood poverty (Warner, 1999). In their research, they found that social control was threatened due to a lack of money and financial resources (Sampson & Groves, 1989). The ripple effect of poorer residents was found in less volunteerism and organizational participation which consequently resulted in fewer avenues for generating important resources and thus poorer control over managing the community. Prior studies have also reported the negative effect of neighborhood poverty on Blacks’ school performance. Racial diversity was also viewed as a social disorganization factor that could disrupt social control. When individuals are from different backgrounds, it cannot be assumed that they will acknowledge the same social or educational goals. This potential barrier could be compounded with differing perspectives on methods of goal attainment. Even if all educational goals and methods of goal attainment are identical, social control may still be reduced through difficulty in establishing strong social ties across cultural barriers (Elliott, Menard, Rankin, Elliott, & Wilson, 2006; Sampson & Groves, 1989). Indeed, many ethnic minority groups in the United States tend to cope with the lack of socioeconomic resources and stressful events by actively mobilizing a collective resource within their racially ethnically identical groups. Bankston (2004) viewed this tendency to ethnically mobilize resources as social capital. This ironically implies that there is a racial/ethnic line in social interrelationships between minority and majority communities. In other words, we may assume that racial diversity could serve as a positive contextual factor, if a community is racially well integrated. However, as long as this line exists, racial diversity more often functions as a negative community factor. Another factor identified as diluting the ability to establish social control was family composition (single-parent households in general and female-headed households in particular). The number of female-headed households is a critical factor in maintaining social control because it also suggests less supervision of others and fewer community role models (Sampson, 1997). Consistent with Shaw and McKay’s social disorganization theory, for example, Garbarino (1992) found that the highest predictor of child and infant risk for poor outcomes was birth to unmarried mothers.

Since Shaw and McKay’s (1942) development of social disorganization theory, research has found both negative and positive neighborhood effects on child and adolescent development. However, as far as child and adolescents’ educational outcomes are concerned, research has been actively conducted
only since the 1980s. One of the early studies focusing on neighborhood effects on educational outcomes was Datcher’s (1982) study where neighborhood differences were found to be just as important as family characteristics in explaining Black and White academic achievement. In particular, in explaining the linkage between negative neighborhood conditions and “Black” adolescents’ school performance, Wilson (1987) brought social disorganization theory to the attention of educational researchers to explore the effects of community risk factors on Blacks’ school success. Wilson found that school failure was mainly a consequence of poor social control. Inner-city Blacks were unable to access and apply social capital to expose their children to success-oriented educational resources and networks. More involved affluent communities did not have this issue.

**Neighborhood Effects Research in Education**

Since the late 1980s, there have been a growing number of studies exploring neighborhood effects on educational outcomes with newer methods of analysis (e.g., hierarchical linear modeling). Studies in this period have indicated the significant effects of neighborhood socioeconomic status (SES) or poverty. Brooks-Gunn, Duncan, Klebanov, and Sealand (1993) found a positive correlation between the presence of affluent neighbors and the cognitive performance of 3-year-olds. This correlation also held true at age 5 (Duncan, Brooks-Gunn, & Klebanov, 1994). By reviewing data from the Woodlawn (Chicago) Longitudinal study, Ensminger, Lamkin, and Jacobson (1996) also investigated the direct, indirect, and interactive effects of neighborhoods on school completion. They found that Black male students were three-and-a-half times more likely to graduate from high school if they were from middle-class neighborhoods. An increase of middle-SES neighbors was also negatively related to school dropout (Ensminger et al., 1996).

Similarly, Dornbusch, Ritter, and Steinberg (1991) looked at the effects of neighborhood characteristics on school performance. They operationalized school performance as self-reported grades. Neighborhoods were measured using neighborhood SES, household income, number of families above the poverty line, number of professional/managerial workers, and mean level of completed education. Neighborhood SES was found to be a better predictor of self-reported grades. This was still evident after normal mediating factors, such as parental and family variables, were controlled. Notably, these effects were much greater for Black than for White students.

Coupled with the effects of neighborhood types (e.g., affluent, middle-class, or high-SES neighborhoods), the presence of professional/managerial
workers or neighbors having high-status jobs was identified as an important neighborhood effect. Crane (1991) used a data set of 92,512 teenagers from the 1970 Census to examine neighborhood effects on dropping out. He found a dramatic increase in dropout numbers in neighborhoods where less than 5% of its members had high-status jobs.

All of these findings are consistent with collective socialization and institutional models of social development, which demonstrate how the absence or presence of affluent neighbors is a significant influential factor (Brooks-Gunn et al., 1993). These prior studies have substantively built our knowledge on neighborhood effects (e.g., neighborhood poverty, number of middle-SES neighbors, number of professional workers, etc.).

Despite our current knowledge about the effect of these community risk factors, however, less is known about the effect of female-headed households in particular as a community risk factor on Black male adolescents’ achievement. With only a few exceptions (e.g., Duncan, 1994), a majority of studies (e.g., Battle & Coates, 2004; Battle & Scott, 2000) tended to examine the effect of female-headed households as an individual-level risk factor. Although such research sheds light on how poor parenting plays a role in shaping adolescents’ social outcomes at the individual level, little is known about how parenting deficiency at the collective level works. The perspective of collective socialization provides the importance of female-headed households at the neighborhood level. Through “collective socialization,” adult role models influence a youth’s view of racial/ethnic identity, marriage, school behaviors, and so on (Jencks & Mayer, 1990). This community feature works on the premise that positive community members function as important socializing agents for healthy development whereas negative community members allow for the development of behaviors and norms that do not typically lead to success. As mentioned above, Crane (1991), for example, showed that the presence of a small critical mass of professional workers can positively influence adolescent development. In a similar logic, adolescents living in neighborhoods having high proportions of female-headed households would probably be exposed to a smaller number of adult role models who can provide information about succeeding in school and acquiring higher quality jobs. In a similar context, Rodney, Tachia, and Rodney (1997) reported the presence of significant other adults is critical to the psychological well-being of Black young male adolescents by reducing lifetime acts of violence. That is, the high proportion of female-headed households would undermine collective socialization because as the proportion of female-headed households increases in a community, the possibility of the presence of law-abiding male adults, supportive supervision, or role models.
would decrease. In this regard, it is clearly necessary to revisit the effect of female-headed families on the academic achievement of Black male students at the community level. This may offer insight into how community adults serve as role models for individuals who are not their children. This will help determine whether the influence of a two-parent family might be diluted if present within a community of female-headed households. In this regard, we examined the effect of female-headed household proportions on the educational outcomes of Black male adolescents when other important individual and community risk factors are controlled.

In addition, the lack of collective socialization caused by the high proportion of female-headed families is likely to influence the educational outcomes of Blacks differently by gender. As part of social disorganization theory, neighborhood poverty and racial diversity, considering their nature, seem to be gender-neutral factors. However, the number of female-headed households in a community is likely to be a more gender-sensitive factor. Perhaps a fatherless home will influence a boy differently than a girl. To our knowledge, there are a few studies (e.g., Duncan, 1994) that statistically account for the different neighborhood effect of female-headed households in a community on Blacks’ academic achievement by gender. Although some studies examined the different effect of female-headed households on Black young adults by gender, as stated earlier, these studies usually treated female-headed households as an individual risk factor. For example, two recent studies examined how father-only and mother-only households influence differently the academic achievement of Black boys (Battle & Scott, 2000) and Black girls (Battle & Coates, 2004). Although these studies contributed significantly to understanding the effect of the different types of single-parent households on Black adolescents’ achievement, understanding the community effect of female-headed households on Black youth appears timely.

Research Question

Based on our primary inquiry, we centered on the following research question:

*Research Question 1:* Is there a different association between female-headed households and Black adolescents’ achievement by gender when other community and individual risk factors are controlled?

In examining these questions, we placed an emphasis on comparing White adolescents with Black peers. By doing so, we intended to examine
whether certain effects of female-headed households on educational outcomes could be found among White as well as Black students. For example, if similar negative results are found in both student groups, the increasing number of female-headed households would be more than just a critical social issue facing Black male students. Conversely, if certain negative results are identified only among Black male students, educators and policy makers need to pay special attention to the specificity of any plan to resolve the issue for Black communities.

Method

Data

Data were gathered for quantitative analysis from three different sources. First, standardized reading scores of 2,849 (1,667 White and 1,182 Black students) were obtained from the 2002 Metropolitan Achievement Test–7 (MAT-7) data—The MAT-7 was the standardized test of achievement for Grades 2 to 10 chosen by the district. It is designed to measure knowledge by focusing on knowledge quantity, understanding of knowledge, and the ability to apply knowledge. As such, the populations consisted of all students who took the MAT-7 in the spring of 2002 and enrolled in all middle schools (7th or 8th graders in 10 schools) in the St. Paul public school district in Minnesota during the fall of 2002. Second, together with student information (e.g., gender, grade, and home address), individual risk factors (i.e., SES, limited English proficient [LEP] status, and special education status) were collected from the permanent records of the students.

Exogenous social disorganization factors (i.e., female-headed households, poverty, and racial diversity) were gathered from the U.S. Census data. According to the U.S. Census data, in 2002, the percentage of individuals below the poverty line in St. Paul was 15.6% compared to the national average of 12.4%. In addition, the 2004 American Community Survey indicated that the poverty rate of female-headed households who had children below 18 years was 30.4% in St. Paul compared with the national average of 37.6% (U.S. Census Bureau, 2008). These statistics exist within the context of St. Paul being one of the most racially diverse places (0.53 for racial diversity rate) among those cities which have a similar population size to St. Paul (the total population, 258,422). Along with this relatively high racial diversity, it should be noted that both White and Black groups tended to be segregated to some degree in particular neighborhoods in St. Paul. As presented in Figure 1, although Black populations tended to reside in the neighborhoods located in the center of the map,
most of the neighborhoods located in the lower left side of the map were dominated by White populations. In other words, the St. Paul neighborhoods on average had relatively high racial diversity, although some of the neighborhoods tended to be segregated by race. We believe that these local community circumstances should be considered when estimating the effect of neighborhood disorganization factors on the academic achievement of Black students. To this end, we used the tract-finder system, which was matched with individual students’ residential address for building a nested data set.

Finally, neighborhood crime, another exogenous social disorganization factor, was gathered from the local police department. This data set included 18,088 Part-1 crimes (homicide, rape, robbery, aggravated assault, burglary, theft, auto theft, and arson) from 2002. Specifically, street-level crime data were methodically aggregated to the census-tract level because the police department did not collect the crime data at the census-tract level.

**Data Analysis**

As students existed as individuals nested within 79 out of 81 St. Paul census tracts, two-level hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002) was employed. In constructing the model, we first developed our Level-1 model. Level-2 predictors were used to try and explain the variance left over from the Level-1 model. The following variables were used for the HLM analyses.
Independent variables (Level 1). Based on prior research on individual predictors of achievement, the following factors were used in the Level-1 model: race, gender, LEP, special education status, and participation in the free or reduced-price school lunch program (for SES).

As our primary analytical focus was on examining how the proportion of female-headed households interacts with race and gender, we created several dummy indicators by race and gender: Black male (the reference group), Black female, White male, and White female. In addition, eligibility for a free or reduced-priced lunch was used as an indicator of each student’s SES level. For example, to be eligible for free lunch, family income had to be no more than 130% of the poverty line. That is, a family of five’s annual income would need to be equal to or less than US$26,871 (Department of Health and Human Services, 2001). The variables were included in the model and coded in a binary fashion, which were entered uncentered.

Independent variables (Level 2). Four community risk factors were the independent variables of major interest. All these variables were used as Level-2 predictors in our hierarchical linear regressions. First, female-headed households were represented as the total number of female-headed householders with children younger than 18, divided by the total number of families within a neighborhood. Second, neighborhood poverty referred to the proportion of families within a neighborhood living below the poverty line in the past 12 months. Third, racial diversity was calculated by summing each racial group’s squared population proportion and then subtracting this sum from 1. The formula for this calculation is represented by \( (1 – \Sigma p^2) \), where \( p \) is equal to the population proportion (Blau, 1977). Finally, neighborhood crime rates by the census tract were used. The Level-2 continuous variables were grand mean centered.

Notably, there was a high correlation between poverty and diversity \((.776**)\) and some moderate correlations among other Level-2 predictors. Because of a concern for multicollinearity, a few further steps were taken to address this issue. First, instead of eliminating either poverty or diversity from our analysis, poverty and diversity were integrated into one interaction effect (i.e., Poverty \( \times \) Diversity) because those two variables represent key neighborhood risk factors related to adolescent development. By doing so, the correlations of these variables with others were significantly reduced or disappeared. Specifically, only one correlation among the Level-2 predictors was found between female-headed household and Poverty \( \times \) Diversity \((-272*)\). Although it was a moderate correlation, we further detected multicollinearity by using variance inflation factors (VIFs). The further investigation using regression analysis indicated that the VIF values of each
independent variable were far less than 10. Based on the result, we continued to conduct our data analysis.

Dependent variable. The reading score from the 2002 MAT-7 was the dependent variable. The scale of standardized test scores ranged from 1 to 99 with an average of 50. As the MAT-7 was the norm-referenced standardized test of achievement, a student’s score which is higher than 50 points means that she performs better than the average student who took the test.

Result and Discussion

Table 1 presents the descriptive statistics of demographic characteristics of our final sample: the 2,849 students resided in 79 different neighborhoods in the school district. Chi-square tests revealed that there was a significant association between race and student demographics (i.e., LEP status, SES [i.e., lunch status], and special education), and there was no significant association between race and gender/grade. The most significant difference between Black and White students was SES. An odds ratio indicates that Black students were less likely to pay full price for lunch (0.10 times) compared to their White peers. In addition, there was a disproportionate racial representation for students who receive language or other special education services. White students were less likely (0.50 times) than their Black counterparts to receive special education services. White students were also less likely (0.21 times) than their Black peers to be LEP students.
Based on identifying descriptive characteristics of the sample students, a series of HLM analyses was conducted. The HLM model allowed us to estimate the likelihood of an educational outcome based on manipulating the independent variables at the student or community level. An unconditional model (no individual- or community-level factors) was first fitted to the achievement data to identify the estimated student reading mean for all of the schools. The estimated grand mean was 48.5 points with standard error of 1.52 on a 1-to-99-point scale for all students. The grand mean achievement suggests that all students slightly lagged behind the average reading achievement score (50) on the MAT-7 since normal curve equivalents were used (i.e., the average is 50 with equal interval scores ranging from 1 to 99). Table 2 presents the summary of the HLM models predicting the reading achievement. By fitting only an overall constant to the data, we calculated how much of the variance in the mean reading score lies between neighborhoods. We found that the average reading score varied significantly across the neighborhoods by identifying 26.2% of the unconditional variation in the estimated reading score—that is, the associated intraclass correlation coefficient of $\frac{.262 = 164.22}{463.62 + 164.22}$. Based on the size of the intraclass correlation, we continued to use HLM techniques (Raudenbush & Bryk, 2002).

Model 2 represents a conditional model with the Level-1 predictors—that is, Black female, White male, White female, LEP, SES, and special education status. Model 3 shows a two-level model that includes the community-level risk factors—that is, crime and Poverty $\times$ Diversity. Model 4, the final model, added another Level-2 predictor of female-headed households. Consistent with our primary research question, Model 4 (i.e., intercepts- and slopes-as-outcomes model) explored whether there was a cross-level interaction between Level-1 predictors (gender and race) and the community risk factors. As such, the HLM equation of our final model was

Level-1 model:

$$Y_{ij} = \beta_{0j} (\text{Black} \_ \text{male})_{ij} + \beta_{1j} (\text{Black} \_ \text{female})_{ij} + \beta_{2j} (\text{White} \_ \text{male})_{ij} + \beta_{3j} (\text{White} \_ \text{female})_{ij} + \beta_{4j} (\text{LEP})_{ij} + \beta_{5j} (\text{SES}) + \beta_{6j} (\text{special} \_ \text{education})_{ij} + r_{ij}$$

Level-2 model:

$$\beta_{0j} = \gamma_{00} + \gamma_{01} (\text{crime})_{j} + \gamma_{02} (\text{Poverty} \times \text{Diversity})_{j} + \gamma_{03} (\text{female} \_ \text{households})_{j} + u_{0j}$$

$$\beta_{1j} = \gamma_{10} + \gamma_{11} (\text{crime})_{j} + \gamma_{12} (\text{Poverty} \times \text{Diversity})_{j} + \gamma_{13} (\text{female} \_ \text{households})_{j} + u_{1j}$$
Table 2. Hierarchical Linear Models Predicting Reading Achievement (Fixed Effects)

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand mean</td>
<td>48.05*** (1.52)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>For Black male</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>slope $\beta_{0j}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept $\gamma_{00}$</td>
<td>47.61*** (1.22)</td>
<td>47.53*** (1.22)</td>
<td>48.64*** (1.32)</td>
<td></td>
</tr>
<tr>
<td>Crime $\gamma_{01}$</td>
<td>0.37 (1.28)</td>
<td>-0.21 (1.13)</td>
<td>-0.02 (0.57)</td>
<td></td>
</tr>
<tr>
<td>Poverty $\times$ Diversity $\gamma_{02}$</td>
<td>0.43 (0.77)</td>
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<tr>
<td>For Black-headed household $\gamma_{03}$</td>
<td></td>
<td></td>
<td></td>
<td>-3.50** (1.23)</td>
</tr>
<tr>
<td>For Black female</td>
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<td></td>
</tr>
<tr>
<td>slope $\beta_{1j}$</td>
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<tr>
<td>Intercept $\gamma_{10}$</td>
<td>1.76 (0.89)</td>
<td>1.92* (0.90)</td>
<td>0.81 (1.07)</td>
<td></td>
</tr>
<tr>
<td>Crime $\gamma_{11}$</td>
<td>-1.54 (1.22)</td>
<td>-1.06 (1.12)</td>
<td></td>
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<tr>
<td>Poverty $\times$ Diversity $\gamma_{12}$</td>
<td>-0.20 (0.84)</td>
<td>0.07 (0.72)</td>
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<tr>
<td>Female-headed household $\gamma_{13}$</td>
<td></td>
<td></td>
<td>2.13 (1.10)</td>
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<tr>
<td>For White male</td>
<td></td>
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<td></td>
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<tr>
<td>slope $\beta_{2j}$</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intercept $\gamma_{20}$</td>
<td>15.23*** (1.32)</td>
<td>15.82*** (1.32)</td>
<td>13.91*** (1.48)</td>
<td></td>
</tr>
<tr>
<td>Crime $\gamma_{21}$</td>
<td>-8.07*** (1.98)</td>
<td>-5.94** (2.17)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poverty $\times$ Diversity $\gamma_{22}$</td>
<td>2.60 (1.33)</td>
<td>1.69 (1.26)</td>
<td></td>
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</tr>
<tr>
<td>Female-headed household $\gamma_{23}$</td>
<td></td>
<td></td>
<td>-1.28 (1.69)</td>
<td></td>
</tr>
<tr>
<td>For White female</td>
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<td></td>
</tr>
<tr>
<td>slope $\beta_{3j}$</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Intercept $\gamma_{30}$</td>
<td>15.59*** (1.36)</td>
<td>16.12*** (1.32)</td>
<td>14.51*** (1.43)</td>
<td></td>
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<tr>
<td>Crime $\gamma_{31}$</td>
<td>-7.45*** (1.95)</td>
<td>-6.05** (1.99)</td>
<td></td>
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</tr>
<tr>
<td>Poverty $\times$ Diversity $\gamma_{32}$</td>
<td>1.05 (1.28)</td>
<td>0.60 (1.27)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female-headed household $\gamma_{33}$</td>
<td></td>
<td></td>
<td>0.51 (1.67)</td>
<td></td>
</tr>
<tr>
<td>LEP (1 = LEP) $\gamma_{40}$</td>
<td>$-10.61*** (1.78)$</td>
<td>$-10.96*** (1.83)$</td>
<td>$-10.80*** (1.76)$</td>
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<tr>
<td>SES (1 = free/reduced lunch) $\gamma_{50}$</td>
<td>$-12.24*** (1.02)$</td>
<td>$-12.24*** (1.03)$</td>
<td>$-11.95*** (1.02)$</td>
<td></td>
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<tr>
<td>Special education (1 = yes) $\gamma_{60}$</td>
<td>$-20.65*** (0.82)$</td>
<td>$-20.68*** (0.84)$</td>
<td>$-20.53*** (0.83)$</td>
<td></td>
</tr>
</tbody>
</table>

Note: LEP = limited English proficient; SES = socioeconomic status. Values within parentheses denote robust standard error.

*p < .05, **p <.01, ***p < .001.

$$
\beta_{2j} = \gamma_{20} + \gamma_{21} (\text{crime})_j + \gamma_{22} (\text{Poverty} \times \text{Diversity})_j + \\
\gamma_{23} (\text{female household})_j + u_{2j}
$$

$$
\beta_{3j} = \gamma_{30} + \gamma_{31} (\text{crime})_j + \gamma_{32} (\text{Poverty} \times \text{Diversity})_j + \\
\gamma_{33} (\text{female household})_j + u_{3j}
$$
In Model 2, the student-level demographic variables were added. All coefficients held their statistical significance, except the predictor of Black female, when differences in such demographic backgrounds were controlled. Specifically, the intercept of 47.6*** is the estimated mean reading achievement of a student who is at the level of 0 on all of the binary predictors—that is, a Black male student who did not receive LEP, special education, and free/reduced-priced lunch services. This mean achievement reveals that even Black male students who did not have demographic labels that typically indicate underperformance still lagged slightly behind the average achievement (50.0) of the entire population in reading achievement. Notably, those Black students who were categorized in special education programs (−20.7***), free/reduced-price lunch services (−12.2***), or LEP (−10.6***)) were estimated likely to lag far behind their counterparts with regard to educational outcomes. If the student was a White boy or girl instead of Black boy, the predicted achievement would be a significant 15.2*** or 15.6*** points higher, respectively, with the other predictors held constant. Model 2 also presented that 32.6% of the variance in the reading score within neighborhoods was explained, and 16.1% of the variance between neighborhoods in the achievement was explained (see Table 3).
Model 3 added two neighborhood characteristics: crime and Poverty × Diversity. All of the individual predictors were significant in the model. The largest student-level coefficient that was significant in Model 3 was special education status (−20.7***). Both LEP (−11.0*** and SES (−12.2***) also showed significantly negative effects on the reading achievement, with the other predictors controlled. Importantly, the estimated mean reading achievement of a Black male student, who did not receive LEP, special education, and free/reduced-priced lunch services, would be an average of 15.8*** points lower than his White male peer with the other predictors held constant.

With regard to the community risk factors, the HLM results show a distinguished feature in terms of race. The predictors of crime turned out to be significantly negative for White students in particular. The effects of crime rates (−8.1*** for White boy and −7.5*** for White girl) indicate that the estimated reading achievement of both student groups were likely to be exacerbated by the increase of crime rates in their neighborhoods although there was no cross-level interaction effect of neighborhood crime rates on the estimated reading achievement of both Black male and female students. This contradictory finding suggests that the reading achievement of White students in particular is likely to be negatively affected in neighborhoods with a high crime rate. This is similar to earlier research on crime and White achievement outcomes (Madyun & Lee, 2008). However, there was no significant cross-level interaction effect of neighborhood poverty/diversity on the estimated reading achievement. Consistent with our primary interest, Model 4 added the predictor of female-headed households. All coefficients held their statistical significance except the predictor of Black girl, when differences in such demographic backgrounds and neighborhood characteristics were controlled. Specifically, the intercept of 48.6*** is the estimated mean reading achievement of a Black male student who did not receive LEP, special education, and free/reduced-priced lunch services. In parallel with the previous models, LEP (−10.8***), free/reduced-price lunch services (−12.0***), and special education status (−20.5***) had significantly negative effects on the estimated reading achievement. In terms of the neighborhood risk factors, another distinctive finding emerged from the final model. Although the predictor of crime continuously held negative interaction effects on the estimated achievement of White students only (−5.9** for White boy and −6.1** for White girl), the interaction effect of female-headed households turned out to be significant for the estimated achievement of Black male students only (−3.50**). That is, Black male students were likely to be particularly vulnerable to the increase of female-headed household in their neighborhoods. Model 4 accounted for 36.4% of the total variance in reading achievement—47.1% of the variance between neighborhoods and 34.7% of the variance within neighborhoods in the reading achievement.
Based on identifying this distinctive effect of female-headed household on Black male students, we did an additional analysis that focused entirely on Black male and female students to shed further light on the finding. We again examined the descriptive statistics of only 1,182 Black students to detail the characteristics of our target population (i.e., Black male adolescents). Importantly, 21% of the students had special education status. Chi-square tests revealed that special education was the only student demographic with a significant association with gender. In fact, 28.9% of the Black male students were labeled with special education status, which is two-and-a-half times more than the percentage of White students with special education status (see Table 1). In addition, an odds ratio shows that the Black male students were more likely (2.53 times) than their female peers to receive special education services. This finding is consistent with historical overrepresentation of Black male students in special education programs (Harry & Anderson, 1994). Up to now, we have examined to seek answers to our key question: Is there a different association of female-headed households with Black male adolescents’ achievement in terms of gender and race when other community and individual risk factors are controlled? Findings indicate that the proportion of female-headed households were particularly influential on determining the reading achievement of Black male students. On one hand, this finding is, in general, consistent with social disorganization theory. On the other hand, it raises the question of why did female-headed households have a significant interaction effect on the achievement of Black male adolescents only. This is an important question in that (a) Black male students appeared to be particularly vulnerable to the increase of female-headed households whereas (b) the other neighborhood predictors (i.e., crime and Poverty × Diversity) were not significantly associated with the achievement of Black male students. The theoretical reasoning behind the distinctive contribution of female-headed households beyond the theory reviewed early in the literature might be explained by social comparison models (Jencks & Mayer, 1990). The social comparison models use principles of relative deprivation, which is a concept for establishing one’s own resource quantity based on some standard that is either real or imagined (Williams, 1975). Under the social comparison model, Black students in our study may have judged their status in comparison to their Black peers. The Black students shared a common context and possibly did not feel they existed differently within their neighborhoods on the basis of crime and poverty. However, if there was large presence of female-headed households, the social comparison model suggests that Black male students may have decreased their motivation to achieve when they had potentially fewer examples of visible or successful models in
their neighborhood compared to Black female peers. As presented in Table 2, the proportion of female-headed households seemed to be differently associated with Black student achievement by gender. If this interpretation is true, then the negative association of female-headed households with Black male students’ achievement also comes to support social disorganization theory—the high number of female-headed households reflects less supervision/guidance of adolescents and fewer community models or (male) adult role models (Sampson, 1997).

The HLM results shed a little light on other related issues to the achievement gap. With regard to individual risk factors, HLM results suggest that special education status would be the most critical risk factor influencing Black male students’ achievement as we identified that Black male students are the majority of students who were labeled with special education status (28.9% of the total Black male students). Considering the effect size of special education status, the negative influence of special education status on Black male students was not only semantic but also substantive. Black male students in special education turned out to be the lowest achievers. This reflects an enormous area of intervention.

**Limitations**

There are two limitations. First, we did not include the individual effect of being in a female-headed household because of data inaccessibility. Nonetheless, our study captures the aggregate effect of female-headed household on Black students’ academic performance. Unmasking this aggregate effect is important because with only a few exceptions (e.g., Duncan, 1994; Garbarino, 1992; Garbarino & Crouter, 1978), a majority of studies tended to examine the effect of the single-parent family as an individual-level risk factor only. Second, in building explanatory models we did not include some school-based variables also due to data inaccessibility. As there was school choice in the school district, investigating the effect of school difference on the academic performance was important to lessen the uncharted effect of school variables in our HLM model. To this end, we did a series of multiple regression analyses. The 10 schools were dummy-coded and added in the regression model. With other variables held constant, the dummy variables of 10 schools only slightly increased the adjusted $R^2$-squared value of .038. That is, school difference explained only additional 3.8% of the variance in the reading. This suggests that the effect of school difference on the academic performance in our sample schools was small enough to ensure our results from the HLM analyses despite the presence of school choice. These
results appear understandable because the schools involved in this study were limited to public schools in one school district. This ruled out the possible existence of different patterns in private and public schools’ organizational cultures and the possibility of unaccounted between-school district effects. This is not to suggest that school quality was not an important factor. Research strongly points to the importance of school quality. The argument in this study is that improving schools alone is far from enough when larger social structures are so disadvantaged.

**Conclusion**

Despite recent positive trends in Black America (e.g., the expansion of Black middle class, the increase of church-going Blacks, or the increase of high school completion), according to the 2007 Pew report, Blacks’ optimism on their social progress has consistently declined over the past decades (Pew Research Center, 2007). Still, currently there are more Black male adolescents in prison than in college. As of 2006, the representation in prison was 1 in 15 Black male adolescents compared to 1 in 106 Whites (Pew Center on the States, 2008). In response to this alarming and disproportionate statistic regarding Black male adolescents, we paid special attention to the collective effect of female-headed households on Black male adolescents.

Drawing on our analyses, we argue that the development of Black students is influenced by not only individual parenting but also the aggregation of parenting across the community. This is a potentially critical reconceptualization that could be easily overlooked or underexamined (Milner, 2007). As adolescents develop goals and expectations based on the quality of the individuals within their community and the number of options they feel the adults have (Wilson, 1987), they may be vulnerable on multiple levels to negative social conditions. If Black male adolescents reside in neighborhoods where there appears to be a high proportion of female-headed households, we argue that this demographic composition will have an important influence on their educational trajectory. This is not to say that the main source of the problem stems from the poor parenting of the Black mothers who head their households. We do not think that living in a female-headed household is a priori of parenting deficiency. Black mothers are often blamed for their inability to raise their sons successfully during the transition period into manhood. However, as Bush (2004) pointed out, the many plights facing the Black mothers, in essence, stem from larger social problems that are difficult for many two-parent Black families. The point here is that when conditions are difficult to navigate, the more resources and
support you can access, the better your chances of navigation. With a high number of female-headed households, Black male adolescents may have fewer chances to learn from adult role models how to navigate and use opportunity structures necessary to become men that are consistent with the content of their characters. We believe that many negative factors (e.g., institutionalized racism, peer pressure, self-defeating belief system, poverty, crime, segregation, poor schooling, and unemployment, to name a few) are intertwined with shaping the current status of Black male students’ educational outcomes and experiences. Even though we do not view Black male students as helpless victims, many of those negative factors are beyond what is reasonable to ask an individual Black male student to control, as Noguera (2008) pointed out. Some pervasive combinations of these factors make the experience for Black male students even more difficult to navigate. Drawing on our analyses, we believe that the number of female-headed households in a community should be reconceptualized as a foundational issue for unmasking the compound social disadvantage facing Black male adolescents in particular. This reality facing Black male adolescents can definitely undermine a consistent and proper application of social capital toward educational goals. By our lived experience as well as research, we know that students who showed academic success despite their poor surroundings, tended to have significant nonfamilial adults who served as role models during their adolescent period (Portes & Fernandez-Kelly, 2006). In this sense, the issue of the number of female-headed households in a community is critical. Certain programs providing Black male adolescents with adult mentors, who help them navigate, mobilize, and organize social resources and opportunities are needed. Of course, it would be too expensive and complex to directly change the current situation of the high proportion of female-headed households without a very organized, concerted, sincere effort on the part of all contributing parties. Therefore, programs should reexamine how restrictive their definition of a role model might be, especially in neighborhoods having a high number of female-headed households. Such community-based mentor programs for Black male adolescents especially who attend high poverty schools have demonstrated the positive outcomes (see certain exemplary programs from Noguera, 2008). However, intervention can be just as effective if the normal socialization that family structures naturally provide can be understood and infused into the community. For this to occur, a more communal approach to education must be taken to leverage the nexus between sociology and educational psychology. This nexus contains the socialization mechanisms in place that best explains individual-level achievement.
Finally, as another salient finding indicates that neighborhood crime rates had negative effects on White students in particular, even though beyond our primary interest of analysis, the finding suggests that White students’ academic achievement are likely to be more vulnerable to the increase of neighborhood crime. Future research is needed for providing explanations about why White adolescents are particularly vulnerable to the increase of neighborhood crime compared with their Black counterparts.

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Notes

1. Duncan (1994) found that a high number of low-income neighbors and a high number of Black neighbors correlated negatively with college attendance for Black male adolescents. Consistent with part of social disorganization theory, Duncan also found that as the number of female-headed households increased, smaller proportions of Black female adolescents finished high school.

2. Our initial sample encompassed all Black and White, 7th and 8th graders who took the Metropolitan Achievement Test (MAT) within the urban school district. As such, we initially obtained 2,908 total students, which included immigrant students. Of the 2,908 students, there were 59 missing values on the MAT reading score. We excluded the 59 students due to the missing values. Chi-square tests showed that our final sample of 2,849 included students did not differ from the 59 excluded students in regard to grade level, gender, race, special education status, and LEP status. The only difference was SES. Although excluded students were more likely to participate in free or reduced-price lunch services, the chi-square value was small: \( \chi^2(1) = 8.85, p = .003 \). Although caution might need to be exercised in interpreting the results of our study due to the SES difference between the two groups, our analyses still included 98.0% of the total students enough to ensure robust precision and adequate statistical power to examine effects of interest.
3. As of 2004, the identified 11 most similar cities, whose total population sizes range from 208,054 to 292,056, were as follows (racial diversity in parentheses): Anchorage (0.50), Aurora (0.45), Bakersfield (0.50), Buffalo (0.55), Corpus Christi (0.20), Lexington-Fayette (0.32), Madison (0.29), North Hempstead Town (0.35), Riverside (0.49), Stockton (0.49), and St. Petersburg (0.49; U.S. Census Bureau, 2008).

4. *p < .05. **p < .01. ***p < .001.

5. The Black female predictor showed a borderline-level significance (p = .051).

6. The original sample size of the Black students was 1,213, including 31 missing values for reading. We excluded the 31 students due to the missing values because chi-square tests revealed that there was no significant difference between the 31 excluded and 1,182 included students in regard to individual demographics.

References


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