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Who Has the Advantage? Race and Sex Differences in Returns to Social Capital at Home and at School*

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Abstract

A growing body of literature suggests that social capital is a valuable resource for children and youth, and that returns to that capital can increase academic success. However, relatively little is known about whether youth from different backgrounds build social capital in the same way and whether they receive the same returns to that capital. We examine the creation of and returns to social capital in family and school settings on academic achievement, measured as standardized test scores, for white boys, black boys, white girls, and black girls who were seniors in high school in the United States. Our findings suggest that while youth in different groups build social capital in largely the same way, differences exist by race and sex as to how family social capital affects academic achievement. Girls obtain greater returns to family social capital than do boys, but no group receives significant returns to school social capital after controlling for individual- and school-level characteristics.

Keywords

social capital; academic achievement; race; sex; adolescence

1. Introduction

A long tradition of research has demonstrated powerful advantages in the U.S. educational system for students from traditionally privileged groups (cf. Bowles & Gintis, 1976; Downey & Pribesh, 2004; Bobbit-Zeher, 2007; Bloome, 2014). For example, female students remain at a disadvantage in terms of access to and participation in STEM training and fields (Chen, 2013; Riegel-Crumb & Moore, 2014), whereas the black-white gap in standardized testing persists (Jencks & Phillip, 1998; Davis-Kean & Jaeger, 2014). However, in recent decades, girls and women have come to outpace boys and men in educational attainment (DiPrete & Buchmann, 2013), differences that likely lie at least partly in achievement processes. Progress across racial and ethnic groups has not been as rapid, and

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has certainly not reached a tipping point like gender has where students from traditionally privileged groups are outperformed by groups with lower ascribed status.

In this paper, we analyze the puzzle of explaining differences in academic achievement between boys and girls and between white and black students. We introduce a relatively neglected explanation for these differences by asking to what extent social capital in the home and the school are created in the same ways and used in the same ways across these groups of students. Using a nationally representative data set and structural equation modeling, we first examine whether students in these groups (white boys and girls; black boys and girls) accrue social capital at home and at school in the same ways. We then turn to models predicting academic achievement to examine whether students in these groups receive the same returns to social capital.

Although we derive our central arguments from the social capital literature, our investigation may also fit more broadly under recent treatments of intersectionality (Collins 2000; Choo and Ferree 2010; Shields 2008). In the context of our quantitative research, such arguments suggest that looking at the effects of race and gender additively can miss unique forms of disadvantage or discrimination that those who occupy two or more disadvantaged statuses may experience. Our approach will reveal, for example, whether black girls experience non-additive forms of disadvantage relative to white girls, black boys or both. We will be able to determine whether such disadvantage involves lack of access to social capital, difficulties using it effectively in pursuing academic achievement, or both. In contrast, we would be unable to address these issues by focusing on race and gender in separate investigations.

2. Background

Sommers (2013) argues that schools have become tailored to girls' learning styles and preferences, and that schools' movements to "boy-averse" structures have had deleterious effects on male achievement and attainment. Some scholars, however, argue that this perspective overstates the effects of schools on academic outcomes, and that differences between boys and girls in families account for much of the differences between boys' and girls' attainment and achievement (cf. Farkas, 2003). For example, DiPrete and Buchmann (2013) note that mothers and fathers parent their children differently depending on child gender. They also argue that father absence, a growing feature of many households, is more consequential for boys than for girls (DiPrete & Buchmann, 2013). Does this mean that girls have an advantage in educational achievement because of what happens at home, or what happens at school? Might it be that girls form stronger social relationships at school, which then promote stronger achievement? Or, does there remain a "boy problem" at school (Grant, 2014) that results in gender differences in achievement?

Questions similar to those concerning sex differences in educational achievement and attainment can also be posed concerning racial differences. For example, some research has outlined important differences in educational opportunities and experiences for minority students (Downey & Pribesh, 2004; Tyson, 2011), which would suggest the source of such inequities is centered in the schools themselves. However, another perspective places mechanisms of inequality across racial groups in the home. For example, black students are

more likely than other students to be living with single mothers (Vespa, Lewis, & Kreider, 2013), while Asian and Latina/o students are more likely to speak a language other than English in the home (Federal Interagency Forum on Child and Family Statistics, 2015), both family circumstances that are strongly associated with educational outcomes (cf. McLanahan, Tach, & Schneider, 2013; Kanno & Kangas, 2014). Some research also suggests that cognitive differences across children from different racial backgrounds exist when these children enter school, shifting focus to families (Farkas, 2003), and that schools are limited in their abilities to change these trajectories (Crosnoe & Cooper, 2010). There is also continued conversation regarding whether race is of declining significance in attainment processes (Wilson, 2003). Although these latter arguments generally refer to occupational attainment, education, as a major precursor of occupation, is clearly relevant. At the same time, gender differences in educational attainment within racial groups (DiPrete & Buchmann, 2013) suggest we should investigate race and sex simultaneously to address what might be different processes of achievement by subgroup.

All of these studies neglect issues of gender variation in how social bonds at home and at school may differentially impact boys' and girls' chances of academic success. They also fail to address how social capital formation and use may vary by race. To fill this gap, we introduce a relatively neglected explanation for differences across ascriptive status groups: potential differences in a) the ways social capital is built both at home and at school, and b) and in the returns to family and school social capital across groups. We continue a tradition that uses social capital theory to organize investigations concerning the role of ascription, social processes, and educational achievement (Portes, 2000; Parcel & Menaghan, 1994). Given the ways previous research has exposed the entanglement of race, sex, and academic achievement, we expect that the ways social capital operates in different settings will be sensitive to ascribed characteristics.

3. Educational Attainment for Boys and Girls and for Black Students and White Students

Much early research on sex inequalities in educational opportunities and attainment focused on obstacles for girls. Even today, research suggests that teachers give fewer comments and less useful feedback to girls (Liu, 2006; Sadker & Sadker, 2010) and have more negative feelings toward female students who challenge their authority (Renold & Allan, 2006). In terms of attainment, gaps still remain between male and female students in terms of participation in STEM courses, starting in high school (Riegle-Crumb & Moore, 2014) and continuing through selection of a college major (Wang, 2013) and the acquisition of higher degrees (National Science Foundation, 2013), even after controlling for ability and previous performance (Riegle-Crumb et al., 2012).

In more recent decades, however, patterns of female advantage have emerged in some components of educational achievement and attainment. For example, girls receive better grades than do boys, and female students are more likely to graduate from both high school and college than are male students (DiPrete & Buchman, 2013). Such patterns have led some scholars to ask whether modern schooling is ill-suited for boys' interests and skills

(Sommers, 2013). For example, DiPrete and Buchmann (2013) argue that girls show greater attachment to school than do boys; they also exert more effort and have skills better suited to the school environment. Over time, these factors become mutually reinforcing and contribute to attainment differentials. Grant (2014) shows that, historically, schools have dealt with their “boy problems” via both excluding some boys from middle-class educational settings and adapting public schools to boys’ interests by including athletics and vocational training, activities that were expected to keep boys more engaged.

Similar research has focused on disparate educational opportunities and attainment across racial and ethnic groups, but for the most part traditionally disadvantaged groups continue to lag behind. While levels of Asian-American educational attainment are high, and there has been progress regarding African-American educational attainment (Kao & Thompson 2003), race differences persist in educational access, achievement, and attainment. A classic example is the persistence of a black-white gap in standardized testing (Jencks & Phillips, 1998); while recent research has shown that as much as half of this gap is due to abilities and skills children bring to school, half of the gap remains unexplained, perhaps attributable to inequities in schools and beyond (Farkas, 2003; Davis-Kean & Jaeger, 2014). Similar patterns exist for post-secondary educational attainment (cf. Zhan & Sherraden, 2011). Although financial capital and possibly cultural capital are important (Lareau, 2011), they do not entirely explain these gaps.

We suggest another approach to explaining differences in educational achievement across these groups: social capital. Previous research has shown that for children and adolescents, social capital is associated with academic achievement (Parcel & Dufur, 2001; Kim & Schneider, 2005; Grubb, 2009; Dufur, Parcel, & Troutman, 2013), but little attention has been given to whether students from different demographic groups have the same access to and receive the same returns to social capital. Given the current debates concerning the sources of inequities in academic opportunities, experiences, and outcomes, we argue that both families and schools may be consequential in explaining these differences.

4. Social Capital in the Family and the School

4.1 The Importance of Multiple Contexts

Children grow and develop within the context of multiple institutions. Although the family provides the first social context relevant for infants and very young children, the wider world takes on a larger role as children mature (Bronfenbrenner, 1989). Bronfenbrenner and Morris (1998) make a strong argument in favor of looking at child development within this framework, which has won widespread support. For example, Crosnoe and Johnson (2011) adopt this perspective in summarizing literature looking at adolescent development. By studying educational achievement as a function of the role of social capital at home and at school, we can compare the impact of these two forms of capital and analyze how the impact of resources in different settings might vary for children from different race-sex groupings.

4.2 Bonding Social Capital at Home

Family social capital refers to the bonds between parents and children useful in promoting child socialization, and as such includes the time and attention parents spend in interaction with children and in monitoring their activities and promoting child well-being (Hoffmann, 2002; Kim & Schneider, 2005; Parcel & Dufur, 2001). Social capital theory implies purposeful investment. Considering children's academic development, Coleman (1988) argued that the mere presence of parental stores of knowledge is insufficient to ensure transmission of that knowledge to children. Instead, parents must make specific choices to invest in their children's development and engage in interactions with a specific child to create the bonds along which information can pass. Following Putnam (2000), these relationships refer to bonding social capital.

Families who invest expect to see higher levels of academic achievement in their children and expect that strong academic achievement during childhood will translate into higher levels of education and occupational attainment later. These investments lead to upward mobility in our stratification system. Thus, family social capital investment has intergenerational consequences.

4.3 Bonding Social Capital at School

Coleman's (1988) definitions of social capital, including information, obligations, and norms passed among connected actors, apply in schools, as well. Purposeful connections between students and schools entail the relationships children form with school teachers and personnel. For example, arguments regarding the superiority of Catholic schools are based on the notion that the religious ties that link many attendees and their teachers promote common norms useful in supporting academic achievement (Coleman, 1988, Coleman, 1990 and Morgan et al., 2009).

Social capital theory, then, explains the mechanisms and processes by which bonds between children and other actors, such as their parents or their teachers, produce academic achievement. Adult investment in children is more than supervision; it creates the mechanisms by which children are socialized and educated. Family and school environments characterized by low levels of social capital are insufficient to transmit necessary information and knowledge to children, leading to lower levels of achievement.

4.4 Bridging Social Capital

Putnam (2000) also highlights the importance of bridging social capital, such as that between home and school. Following the above arguments, attending Catholic schools may promote the formation of bridging social capital through social closure (Coleman 1990); parents are more likely to have relationships with other parents whose children also attend the school. Parents also form relationships with teachers, further linking the home and the school beyond the bonds children form with teachers and other children at school. Adults in non-family settings, such as coaches and church leaders, also incur costs of investing in children as they transmit knowledge and norms that support academic achievement. In addition, children benefit from the social connections that parents have with others such as neighbors and work colleagues (Crosnoe, 2004; Dufur et al., 2013; Johnson et al., 2001;

Parcel & Dufur, 2001; Dufur et al., 2008; Parcel & Dufur, 2001a; 2001b). The stronger these connections are, the greater the resources to which children have access. Because parents and schools share the responsibility of educating children, both bonding and bridging social capital may be important in promoting academic achievement.

5. The Effects of Capital at Home and at School: What Do We Know?

5.1 The Effects of Capital at Home and at School on Adolescent Outcomes

Scholars generally accept the idea that children can derive capital from more than one context (Parcel & Bixby, 2016). However, empirical investigation of the dynamics through which these forms of capital operate were initially not well developed, often using single-variable indicators of social ties to demonstrate the importance of social connections on academic outcomes (see Parcel, Dufur, & Zito, 2010 for a review). For example, individual variables ranging from discussing school with parents to aggregate counts of the number of married parents in a school have been used in different examinations of family social capital; similarly broad approaches to school social capital include variables ranging from PTA participation to attendance at a Catholic school. Taken as a whole, these inquiries suggest that social capital is accrued both at home and at school, but test only limited measures of each form of capital.

The notion that the sources of social capital are important for youth development has resulted in several studies focused on cognitive and behavioral outcomes. For example, McNeal's (1999) analysis revealed that parental involvement negatively predicted truancy and high school dropout, net the effects of measures of school capital. Parcel and Dufur (2000) found that both school and family social capital predicted math and reading Peabody Individual Achievement Test (PIAT) scores, which are indicators of cognitive development. These results are consistent with research from criminology and social psychology that stronger and more affectionate bonds between parents and children lead to better cognitive development and fewer problem behaviors (Fagan et al., 2011; Hartup & Rubin, 2013).

More to the point, several studies directly compare family social capital and school social capital to examine their influences on cognitive and behavioral outcomes. Hoffmann and Dufur (2004), for example, determined that measures of family social capital such as emotional attachment and involvement negatively predicted delinquent behavior, even though school social capital also had negative effects. McNeal (2001) noted that both family capital and school capital predicted behavioral outcomes, whereas school social capital actually had a negative impact on cognitive outcomes (science achievement), but that SES modified these associations. More recently, Dufur et al. (2015) found that sources of capital in the family exerted a stronger influence on delinquent behavior than school-based sources of capital. In fact, the effect of school social capital was only about one-third the effect of family social capital on this type of behavior. While these studies examine behavioral outcomes and we focus on educational achievement, we note that the similarities in findings across these outcomes suggest important effects of family and school social capital on promoting positive adolescent growth and attainment.

Several analyses that have attempted to more thoroughly model broader conceptualizations of children's social capital guide the current investigation (Parcel & Dufur, 2001; Crosnoe, 2004). Dufur et al. (2013) used structural equation modeling (SEM) to examine academic achievement as a function of social capital at home and at school. Analyzing test scores among high school seniors, the SEM analyses suggested that although both family and school social capital influenced academic achievement, family social capital exerted stronger effects than did school social capital, demonstrating that there were two separate forms of social capital, one in the family and one at school, and that distinguishing between these two types of capital can help us better understand the effects families and schools can have on youth.

5.2 Race and Sex Differences in Social Capital at Home and at School

Although these latter studies demonstrate that youth social capital should not be treated as monolithic, with important distinctions between the capital built at home and school, they do tend to treat the youth themselves as undifferentiated by ignoring whether different groups of students might build social capital differently or receive different payouts to using that social capital. For example, previous work tended to treat demographic characteristics as control variables rather than reflecting important ascriptive mechanisms, and therefore could not demonstrate whether youth who vary by race or sex build capital differently or receive different returns to the capital created in their families and their schools (cf. McNeal, 1999, 2001). This further underscores the difficulties quantitative research as a whole has had in examining the intersections between race and sex. There are two aspects to this problem in our inquiry. One is whether youths have *differential access* to key resources needed to promote academic achievement. If they do, then we need to attend to the processes through which accumulation of such capital differs by these statuses. The second is whether equivalent resources *pay off differently* for youths from different status groups. If they do, then we need to focus on what is impeding equivalent resources from generating equivalent returns. Relevant literature shows mixed findings.

Concerning social capital built at home, research on everything from parental discussion with children about sex (Hutchinson & Cederbaum, 2011) and school (Carter & Wojtkiewicz, 2000) to saving for college (Conley, 2000) suggests that different family dynamics may be in play for sons and daughters (Raley & Bianchi, 2006), leading to the conclusion that the creation of social capital in families might differ for boys and girls as well. Some research suggests that parents of boys exert more control either in response to more aggressive behavior or in anticipation of it (cf. Buschgens et al., 2012; Knight, Guthrie, Page, & Fabes, 2003). Such control might damage family social capital in some ways, such as decreasing trust between parents and children, but build it more efficiently in others. Tamis-Lemonda, et al. (2009) point out that most tests of parental investment are derived from samples of middle-class, white respondents, leaving open the question of how minority families develop social capital. This limitation in samples frequently used to study social capital is important since other studies find that minority parents tend to exert more control over children than do white parents, which might affect levels of trust in the family (Deater-Deckard & Dodge, 1997). However, such strategies could also mean that minority parents know more of their children's friends or where their children are when away from home,

suggesting higher levels of family social capital (Dufur et al., 2013). But some studies indicate no differences in parenting behaviors among ethnic groups or between parents of boys and girls (cf. Whiteside-Mansell, Bradley, Owen, Randolph, & Cauce, 2003), and equal or higher amounts of social capital for black families (Yan, 1999).

Regarding school social capital, some scholars argue that it is girls who lack social resources at school, with teachers interacting in more frequent and positive ways with male students (cf. Sadker & Sadker, 2010). The fact that girls in the same sample score higher on academic achievement tests (an objective measure) but receive similar grades (a more subjective measure) provides some evidence that teachers apply different norms to male and female students, to girls' detriment (Cornwell, Mustard, & Van Parys, 2013). These gendered differences persist into graduate-level training, with elite male scientists training fewer women in their labs than they do men (Sheltzer & Smith, 2014).

However, given recent advances in girls' educational attainment, other research suggests that it is boys who have a harder time building social capital at schools. DiPrete and Buchmann (2013) argue that even advantaged boys may resist attachment to school, in contrast to girls, while Sommers (2013) argues that policies that shape schools ignore boys' specific needs and communication styles. In particular, ineffective communication between boys and school personnel decreases the amount of school social capital available to boys. Teachers may be less likely to invest in boys they view as having less potential (Auwarter & Aruguete, 2008), though debate continues over whether teachers favor boys or girls (DiPrete & Buchman, 2013). Additional research suggests that school support for academic outcomes varies for boys and girls across outcomes, such as early transmittal of norms about gender and math ability (Cvencek, Meltzoff, & Greenwald, 2011).

The sociological literature is replete with discussion of how students who differ by race have differing levels of access to *financial* capital embedded in schools, partly due to residential segregation by race or by social class (Logan et al., 2012). Much less is known, however, about whether there is differential access to *social* capital at school by race. Downey and Pribesh (2004) demonstrate that racially-based bias leads white teachers to judge black students more harshly, an example of restrictions to building social capital for minority students. This may occur because teachers often underestimate the abilities of students from less-privileged backgrounds (Ready & Wright, 2011; Speybroeck et al., 2012), perhaps discouraging such teachers from investing in creating social capital with minority students. Teachers also refer black and Latino/a students for discipline more often than they do white students, yet direct more positive or neutral statements toward white students (Tenenbaum & Ruck, 2007), perhaps indicating different expectations across racial and ethnic groups. As expectations are one of Coleman's (1988) indicators of social capital, these findings may indicate obstacles to minority students creating social capital at school. Access to social capital for minority students may also depend on whether the mechanisms for creating that capital are limited to formal channels. For example, Robinson and Harris (2014) show that white and black parents are quite similar in terms of involvement in PTO meetings or parent-teacher conferences, but that black parents are much less likely to have informal conversations with teachers during the school year. As before, few of these studies shed light on how intersections of race and sex might operate in school settings.

These studies provide less information on how, independent of access, these resources may be translated into returns to key outcomes such as educational achievement. Most of these arguments focus on how white and minority youth or boys and girls have different access to social capital in their homes and schools. It may also be true that these groups receive different *returns* to the same social capital. These arguments are analogous to those in long-standing traditions of studying race and sex differences in returns to outcomes such as earnings (Maume, 1999; Parcel & Mueller, 1983), which often show that females and minorities have both lower levels of access to key resources as well as lower levels of returns to the resources they do have. Although there is some evidence that black students' school-parent interaction, which could be viewed as social capital, benefits their reading skills, this occurs in the context of most school-parent contact exerting no influence on other academic outcomes (Robinson & Harris, 2014). In this analysis, we address these issues more directly by simultaneously investigating whether girls obtain superior returns relative to boys, whether white students benefit more from social capital at home and at school than do black students, and whether black girls experience double disadvantages.

We treat social capital at home and social capital at school as largely independent constructs, each of which affects educational achievement. We hypothesize that students from these groups will build, or accrue, social capital at home and at school in different ways. We further predict they receive different returns to their family and school social capital. For example, do girls obtain stronger returns to school social capital, which may serve as vehicles to promote educational achievement, as Sommers (2013) might argue? Given the nature of social stratification in the U.S., we also expect that white students gain more in terms of academic achievement from both family and school social capital. However, this picture may change when we more fully account for gender differences within racial groups.

6. Hypotheses

Based on these previous findings concerning both the intersections between race and sex on educational achievement and the effects of social capital in the family and the school on a number of youth outcomes, we hypothesize that students from traditionally-advantaged groups will receive greater returns to their social capital:

- H1** The association between the latent factor measuring family social capital and the indicators of family social capital will be stronger for boys than for girls.
- H2** The association between the latent factor measuring school social capital and the indicators of school social capital will be stronger for girls than for boys.
- H3** The association between the latent factor measuring family social capital and the indicators of family social capital will be strongest for white boys.
- H4** The association between the latent factor measuring school social capital and the indicators of school social capital will be strongest for white girls.
- H5** Effects of (or returns to) *both* family and school social capital on student test scores will be stronger for white students than for black students.

- H6** Effects of family social capital on student test scores will be stronger for boys than for girls.
- H7** Effects of school social capital on student test scores will be stronger for girls than for boys.
- H8** Effects of family social capital on student test scores will be stronger for white boys than for any other group.
- H9** Effects of school social capital on student test scores will be stronger for white girls than for any other group.

7. Methods

7.1 Data

Data requirements for this investigation are demanding. First, we need a national sample to allow sufficient generalizability of our findings. Second, given that we identify both families and schools as relevant contexts generating social capital, we need data that contain measures of this capital in *both* of these contexts. Finally, the data must contain adequate numbers of cases in each subgroup of black boys, white boys, black girls, and white girls for comparison of separate models for each group.

Data from the second follow-up wave of the National Educational Longitudinal Study (NELS), sponsored by the National Center for Educational Statistics (NCES), meet these requirements. The NELS is a nationally representative study that gathered data from students, parents, teachers, and school administrators. The first wave of the study was conducted in 1988, drawing random samples of approximately 25 eighth-grade students from each of 1000 randomly selected schools. Students were surveyed again in subsequent years. We employ data from the 10th and 12th grade surveys for black and white students only, yielding a sample of 8,941 students. We use the 12th grade data for our social capital and outcome measures because older students' have the longest exposure to their schools and may therefore have accrued greater capital at school.

In addition, the NELS has extensive data on schools and schooling, and includes many indicators of social capital for families, as well. It is also an especially useful data set for this inquiry as it provides potential indicators of social capital from multiple types of actors. Specifically, we can incorporate information on student, parent, teacher, and administrator behaviors, an especially important point in examining bonding and bridging social capital created across different actors and in different settings (Coleman, 1988, 1990; Putnam, 2000). While the NELS are not the most recent data collected concerning adolescent social processes and achievement, they include the broadest set of potential indicators of both family and school social capital we could identify. In contrast, for example, some other data sets that include data on both family and school contexts, such as the NLSY79 Child-Mother data set, contain data from fewer informants and from fewer school personnel, thus limiting the richness of the measures. In addition, the data attached to the NLSY79 Child-Mother data set lack measures of child or parental attachment to the school that are available in the NELS data. More recent data sets that do include different kinds of respondents, such as the

ELS data that are quite similar to the NELS data we employ here, exclude some potential measures of social capital that carry key connections to social capital theory, such as trust between parents and children. While we acknowledge the age of the NELS data, we argue that the thoroughness of the available potential measures of social capital make it an appropriate data sets for examining our theoretical arguments.

7.2 Measures

Table 1 describes the variables used in the analyses. Our outcome variable, academic achievement, is a composite standardized test score of knowledge in math, reading comprehension, and science. Students completed the test during their senior year of high school. Correlations between our indicators of social capital and test scores broken out by subject did not vary noticeably across subject matter, so we report the composite test score here.

Regarding measures of social capital, we focus on capital that students may accrue through their contact with key actors in their families and schools. We use variables that indicate potential capital provided either by the adolescent or an adult attached to that specific adolescent. In keeping with the above theory regarding social capital, we focus on indicators of interconnection and the transmission of norms to measure the social capital latent variables (see *identifying citation* for thorough discussion of the measurement of the capital constructs). Guided by previous research and theory concerning social capital, we identified more than 65 potential measures of family social capital and more than 45 potential indicators of school social capital in the NELS data. We investigated multiple specifications of social capital using these variables; the measures we report below represent the best models indicating child social capital in these data. These models have been used successfully to tap social capital at home and at school and to predict both academic and behavioral outcomes (*identifying citation*). While we found the exclusion of some variables surprising, including measures used to tap social capital in previous research, those variables simply were not a good fit to models specifying social capital in this context.

The indicators of family social capital include variables that may indicate avenues through which children can build social capital as they age into adolescence. We measure family social capital with eight indicators. This includes a variable asking parents how much they trusted their children; higher scores indicated greater trust. To tap parent-child interconnectedness (bonding), we include variables on how often students discuss 1) school programs, 2) school activities, and 3) school classes with their parents; higher scores indicate more frequent discussion. We also use a variable tapping how often the parent checks homework; higher scores indicate more contact. Two items, parental attendance at parent-teacher meetings and parental attendance at school events, tap parental interaction with schools, *bridging* social capital. Also indicative of bridging social capital is student participation in extracurricular activities, assessed by a four-item scale that includes athletics, academic clubs, and other school extracurricular activities ($\alpha = .74$). Participation provides more opportunity for both students and parents to build ties with teachers, staff, other students, and other students' parents. Although these are ordinal variables, they all

have five or more categories and are not notably skewed; they are therefore appropriate to use in the models we employ here.

We measure school social capital with four items. Two of those measures are teachers' reports of morale among school employees and conflict between school employees. High morale and low conflict are linked to greater ties to other adults in the school, providing greater overall school social capital into which students can tap. We reverse-coded the original conflict measure so that higher scores on both variables would indicate greater social capital. An indicator of student-teacher contact asks parents whether they feel teachers meet the needs of individual students. Higher scores indicate greater contact. We also include a 14-item scale containing items asking students about their school environment, including such items as the degree to which various issues, such as delinquency, violence, and absenteeism, are a problem in their schools ($\alpha=.88$). We reverse-coded many of the items included in this scale so that higher scores indicate more positive school environments. We argue that higher scores on these scales indicate schools where adults and students work to create a positive environment and may be more likely to remain on school grounds and build social ties.

In previous research, we examined the possibilities that youth social capital represented a single latent variable, capital created in two settings (family and school), more than two settings (capital from family, global school settings, individual teacher-student interactions, etc.), or that indicators of social capital could load on both family and school social capital latent constructs (see *identifying citation* for more details on this measurement exploration). The models we use here, with two latent variables measuring family and school social capital separately, were the best fit to these data.

To allow for conservative estimates of social capital effects, we also include several controls that previous research shows are strongly associated with educational achievement. Since greater parental socioeconomic status is associated with more positive student outcomes (Crosnoe & Johnson, 2011; Bloome, 2014), we measure SES with a NELS composite measure that takes into account both maternal and paternal education and employment and total household income. We use standardized scores in the analyses. Family size is also associated with educational outcomes, with more siblings generally associated with less positive outcomes (Downey, 1995). Thus, we assess family size by the total number of people residing in the student's household during the 12th grade survey. Finally, students who live with two married parents on average have more positive outcomes than students who live with single parents (McLanahan, Tach, & Schneider, 2013). Consequently, we use a measure of parental marital status in these models where 1=single parents and 0=married parents.

We also include control variables for students' grades and pro-school behaviors. In addition to potentially being correlated with our outcome of interest, we note that social capital creation and returns are related to pro-social behavior, as well (Dufur et al., 2015; Fagan et al., 2011). This may be especially true for school social capital, as students who remove themselves from school or who are removed from school may have less opportunity to build school social capital. To measure these concepts, we use the following variables from the

10th grade survey, assuming that problems in school could affect the creation or use of school social capital in 12th grade. First, we include a variable tapping students' self-reported grades in math and English. This variable is coded such that higher values indicate better grades (1=mostly below Ds to 8=mostly As). We also include student-reported variables indicating the number of times during the first half of their 10th-grade year they cut classes, got in trouble at school, were placed on in-school suspension, or were suspended from school.

Additionally, it is possible that differences across school structures and organization could affect both the opportunity to build school social capital or the returns students might receive from social capital. Due to the fact that some of the indicators of school social capital are measured at the school level we cannot use school fixed effects to ubiquitously account for all differences across schools since the fixed effects and school level measures of social capital are perfectly collinear. But we do account for some between-school differences by using a series of school-level controls reported by the school administrator from the second follow-up (12th grade) survey, concurrent with the test scores for students we use as outcomes. Region of the school uses U.S. Census designations of school location in the Northeast, North Central, South, or Western regions of the U.S., with the Northeast as the reference category in all analyses. Public school is indicated by a dummy variable where 1 means the student attended a public school in the 12th grade. We tap the percent of minority language (non-English) speaking students at the school with six categories (0=None; 1=Less than 10%; 2=10–19%; 3=20–29%; 4=30–39%; 5=Greater than or equal to 40%). Finally, we include a dummy variable indicating that more than 10% of students at the respondent's school receive free or reduced price lunch (Byun, Meece, Irvin, & Hutchins, 2012); this configuration was chosen to ensure an adequate number of cases in each cell.

7.3 Analytic Strategy

We are primarily interested in two comparisons. First, do students from different groups build social capital in different ways? If so, a majority of the factor loadings of indicators onto latent capital constructs should be significantly different. Second, do students from different groups receive different returns to their social capital? If so, the coefficients representing the effects of family social capital and school social capital on student test scores should be significantly different across ascribed status groups.

To answer the questions outlined above, we perform multiple-group analyses, comparing four groups: white boys, white girls, black boys, and black girls. We first test whether the variables that have been shown in previous research to work together to measure social capital vary across these groups, a test of whether students from different status groups build social capital in different ways. We then test whether the effect of the latent constructs of family and school social capital vary across the groups in terms of their ability to predict test scores. These tests are technically called tests of invariance, and evaluate the null hypothesis that returns do not vary by gender or race.

Invariance testing in this study follows a two-step process: 1) configural invariance tests and 2) structural invariance tests. In the first step, we identify the invariant factor loadings in measurement models for each latent variable, if any. Measurement invariance among the

factor loadings is determined in two ways. First, if there is a difference in the statistical significance of a given factor loading between groups such that in one group the factor loading is statistically significant at the $p < 0.05$ level while in the other it is not statistically significant at the $p < 0.05$ level, the factor loading is considered non-invariant; this follows from the definition of statistical significance tests, since in one group the factor loading is statistically different from zero, while in the other it is not. Second, if the factor loading is statistically significant in both groups, we use a Wald test to test for invariance. Factor loadings that are invariant indicate that students in the groups being compared build social capital in similar ways. In the second step, we constrain any factor loadings that were invariant across groups in the measurement model to be equal in the model predicting academic achievement, while allowing those that were found to be significantly non-invariant to be freely estimated across groups; this method is consistent with Byrne, Shavelson, and Muthén's (1989) treatment of partial measurement invariance.

The structural invariance tests follow the same method used to identify invariant parameters in the configural model outlined above. For each parameter, when the same coefficient is statistically significant at the $p < 0.05$ level in both groups, a Wald test is used to test for invariance; pairwise parameter comparisons that report a Wald test with a p -value < 0.05 , or that are statistically significant at the $p < 0.05$ level in one group but not in the other, are labeled as non-invariant. We use multiple imputation in Mplus following Asparouhov and Muthén (2010) to account for small amounts of missing data.

We report unstandardized coefficients in our SEM analyses for three reasons. First, standardization in SEM is based on the individual standard deviations of each covariate (x) and the standard deviation of the outcome (y)—these standard deviations can be calculated from the sample or from the estimated variances in x and y from the hypothesized model—such that a standardized coefficient (β_{std_x}) is equal to:

$$\beta_{std_x} = \beta_x \left(\frac{\sigma_x}{\sigma_y} \right)$$

where β_x is the estimated unstandardized coefficient for explanatory variable x , σ_x is the standard deviation of the same covariate x , and σ_y is the standard deviation of outcome y (Bollen 1989:123–126). This standardization process makes the interpretation of the resulting standardized coefficients very difficult, i.e., a one standard deviation increase in explanatory variable x is associated with an estimated β_{std_x} standard deviation shift in outcome y . For simplicity, we prefer an interpretation of the estimated coefficients based on the unit of measure for each variable (x and y) instead of an interpretation involving their respective standard deviations, since, in most cases, the meaning of a one unit change in each variable's original unit of measurement is more intuitive than a change in their respective standard deviations. Second, since σ_x is the standard deviation of a single covariate x , it is unlikely that $\sigma_{x_i} = \sigma_{x_j}$ for two different covariates i and j , thus despite the name, standardized coefficients in SEM analyses are not directly comparable. For example, in a hypothetical SEM let us assume that $\beta_{std_{x1}} = 0.4$ and $\beta_{std_{x2}} = 0.8$ for two explanatory variables x_1 and x_2 respectively, independent of what these variables represent in the model,

an assertion that the effect of x_2 on outcome y is greater than the effect of x_1 on the same outcome y is unsubstantiated unless the standard deviations of x_1 and x_2 are equal (i.e. $\delta_{x_1} = \delta_{x_2}$). Third, invariance tests between groups are calculated using unstandardized coefficients and since the standard deviation of the respective explanatory variables (i.e. $\delta_{x_1}, \dots, \delta_{x_k}$ for k explanatory variables) and the standard deviation of the outcome (δ_y) are estimated separately for each group, there is no guarantee that either will be equal across groups and the problem of comparability mentioned in the second point above applies to the same covariate across groups. For a more detailed discussion of the use and interpretation of standardized coefficients in SEM see Bollen (1989). Given the above, we present unstandardized coefficients for all of our models.

8. Results

Table 2 provides descriptive statistics among the four groups we compare: white boys, black boys, white girls, and black girls. White students' achievement scores are on average higher than black students'. Means across groups on social capital items are generally very similar, i.e., within one standard deviation of each other. As a partial exception, there are some differences in the extent to which children discuss homework, school programs, activities and classes, with parents favoring white girls, while black students are at a slight disadvantage in terms of school environment. Differences in demographic measures are similar to those found in previous research.

We first investigate whether the four groups of students build social capital in the same ways. Measurement models demonstrate that in general, black youth and white youth do build social capital in both families and schools in largely the same ways, regardless of their sex (see Appendix A for full models). While some small differences exist, they do not provide a discernable pattern of differences in the home or in the school that suggests either obstacles to the accrual of family or school social capital for traditionally disadvantaged groups or advantages for girls in accruing school social capital. For example, for black boys the factor loading of parental trust is statistically insignificant, suggesting that either the creation of family social capital is not predicated upon trust between black boys and their parents, or possibly that parental trust is a biased measure in reference to black boys because parents of boys exert more control either in response to more aggressive behavior or in anticipation of it (cf. Buschgens et al., 2012; Knight et al., 2003), consequently hindering the accrual of family social capital. However, for black boys, the factor loading of participation in extracurricular activities is less than in other groups while on the factor loading of discussing school programs with one's parents is higher; yet, combined these findings do not suggest an overall pattern of directionality in differences in building social capital.

Similarly, the Wald tests suggest that while black girls appear to respond more to the effectiveness of teachers to address individual needs than white girls, white boys are slightly more sensitive than white girls with regards to teacher/administrator conflict and teacher morale. Beyond the lack of statistical significance of parental trust for black boys, these findings do not identify *patterns* of advantage or disadvantage and thus provide little support for the hypotheses (H1-H4) suggesting that students from different race-sex groupings build, or accrue, social capital across settings in different ways. Given the implications of

differences in educational achievement by ascribed status, these largely null findings regarding the accrual of social capital are reassuring.

Figure 1 compares the models using family and school social capital to predict academic achievement for the four race-sex groups. Bolded numbers indicate non-invariance between the two groups on the effect of that form of social capital. These findings show that, consistent with prior research, returns to family social capital exceed returns to school social capital (Dufur et al., 2013). In addition, they demonstrate that this important point holds for both black and white students. However, the results add important information about sex differences in these processes. Regardless of race, girls benefit more than do boys from the social capital they gain at home, whereas the returns from social capital built at school are not statistically different from zero for any group once controls are added to the model (Figure 1).

In reference to hypotheses concerning the ability of social capital to predict test scores, these findings provide little support for Hypothesis 5, which predicted that returns to social capital would be stronger for white students than for black students. In addition, these findings contradict Hypotheses 6 and 7, which predicted greater returns to family social capital for boys and to school social capital for girls. In addition, they do not provide evidence for Hypotheses 8 and 9, which predicted greater returns to family social capital for white boys than any other group and greater returns to school social capital for white girls than any other group. Instead, returns to family social capital are greater for girls of both races, and the non-significant returns to school social capital net of controls are invariant across race-sex groups. The fact that school social capital effects diminish to nonsignificance across all groups also contradicts arguments claiming that schools are organized in ways that benefit girls and their social interactions (Sommers 2013).

Though our theoretical focus is on the acquisition of and returns to family and school social capital, we also test for statistical invariance in the effects of all control variables that are statistically significant in both groups (see Appendix B for full models). Across racial groups there are significant differences in the effects of socioeconomic status (SES), which exerts a stronger effect among white youth than black youth, and the effect of attending a public school which is more disadvantageous for black youth than white youth. The effects of students' grades in English and Math when they were in 10th grade show a similar racial pattern of disadvantage for black youth, but with the caveat that within black youth, black girls receive some benefit from doing better in class while the effect of better grades is not statistically different from zero for black boys. Lastly, the geographic region of the students, and consequently the schools they attended, had differing effects for each of the four groups. The results suggest that black boys receive a significant, both statistically and substantively, advantage over all other groups when they attend schools in the North Central and Southern regions of the U.S. Black girls, on the other hand, receive an advantage when they attend school in the Western U.S. While whites generally receive a benefit from attending school in the Northeast (reference group), and a penalty for attending schools in the South, but white girls receive an additional penalty if they attend schools in the Western U.S. The effect of attending school in the West is indistinguishable from zero for white boys. Other school level variables vary little (Byun et al., 2012). The models provide a moderately good fit to

the data for all groups, with root mean squared errors of approximation (RMSEA) less than 0.044 and Bayesian Information Criteria (BIC) that are highly negative, which as Raftery (1995) shows indicates that the hypothesized models fit the data significantly better than the fully saturated model.

9. Discussion

We began by wondering whether boys or girls had the advantage in terms of the utility of social capital for educational achievement. We also wondered whether schools' social capital was failing boys, or whether more traditional models exhibiting advantages for males in attainment processes would hold for social capital returns as well. Furthermore, we asked whether race simultaneously affected these possible differences in both the returns to and accumulation of social capital. Given the empirical evidence for educational advantages among those groups, we speculated that differences would favor whites for both forms of social capital, boys for family social capital, and girls for school social capital.

We found little support for the hypotheses that students in different race-sex groupings build, or accrue, social capital in different ways. This finding is both useful to scholars and encouraging concerning adolescent development, because it suggests that the same strategies for helping children build social capital operate similarly across ascribed statuses. This suggests that families, educational personnel, and policy makers could potentially concentrate on a concrete and similar set of actions to build additional social capital in families and in schools for all students, regardless of race or sex. One important exception to this general finding is the role of parental trust in accruing family social capital for black boys, in that parental trust is not significantly related to family social capital for them. Whether this finding suggests a general lower level of trust toward black boys, or that parental trust is somehow measured differently for black boys, or because parents of boys exert more control either in response to more aggressive behavior or in anticipation of it hindering the development of trust, we cannot tell. But, black boys do seem to build social capital in similar ways with regards to the other indicators considered.

However, despite similar pathways in the process of building social capital, our results indicate that even when different race-sex groups have the same availability of resources in family and school social capital, the returns to that capital differ among these groups of youth. Although the direction of the findings concerning sex contradicted our hypotheses, which had predicted greater returns for boys for family social capital, we did find greater evidence for sex effects than for race effects in the returns to family social capital.

Regardless of race, girls received higher returns to family social capital than boys do. Surprisingly, the results also indicate that the sex benefit in returns to family social capital makes up for racial disparities in returns to the same, such that the returns on investments in family social capital between black girls and white boys are invariant. Conversely, the low returns to school social capital did not differ across any group comparisons. These findings challenge movements claiming that schools are structured in ways that coincide with girls' interaction patterns or personal skills, and that special attention therefore needs to be paid to restructuring educational settings in ways that take boys' social patterns and interests into account.

However, strong evidence exists that schools can only do so much to overcome what students bring with them from home, particularly without large-scale investment in community building or parent training (Alexander, Entwisle, & Olson, 2014; Cummings, Dyson, & Todd, 2011; Dobbie & Fryer, 2011). It is possible that our findings illuminate the real cause of schooling gaps scholars have observed for boys—the gap in returns to family social capital. If boys accrue family social capital in similar ways to girls but receive weaker returns from that capital, they may be less prepared to succeed at school than girls are. In other words, perhaps the origins of the “boy gap” in schools are at home (Farkas, 2003). This finding adds nuance to those from DiPrete and Buchmann (2013) who stop short of exploring how social capital may be operating to produce differential educational attainment.

We also wondered whether black girls would experience nonadditive disadvantage in either the accrual or use of social capital relative to white boys because they held “lower” places on two social statuses instead of one. This idea stems from literature on intersectionality, which stresses that people with combinations of social statuses may have unique experiences that would not be revealed if we studied statuses one at a time. In this case, we were concerned that black girls might experience additional discrimination, either at home, at school, or both, in either building social capital or how it is translated into academic achievement; such disadvantage would appear relative to those in more privileged statuses, especially white boys. As outlined above, our findings do not suggest that to be the case.

We do find evidence, however, that race matters for black boys, with black boys at a disadvantage compared to white peers and female counterparts of both races in terms of returns to family social capital. Because the influence of family social capital is so much stronger than that of school social capital, if both black and white girls are deriving significant advantage from family social capital, this may operate as a leveling influence for them vis-à-vis white boys. Unfortunately, this same leveling effect does not appear to occur across race, lending some evidence in favor of other research that suggests schools are unable to overcome racial differences students bring to school with them (Crosnoe and Cooper, 2010). These findings echo research that shows the difficulty of modeling achievement and attainment outcomes for black men compare to other groups; paths that lead to good outcomes for whites and for black women often do not operate for black men and boys (cf. Wilson & McBrier, 2005; Dufur, 2008; Wilson, 2009). In all, continued concern regarding the racial gap, and in particular that of black boys, in returns to family social capital is warranted.

We recognize, however, that our quantitative approach does not reveal important micro-level processes that may lay behind the achievement differentials we have identified (see, for example, Ferguson, 2000, regarding black boys in schools). Additional qualitative research that shows how micro-aggressions may be implicated in either additive or nonadditive achievement differentials would be worthwhile and complementary to our investigation here (Shields 2008; McCall 2005). Similar strategies might also reveal the role of such micro-level processes as fundamental causes of racial differences in academic achievement, in the same manner that Phelan and Link (2015) suggest daily experiences of racism, on the individual level, are fundamental causes of health inequities among racial groups.

10. Future Research and Conclusions

It is important that even though differences in returns to social capital at home seem more notable between boys and girls than between black students and white students, this analysis also replicates earlier findings that family social capital is more important than school social capital in promoting higher academic achievement (Dufur et al., 2013). We conclude that the group differences we have studied are important, and may add to explanations of racial and sex differences in academic outcomes beyond those studied here, such as high school graduation and enrollment in college. Testing these hypotheses requires additional research. We also note that this modeling approach could be equally useful for examining other important developmental outcomes, such as mental and physical health or delinquency outcomes, which may vary sharply across groups (Dufur et al., 2013). Moreover, recall that research has also shown similar effects for cognitive and behavioral outcomes, such as delinquent behavior and standardized test scores. In particular, several studies have found a stronger effect of family than school social capital on behavioral outcomes (e.g., Hoffmann & Dufur, 2004). Thus, the modeling approach presented here should be equally useful for examining other important developmental outcomes, such as mental and physical health or delinquency outcomes, which may vary sharply across groups (Dufur et al., 2013). Finally, our theoretical and empirical approach, though useful in examining differences across race and sex groupings, could also be used to examine how children in other circumstances build social capital in different settings and what returns they receive to that capital. Our modeling strategy could be used to examine rural, suburban, and urban students (Byun et al., 2012), immigrant students' access to and returns to social capital in their families and their schools as compared to non-immigrant students, or children in two-parent versus single-parent families (cf. Korinek, Entwistle & Jampaklay, 2005).

In addition, while we argue that the richness of the variables available to tap both family and school social capital make the NELS and appropriate data source, the strength of our findings concerning family social capital opens intriguing questions for how family social capital may or may not continue to operate in this fashion over time. As the family structures youth are exposed to broaden, and the number of family transitions students are exposed to increases, we encourage the collection of newer data that include a broad spectrum of variables to test the availability of and returns to social capital in family settings and beyond, including not only school but neighborhoods and voluntary associations. We have limited our racial comparisons to students who are either black or white, which necessarily ignores other important racial differences, such as those involving Asian-American and Latino children or children of multiple racial and ethnic heritages. Comparisons involving these groups await future research using data with finer measures of race and ethnicity. We have also focused exclusively on two contexts important for student development—their families and their schools. This neglects other contexts, such as neighborhoods and peer groups, which we know are consequential for student achievement (Sampson, Morenoff, & Earles, 1999). Future research should examine more thoroughly the ways family and school social capital interact and intertwine (Parcel, Dufur & Zito, 2010).

While our focus in this paper is on social capital in the family and at school, the more powerful effects of the dilution of other types of capital on black youth remain notable.

Although social capital is an attractive avenue of inquiry for those seeking to increase academic achievement and attainment because it can often be activated or obtained without additional financial capital, it is unlikely that increases of social capital in either setting we study can overcome lack of financial or human capital in either homes or schools. In our findings, black boys receive the lowest returns to family social capital, and both black boys and black girls receive very little return to school social capital. In conjunction with literature on the stronger effects of low SES for these children (Bloome, 2014), we are concerned that the potential buffering effects of social capital may not be as available for youth who are already disadvantaged financially. This is particularly the case for black boys in our study, who receive significantly lower returns to increases in family SES than whites do. Future research should further investigate the interactive effects of social capital in both settings with other types of capital.

Although this research paints a picture of how students in various groups build social capital in families and schools, as well as the returns they receive to that capital, it is unable to determine *why* youth who are receiving fewer returns benefit less from their social resources. Additional research into the specific mechanisms of social capital and how it is exchanged is needed to investigate why the contacts that benefit some students are less useful for others.

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Appendix A: Multiple-group Measurement Models for Family and School Social Capital for White and Black Students, NELS data. Unstandardized coefficients

	White Boys	Black Boys	White Girls	Black Girls
<i>Loadings for Family Social Capital</i>				
Discuss classes (scaling variable)	1.000	1.000	1.000	1.000
Discuss school programs	1.016 ^{***bd}	2.101 ^{***ac}	0.958 ^{***bd}	1.592 ^{***ac}
Discuss school activities	1.388 ^{***c}	1.361 ^{***}	1.696 ^{***a}	1.807 ^{***}
Parents check homework	0.368 ^{***}	0.382 [*]	0.292 ^{***}	0.330 ^{**}
Parental trust	0.223 ^{***bc}	0.003 ^{ac d}	0.450 ^{***ab}	0.453 ^{***b}
Parents attend meetings	0.983 ^{***}	0.717 ^{***}	1.043 ^{***}	1.345 ^{***}
Parents attend events	1.721 ^{***}	1.087 ^{***}	1.556 ^{***}	1.648 ^{***}
Extracurricular activities	1.681 ^{***b}	0.905 ^{***ac d}	1.701 ^{***b}	2.232 ^{***b}
<i>Loadings for School Social Capital</i>				
Teachers meet individual needs	1.000	1.000	1.000	1.000
School environment	1.875 ^{***d}	1.647 ^{***d}	1.825 ^{***d}	2.854 ^{***ab c}
Teacher/administrator conflict	0.780 ^{***c}	0.647 ^{***}	0.601 ^{***ad}	0.789 ^{***c}
Teacher morale	1.300 ^{***cd}	3.240 [*]	1.055 ^{***ad}	2.622 ^{***ac}
N	3767	459	4133	582

* $p < .05$

** $p < .01$

*** $p < .001$ two-tailed tests

NOTE: Parameters for discussing classes with parents and teachers meeting individual needs are constrained to one.

^a significant difference (at least $p < .001$) between group and white males

^b significant difference (at least $p < .001$) between group and black males

^c significant difference (at least $p < .001$) between group and white females

^d significant difference (at least $p < .001$) between group and black females

Appendix B: Full SEMs for Group Comparisons. Models Include Social Capital Variables and Controls for Both Student-Level and School-Level Characteristics

	White Boys	Black Boys	White Boys	White Girls	Black Boys	Black Girls	White Girls	Black Boys	Black Girls	White Girls	Black Girls
	N=3767	N=459	N=3767	N=4133	N=459	N=582	N=4133	N=459	N=582	N=4133	N=582
Family social capital	2.158***	2.532	2.176***	3.232***	2.151***	3.005***	2.740***	2.091	3.168**	3.144***	3.002***
School social capital	0.400	-0.269	0.416	0.105	0.410	0.238	0.053	-0.268	0.211	0.083	0.171
SES	3.923***	2.546***	3.928***	4.341***	3.943***	3.608***	4.291***	2.574***	3.660***	4.309***	3.697***
Family size	-0.276*	-0.219	-0.275*	-0.247*	-0.276*	-0.382	-0.250*	-0.201	-0.36	-0.257**	-0.353
Single parent	-0.005	0.101	0.025	0.517	0.010	-0.331	0.407	-0.077	-0.570	0.447	-0.252
English grades	1.415***	0.262	1.398***	1.484***	1.383***	0.769***	1.510***	0.225	0.802***	1.486***	0.761***
Math grades	0.880***	0.386	0.906***	0.991***	0.892***	0.656***	1.017***	0.398	0.628**	1.023***	0.626**
Skipping class	0.315*	0.426	0.320*	0.277	0.317	0.679	0.319*	0.339	0.606	0.332*	0.509
Got in trouble at sch	-0.178	-0.114	-0.166	-0.228	-0.177	-0.153	-0.207	-0.063	0.022	-0.231	-0.032
In-school suspension	-0.906**	-1.353	-0.927**	-0.786*	-0.950**	-0.955	-0.688	-1.444	-0.967	-0.716	-0.927
Out-of-sch suspension	-0.456	-1.473	-0.527	-0.769	-0.588	-1.299	-0.836	-1.534	-1.363	-0.820	-1.390
North Central region	0.306	4.230***	0.321	-0.039	0.310	1.511	4.396***	4.438***	1.463	-0.070	1.541
South region	-1.28***	2.25*	-1.278***	-0.879**	-1.265***	-0.097	-0.905**	2.327*	-0.213	-0.901**	-0.158
West region	-0.427	-0.141	-0.334	-1.068*	-0.420	2.966*	-1.160**	-0.272	3.130*	-1.189**	3.088*
Public school	-1.57***	-5.03***	-1.609***	-1.356***	-1.564***	-0.838	-1.385***	-5.333***	-0.907	-1.362***	-0.919
% Language minority	-0.260	0.516	-0.295	0.105	-0.208	-1.511	0.224	0.614	-0.511	0.211	-0.404
% Free/reduced lunch	-0.646*	-1.929*	-0.541	-0.411	-0.699*	-1.691*	-1.996*	-1.765*	-1.367	-0.472	-1.426
Fit Statistics											
R-Square	0.349	0.248	0.353	0.388	0.348	0.335	0.393	0.247	0.331	0.392	0.333
RMSEA		0.043		0.044		0.043	0.043		0.044		0.043
BIC		-1759.344		-83.212		-1664.557	-1662.985		-2495.331		-1540.088
Chi-square		2473.605		4457.945		2582.938	2628.939		1027.273		2739.915
Chi-square df		507		506		507	509		507		506

* p<0.05

** p<0.01

*** p<0.001;

a Coefficients reported are unstandardized;

b Shaded cells signify statistical non-invariance at the p<0.05 level

Highlights

- We examine the effects of family and school social capital on academic achievement.
- We study test scores for children who vary by race and sex.
- Girls obtain greater returns to family social capital than do boys.
- School social capital exerts no significant return on test scores to any group net of controls.
- Racial gaps in test scores are notable and deserve additional research.

Figure 1.

Comparisons Between Race-Sex Groupings on Effects of Family and School Social Capital on Student Test Scores, NELS data (Full Model with Control Variables)

Note: The number listed above the arrow is the coefficient for the first listed group; the number listed below the arrow is the coefficient for the second listed group. For example, in Panel 1, the number above the Family Social Capital arrow is the coefficient for white boys (2.158) and the number below the Family Social Capital arrow is the coefficient for black boys (2.532). Bolded numbers indicate statistically significant differences between the groups at $p < 0.001$. For the full models containing all of the coefficients, see Appendix B. The sample size is 8,941.

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ (two-tailed tests)

Table 1

Concepts and Measures

Variable	Description	Range
Dependent Variable		
Composite test scores	Examines math, reading, science, and history knowledge. Standardized scores reported.	31.2/75.81
Capital Indicators		
Family Social Capital		
Parental trust in child	Student report; 0=only rarely to 6=all the time	0 / 1
Discuss issues with parents	Three items measuring how often students report discussing 1) school programs, 2) school activities, and 3) school classes with parents (0=only rarely to 6=all the time).	1 / 3
Parent checks student's homework	Parental report; 0=only rarely to 6=all the time	1 / 4
Parents attend school meetings	Parental report on total number of times; range from 0–5 and above	0 / 1
Parents attend school events	Parental report on total number of times; range from 0–5 and above	0 / 1
Student participation in extracurricular activities	Student report; four-item scale that includes athletics, academic clubs, and other school extracurricular activities ($\alpha=.74$)	19.05 / 57.15
School Social Capital		
High teacher morale	Teacher report; 1=low to 5=high. Higher scores=higher morale	1 / 5
Low conflict between teachers and administrators	Teacher report; 1=frequent conflict to 5=no conflict (reverse coded to reflect capital accumulation)	1 / 5
Teachers respond to individual needs	Parental report; 1=never to 5=often	1 / 5
School environment	14-item scale containing items asking students about the degree to which various school problems, such as delinquency, violence, and absenteeism, are a problem in their schools ($\alpha=.88$). Coded so that higher scores=more positive environment.	11.09 / 40.36
Controls		
SES composite	Standardized SES scores calculated by NELS	–2.875 / 2.56
Family size	Total number of individuals living in the household	2 / 10
Parent marital status	Parental report; 0=married 1=divorced or separated	0 / 1
Grades in English	1=Mostly below Ds; 2=Mostly Ds; 3=Half Cs & Half Ds; 4=Mostly Cs; 5=Half Bs & Half Cs; 6=Mostly Bs; 7=Half As & Half Bs; 8=Mostly As	1 / 8
Grades in math	1=Mostly below Ds; 2=Mostly Ds; 3=Half Cs & Half Ds; 4=Mostly Cs; 5=Half Bs & Half Cs; 6=Mostly Bs; 7=Half As & Half Bs; 8=Mostly As	1 / 8
Times R cut class	0=Never; 1=1–2 times; 2=3–6 times; 3=7–9 times; 4=Over 10 times	0 / 4
Times R got in trouble at school	0=Never; 1=1–2 times; 2=3–6 times; 3=7–9 times; 4=Over 10 times	0 / 4
Times R put on in-school suspension	0=Never; 1=1–2 times; 2=3–6 times; 3=7–9 times; 4=Over 10 times	0 / 4
Times R suspended from school	0=Never; 1=1–2 times; 2=3–6 times; 3=7–9 times; 4=Over 10 times	0 / 4
School region	0=No 1=Yes for each of four US Census regions: Northeast, North Central, South, and West	0 / 1

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Variable	Description	Range
Public school	0=No 1=Yes	0/1
Percent minority Language at school	0=None; 1=Less than 10%; 2=10–19%; 3=20–29%; 4=30–39%; 5=Greater than or equal to 40%	0/5
Percent free/reduced lunch > 10%	0=0–10%; 1=Greater than 10%	0/1

Table 2

Means for Total Sample and for Race-Sex Groupings

Variable	Total Sample (N=8941)	White Boys (N=3767)	Black Boys (N=459)	White Girls (N=4133)	Black Girls (N=582)
Dependent Variable					
Composite test scores	52.22	52.75 ^{bd}	45.24 ^{ac}	53.32 ^{bd}	46.48 ^{ac}
Capital Indicators					
Family Social Capital					
Parental trust in child	0.79	0.80	0.74	0.80	0.75
Discuss issues with parents					
School programs	2.28	2.23 ^{bc}	2.07 ^{acd}	2.36 ^{abd}	2.25 ^{bc}
School activities	2.54	2.51 ^c	2.43 ^c	2.6 ^{abd}	2.48 ^c
School classes	2.46	2.42 ^c	2.34 ^c	2.53 ^{abd}	2.4 ^c
Parent checks student's homework	3.08	3.14 ^c	3.24 ^c	3.0 ^{abd}	3.2 ^c
Parents attend school meetings	0.52	0.52	0.49	0.52	0.50
Parents attend school events	0.67	0.67	0.52	0.71	0.55
Child participation in extracurricular activities	22.3	22.11 ^c	22.6	22.42 ^a	22.48
School Social Capital					
High teacher morale	3.99	4.00	3.97	4.00	3.93
Low conflict between teachers and administrators	4.47	4.47	4.49	4.47	4.54
Teachers respond to individual needs	4.07	4.10 ^d	3.98	4.08 ^d	3.95 ^{ac}
School environment	33.92	34.14 ^{bd}	32.45 ^{ac}	34.06 ^{bd}	32.67 ^{ac}
Other Covariates					
Family SES	-0.02	0.06 ^{bd}	-0.39 ^{ac}	0.001 ^{bd}	-0.46 ^{ac}
Family Size	4.53	4.47	4.64	4.55	4.69
Marital Status	0.14	0.12 ^{bd}	0.24 ^{ac}	0.13 ^{bd}	0.26 ^{ac}
Grades in English	5.88	5.58 ^{cb}	5.22 ^{acd}	6.22 ^{abd}	5.82 ^{bc}
Grades in Math	5.65	5.67 ^{bd}	5.12 ^{ac}	5.73 ^{bd}	5.37 ^a
Skipping Class	0.56	0.58	0.55	0.55	0.56

Variable	Total Sample (N=8941)	White Boys (N=3767)	Black Boys (N=459)	White Girls (N=4133)	Black Girls (N=582)
Times R got in trouble at School	0.64	0.83 ^{cd}	0.83 ^{acd}	0.47 ^{ab}	0.50 ^{ab}
Times R put on in-school Suspension	0.13	0.16 ^{cb}	0.28 ^{acd}	0.09 ^{ab}	0.16 ^b
Times R suspended from school	0.07	0.09 ^c	0.15 ^c	0.04 ^{bd}	0.13 ^c
School located in the Northeast U.S.	0.21	0.21	0.19	0.22	0.17
School located in the North Central U.S.	0.31	0.33 ^{bd}	0.15 ^{ac}	0.33 ^{bd}	0.15 ^{ac}
School located in the Southern U.S.	0.35	0.32 ^{bd}	0.61 ^{ac}	0.31 ^{bd}	0.63 ^{ac}
School located in the Western U.S.	0.14	0.15 ^{bd}	0.05 ^{ac}	0.14 ^{bd}	0.05 ^{ac}
Public School	0.81	0.79 ^{bd}	0.90 ^{ac}	0.80 ^{bd}	0.88 ^{ac}
Percent Minority Language at School	0.61	0.59	0.75	0.59	0.67
Percent Free/Reduced Lunch > 10%	0.49	0.45 ^{bd}	0.72 ^{ac}	0.46 ^{bd}	0.76 ^{ac}

^a significant difference (***) $p < .001$) between group and white males

^b significant difference (***) $p < .001$) between group and black males

^c significant difference (***) $p < .001$) between group and white females

^d significant difference (***) $p < .001$) between group and black females

Note: Ranges for individual indicators are identical or very similar across race-sex groups with two exceptions. White students have a higher upper range for both participation in extracurricular activities and family SES.