

African Americans and Boys: Understanding the Literacy Gap, Tracing Academic Trajectories, and Evaluating the Role of Learning-Related Skills

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In this study, the authors examined the racial and gender gap in the academic development of African American and White children from kindergarten to 5th grade. Their main goal was to determine the extent to which social and behavioral factors, including learning-related skills, problem behaviors, and interpersonal skills, explain these gaps and shed light on the academic difficulties specifically experienced by African American boys. The authors utilized the Early Childhood Longitudinal Study–Kindergarten Cohort (ECLS-K) sample and applied growth curve modeling. Learning-related skills explained the literacy development of African American boys over and above the effects of problem behaviors, socioeconomic status, and home literacy environment. Results suggest that emphasis placed on the behavior problems and the social risk factors associated with African American boys needs to be refocused and should be accompanied by increased efforts to improve learning-related skills in the classroom context and beyond.

Keywords: African American boys, achievement gap, emergent literacy, self-regulation

African American students, on average, attain poorer academic outcomes on all educational levels and academic domains than their White counterparts (Jencks & Phillips, 1998; Lee, 2002). Researchers have attempted to explain this robust phenomenon in empirical studies. The influence of socioeconomic status (SES), stereotype threat, oppositional identity, and cultural discontinuity are among the most common explanations of the underperformance of African American students (Boykin, 2001; Hill, 2001, 2006; Ogbu, 1997; Steele, 1997).

Within the past decade, another achievement gap has begun to garner increased attention. Researchers have found that girls tend to outperform boys regardless of academic domain (Coley, 2001; Pomerantz, Altermatt, & Saxon, 2002). Girls tend to build stronger relationships with teachers, receive higher overall ratings from teachers, attain higher grades in coursework, obtain higher class rank and honors, progress toward higher levels of education, and are less likely than boys to be referred for remedial services (Birch & Ladd, 1998; Coley, 2001; Duckworth & Seligman, 2006; Flynn

& Rahbar, 1994; Gambell & Hunter, 1999; Lummis & Stevenson, 1990; Ready, LoGerfo, Burkham, & Lee, 2005; Silverman, 2003). Though this “gender gap” can be described as small in most populations, national data and current research confirm more pronounced gender differences in African American and Latino populations (Hefner, 2004; Kleinfeld, 1998; National Center for Education Statistics [NCES], 2006).

In light of these trends, at the interface of the race and gender divide, the schooling experiences and academic performance of African American boys may warrant specific attention. In the school context, African American boys often find lowered teacher expectations, racial discrimination in the classroom, and disproportional representation in lower tiered classes (Ferguson, 2000; McIntosh, 2002). These factors bring into question whether African American boys face a heightened vulnerability in American classrooms. Though prior work has not substantiated a “double jeopardy” status (the multiplicative risk associated with both race and gender group memberships) for African American boys specifically, some investigators have discussed the increased academic difficulties for this population compared with their peers by race and gender and the unique factors that may contribute to these difficulties (Davis, 2005; Noguera, 2003; Stinson, 2006).

In the following study, we examined the early literacy performance of African American boys relative to their peers from other race and gender groups. In addition, we considered social-behavioral variables that may account for group differences in performance. We argue that the differences in academic trajectories for gender and race groups can be identified as early as kindergarten, where performance discrepancies in emergent literacy skills can be explained by social and learning habits.

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Early Literacy Achievement and Assessing the Gaps

Literacy development is of key importance to children's overall academic success (Pressley, 2002). In particular, the development of reading and writing skills plays a prominent role in distinguishing children who will meet academic success from those who will not (Lonigan, Burgess, & Anthony, 2000; Whitehurst & Lonigan, 1998). Christian, Morrison, Frazier, and Massetti (2000) found that children who develop strong literacy-related skills early in life become better readers and show greater gains in other domains including math and science. Early difficulties in emergent literacy also negatively affect children's future success, placing them at risk for reading and writing problems, low performance in other academic domains, placement in special education services, social deviance, school dropout, and a number of other academic and social problems (Baydar, Brooks-Gunn, & Furstenberg, 1993; Lonigan et al., 2000; Morrison & Cooney, 2002; Senechal, LeFevre, Thomas, & Daley, 1998).

Even before formal school begins, African American children tend to perform less well on assessments of early reading, writing, basic vocabulary, and decoding skills than their White counterparts (Fryer & Levitt, 2004; Jencks & Phillips, 1998; Reardon, 2006). This racial gap in literacy development extends through the high school years, increasing in magnitude per academic year (Carter & Wilson, 1997; Fryer & Levitt, 2005; Irvine, 1990). Research has similarly shown consistent gender differences favoring girls at the elementary school level (Coley, 2001; Gambell & Hunter, 1999; Lummis & Stevenson, 1990; Ready et al., 2005). Data from the Early Childhood Longitudinal Study–Kindergarten Study (ECLS-K) have revealed that girls nationwide enter kindergarten with stronger literacy skills and show faster growth in literacy skills over the course of the first year of school than boys (Ready et al., 2005).

Thus, literacy research suggests that African American boys may be at pronounced risk for experiencing difficulties with reading and writing skills development very early in their academic careers. The general underachievement of African American boys in literacy has been documented in the *National Assessment of Educational Progress* (NCES, 2006) in fourth, eighth, and 12th grades, and other work has revealed similar trends (Chatterji, 2006; Davis, 2005; Justice, Invernizzi, Geller, Sullivan, & Welsch, 2005). At present, however, there has been little examination of the underpinnings of emergent literacy for African American boys. In the present study, we critically evaluated the racial and gender gaps in literacy, with a special focus on the literacy development of African American boys and the influential role of classroom social and regulatory skills, particularly learning-related skills.

Influences on Early Achievement

In light of the unique academic hurdles many African American boys face, increased efforts have been made to understand the crux of achievement difficulties for this population. Some frequently discussed explanations include disidentification with academics, machismo or oppositional attitudes, school climate, discrimination, low motivation, and a devaluing of school (Cunningham & Meunier, 2004; Majors, Tyler, Peden, & Hall, 1994; Osborne, 1999; Spencer, Fegley, Harpalani, & Seaton, 2004; Taylor & Graham, 2007). We agree that all of these may be important

explanations of the achievement difficulties of African American males; however, these explanations tend to be most relevant for older boys in the late elementary grades through adolescence. There has been less work focused on the factors that facilitate underachievement trends for African American boys early in the schooling process. In this article, we examine the understudied but important roles of social and behavioral competencies during the early elementary years.

Considering the previously discussed discrepancies in academic performance by race and gender, here we highlight a few areas of proximal influence regarding the underachievement of African American students and boys. These include the role of SES, externalizing behaviors, interpersonal skills, home literacy environment, and learning-related skills. The influence of SES and social disparities on academic achievement between African American and White students is well documented and considered a critical factor in explaining achievement differences by race in the early school years (Fryer & Levitt, 2004). A great deal of research has demonstrated the powerful effect of SES (parent education, family income, and occupational prestige) on academic outcomes (National Institute of Child Health and Human Development Early Child Care Research Network, 2005) and across ethnic groups and genders (Entwisle & Alexander, 1990; Entwisle, Alexander, & Olson, 2007). Further, some work has highlighted how poverty may have a more deleterious impact on ethnic minority boys than on ethnic minority girls (Spencer, Dobbs, & Swanson, 1988).

Second, the externalizing behaviors of young children have emerged as primary indicators of early academic difficulties. Overall, children who display externalizing behaviors—harmful, destructive or impulsive behaviors—in the classroom are at greater risk for poor achievement outcomes (Henricsson & Rydell, 2006; Jimerson, Egeland, Sroufe, & Carlson, 2000; Masten et al., 2005; Vitaro, Tremblay, Brendgen, & Larose, 2006). One long-term longitudinal study by Masten and colleagues (2005) showed that early externalizing behavior undermines adaptive academic functioning and is connected with poor peer and teacher relationships. In other longitudinal research, disruptive behaviors observed in kindergarten (aggression–opposition and hyperactivity–inattention) have been significantly predictive of high school non-completion (Vitaro et al., 2006).

Several large-scale studies have found that African American children are more likely than are White, Asian American, or Latino children to have their teachers and parents report significant externalizing problems (Gross et al., 2007; Nguyen, Huang, Arganza, & Liao, 2007). Additionally, kindergarten teachers and scholars alike endorse the importance of behavioral self-control as an explanatory factor for early gender differences in achievement favoring girls (Howe, 1993; Lin, Lawrence, & Gorrell, 2003; Silverman, 2003). Taken together, the extant literature suggests that externalizing may be important in explaining the academic performance of African American boys (Ferguson, 2000; Skiba, Michael, Nardo, & Peterson, 2000), who are consistently rated as high on externalizing by their teachers and receive numbers of suspensions and expulsions that far exceed their statistical representation (Skiba et al., 2000).

Third, interpersonal skills, also known as *prosocial behaviors* in the research literature, are the ways in which a student relates to peers and include behaviors such as playing cooperatively, inter-

acting positively with peers, sharing, respecting other children, and the general integrity of interactions with other children and teachers. In kindergarten, girls are typically rated more highly on interpersonal skills by teachers, whereas boys tend to get higher ratings on aggressive, antisocial behaviors (Birch & Ladd, 1998; Valeski & Stipek, 2001). However, less clear is the role that interpersonal skills may play for African American students. Though African American students are rated higher on externalizing problem behaviors, there is ample theoretical and empirical evidence indicating that African American children rate high on and prefer communalistic values in academic settings (Boykin, 1983, Boykin & Cunningham, 2001; Ellison, Boykin, Tyler, & Dillihunt, 2005). Communalistic styles include cooperative learning and help giving. Scholars have been able to substantiate African American students' preferences for communalistic learning styles by showing increased learning and engagement in environments that accommodate these unique cultural styles (Boykin & Cunningham, 2001; Ellison et al., 2005). Thus, in the present study, we examined how interpersonal skills account for literacy gaps by race and gender.

Fourth, the importance of the home literacy environment for emergent literacy skills has also been well established. Many different conceptualizations of home literacy environment (i.e. shared book reading, singing and playing language games, parent teaching literacy, letter-based activities; frequency of literacy activities and number of books in the home) have shown modest to strong effects on emergent literacy skills in the primary years of school (Payne, Whitehurst, & Angell, 1994; van Steensel, 2006; Wood, 2002). Children who come from rich home literacy environments show greater scores in oral language skills, phonological awareness, knowledge of the written system, vocabulary, and reading comprehension in kindergarten through second grade (van Steensel, 2006).

Ethnic minority and low-income families tend to receive lower scores on home literacy assessments (Payne et al., 1994; van Steensel, 2006). In one study, African American caregivers were found to have fewer books in the home, to read less to their children, and to place less emphasis on literacy-related activities (Heath, 1983). Further, African Americans as well as male 3- to 4-year-olds and 7- to 8-year-olds receive significantly less cognitive stimulation in the home compared with their White and female counterparts (Votruba-Drzal, 2003).

Despite these risk factors for boys and African Americans, recent work has begun to highlight the significance of early self-regulatory and self-directed learning skills in helping underachieving students to succeed. Specifically, the term *learning-related skills* (LRS) refers to a cluster of social skills (e.g. task persistence, learning independence, flexible thinking, organization, and attention control) that facilitate active and efficient learning (Howse, Lange, Farran, & Boyles, 2003). Within the psychological literature, LRS stem from executive functioning skills (e.g. attention, memory, and inhibitory control); however, they most accurately reflect the behavioral and social manifestation of these skills, such as organizing materials, following directions, and exhibiting persistence and directed attention.

Further, LRS embody many of the central aspects of self-regulated learning. The term *self-regulated learning* (SRL) is diversely conceptualized across psychological and education domains; however, SRL within the achievement motivation literature

is traditionally conceptualized as the regulation of one's cognition (e.g., rehearsal), motivation (e.g., positive self-talk), and behavior (e.g., persistence management) in order to service a learning goal or task (Pintrich, 2000; Zimmerman & Schunk, 2001). SRL, although rarely utilized as an early childhood construct, is well aligned with the LRS construct regarding young learners' capabilities to internally regulate or manage their behavior, cognition, and motivation in a way that directly promotes learning. It is important to note that LRS are not simply proxies for self-control or self-discipline constructs. The term LRS refers to the focused management of one's self specifically directed toward academic development and achievement. Although self-control is related, it is distinct from LRS in that it does not necessitate regulation toward learning goals, rather toward outward behavioral respect and adherence to social norms and expectations.

These skills provide the basis for positive outcomes in emergent literacy (Duncan et al., 2007; Matthews, Ponitz, & Morrison, 2009; McClelland, Acock, & Morrison, 2006), while also helping to construct a foundation for successful classroom functioning, behavior, and opportunities necessary for optimal academic performance (Howse et al., 2003). Further, they are consistently predictive of early achievement. LRS at the beginning of kindergarten uniquely predict math and literacy achievement between kindergarten and sixth grade and growth in reading and math through the end of second grade even after a number of sociocultural variables have been controlled (McClelland et al., 2006; McClelland, Morrison, & Holmes, 2000).

These skills have been used to elucidate early achievement differences by gender. Ready and his colleagues (2005) in a study with the ECLS-K sample found that *learning approaches*, which are also frequently termed and discussed as LRS, explain the gender gap between kindergarten boys and girls to a larger extent than problem behaviors. In addition, aspects of LRS and interpersonal skills were found to be strong predictors of special education referrals, with an overrepresentation of boys who were rated as low on these skills (Cooper & Farran, 1988; Speece & Cooper, 1990).

Unfortunately, the utility of these skills has been understudied in African American students. Recent literature by Stephanie Coard and her colleagues on the Task Force on Resilience and Strength in Black Children and Adolescents of the American Psychological Association (APA; 2008) introduced theory, grounded in Garnezy's research on risk and resilience in marginalized students (Garnezy, 1991; Pellegrini, Masten, Garnezy, & Ferrarese, 1987), that suggests that academically oriented skills, such as learning flexibility, critical thinking, problem solving, and self-motivation that produce academic persistence and engagement can serve as development assets for African American children and may facilitate academic resilience in African American children despite the presence of risk factors, such as low SES, poor quality schools, discrimination by school personnel, and low-resourced community and family backgrounds (APA Task Force on Resilience and Strength in Black Children and Adolescents, 2008).

Some empirical work has begun to substantiate these claims. For example, behavioral self-regulation and academic self-confidence in African American children were found to buffer the negative effects of living in impoverished and violent communities (Shumow, Vandell, & Posner, 1999). Critical thinking skills and mastery goal setting also played a similar role for adolescent African American students (Gutman, 2006). Much of this work has been

empirically tested in late elementary and secondary populations, but a similar process is theorized for primary education populations (APA Task Force on Resilience and Strength in Black Children and Adolescents, 2008). In one racially mixed sample, McClelland and colleagues found a connection between low LRS and underachievement in math and literacy for African American students in the early elementary years (McClelland et al., 2006; McClelland et al., 2000).

Though there are some findings that indicate that LRS are important for academic success for African Americans and boys, work on this construct for these populations is only beginning. More empirical work is needed to corroborate these theoretical claims. Further, there has been virtually no research in which these skills have been used to investigate the early emerging and persistent literacy gaps for African American boys. Therefore, we focused our attention on the role of LRS in conjunction with other sociobehavioral competencies, SES, and home literacy environment, which may explain the performance and adjustment of African American boys in the early elementary school years.

Some scholars have highlighted the importance of behavioral (nonacademic) self-control for school success and readiness (Lin et al., 2003; Silverman, 2003), especially for explaining differences by gender; however, we endorse LRS as a more precise conceptualization of effortful regulation toward an academic goal. Similarly, interpersonal skills and LRS, though distinct concepts, are often highly correlated and usually are examined in conjunction with one another (McClelland et al., 2000). Similar to self-control, LRS subsume aspects of interpersonal skills; however, scholars have found LRS to be statistically distinct and more academically focused and thus a stronger predictor of academic outcomes (McClelland & Morrison, 2003; McClelland et al., 2000). Here we evaluate the two as distinct concepts in order to ascertain the unique influence of each.

The Present Study

Our primary aim in the present study was to identify aspects of classroom social skills that best explain the trajectory of literacy development for African American boys from kindergarten into the fifth grade. We utilized the ECLS-K, a large, nationally representative sample with a prospective longitudinal design. In light of previous work, we hypothesized that the literacy gaps between both African American boys and White boys and African American girls would increase from kindergarten through fifth grade (Fryer & Levitt, 2005; Ready et al., 2005). We also considered whether the race and gender effects come together in an additive fashion (i.e., whether race and gender main effects are significant) or whether African American boys are also hampered by unique vulnerabilities that go beyond the cumulative effects of their race and gender statuses (i.e., double jeopardy as evidenced by a Race \times Gender interaction).

Second, we examined the extent to which the race and gender gaps were reduced by including the previously discussed variables. The behavioral and social factors that we examined included SES, externalizing problem behaviors, interpersonal skills, home literacy environment, and LRS. Previous research on race and gender differences in these constructs and their ability to predict literacy outcomes suggests that SES, externalizing problem behaviors, home literacy environment, and LRS should best explain achieve-

ment gaps. However, it was hypothesized that LRS would account for a substantial portion of the variance between both gaps in comparison to the other four variables.

Finally, we explored a series of interactions among the predictors. Although research indicates the importance of strong LRS for all students, a possible interaction among learning approaches, race, and gender would indicate that the construct of LRS is unique for the academic development and performance of African American boys despite the presence of risk factors. Considering recent research examining achievement gaps and their influences as derived from the ECLS-K, our study stands as particularly unique in that we examined both racial and gender gaps with a specific focus on African American boys, using important child-level academic and behavioral skills as our proximal indicator of literacy development trajectories. In previous work on achievement gaps, race, gender, and SES have been examined; however, the primary variables of interest in those studies have been at the school-level (school quality, teacher certification, class size) rather than the child-level (LRS, problem behaviors, interpersonal skills; Chatterji, 2006; Fryer & Levitt, 2004, 2005) characteristics. Other work has highlighted the importance of LRS for children's emergent literacy, though the weightiness of these particular skills juxtaposed to commonly discussed risk factors has not been examined across race and gender and within African American boys.

Method

Participants

Data for the study came from the Early Childhood Longitudinal Study–Kindergarten Cohort 1998–1999 (ECLS-K), collected by the NCES (2002, 2005). The goal of the ECLS-K study was to record the progress of a nationally representative group of U.S. children in kindergarten through the secondary grades using a host of child-centered, school context, and home environment variables. For the ECLS-K, 870 public and private schools nationwide were randomly selected, and then a target sample of 24 children was selected from each school. Data were collected in the fall and spring of selected years from individually administered cognitive tests in literacy, math, and general knowledge. Additionally, structured telephone interviews and written surveys were used to collect data during each wave from the children's parents and teachers.

The base sample size for kindergarten participants in 1998–1999 was 18,211 children from nine different ethnic groups. However, for the objectives of this study, we considered only African American boys ($n = 1,257$) and girls ($n = 1,237$), and non-Hispanic White boys ($n = 5,086$) and girls ($n = 4,805$) for a total of 12,385 kindergarten children in the 1998–1999 school year. The mean age in the fall of kindergarten at the time of first assessment was 5.7 years. In this study, we examined literacy achievement data in the fall and spring of kindergarten, the fall and spring of first grade, and the spring of third and fifth grades (see Table 1).

Measures

To assess literacy achievement, we used item response theory (IRT) scale scores on a literacy test administered by NCES at all time points from the fall of kindergarten through the spring of fifth grade. These literacy assessments were administered individually

Table 1
Means and Standard Deviations

Variable	African American				White			
	Boys (<i>n</i> = 1,257) ^a		Girls (<i>n</i> = 1,237) ^a		Boys (<i>n</i> = 5,086) ^b		Girls (<i>n</i> = 4,805) ^a	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Literacy achievement ^c								
K—fall	26.1	8.0	27.2	7.6	30.2	10.4	31.6	9.8
K—spring	36.1	11.6	37.7	11.4	41.5	13.8	43.8	13.7
First grade—fall	42.0	14.8	44.8	14.4	48.8	17.7	51.7	18.0
First grade—spring	61.1	21.1	65.5	19.5	73.3	22.6	77.4	21.7
Third grade—spring	102.6	23.9	107.0	22.4	122.7	24.1	126.9	22.2
Fifth grade—spring	124.0	25.7	127.9	21.8	144.0	21.8	147.0	19.1
Learning-related skills ^d	2.7	0.7	3.0	0.7	3.0	0.6	3.3	0.6
Externalizing behaviors ^d	2.0	0.7	1.7	0.6	1.7	0.6	1.5	0.5
Interpersonal skills ^d	2.8	0.6	3.0	0.6	3.0	0.6	3.2	0.5
Socioeconomic status ^e	-0.35		-0.37		0.23		0.24	
Home literacy environment ^f	3.0	0.7	3.1	0.7	3.0	0.7	3.3	0.6

Note. Yrs = years; K = kindergarten.

^a Mean age = 5.7 years. ^b Mean age = 5.8 years. ^c Measured with National Center for Education Statistics literacy test (range, 14.85–181.22). ^d Teacher rated on a 4-point scale ranging from 1 (*never*) to four (*very often*). ^e Range from -4.75 to 2.75. ^f Measured on a combined scale ranging from 1 to 4.

and measured both basic literacy skills (letter recognition, beginning and ending sounds, rhyming sounds, word recognition, print familiarity) and advanced reading comprehension skills (initial understanding, interpretation, personal reflection, and ability to demonstrate critical stance). The advanced literacy skills (ability to identify main points, use critical thinking skills, distinguish real and imaginary text, and connect content to one's personal life) were evaluated through verbal dialogue between child and interviewer. The reading assessments given at each grade level were created to capture the full range of abilities expected at each grade level, and therefore the overall difficulty increased at higher grades. However, some identical items were used at adjoining rounds to allow for vertical scaling to create a single K–5 scale (NCES, 2002, 2005). The internal consistency reliabilities (Cronbach's alpha) for these reading assessments were strong and ranged from .75 to .88 from kindergarten to the fifth grade. The reliability of the overall IRT literacy ability estimates (theta) were also strong, ranging from .91 to .96 from kindergarten to the fifth grade (NCES, 2005).

As discussed previously, this study focused on three areas of children's classroom behavior along with the influence of SES and home literacy environment and the relation of these to literacy achievement in the first 6 years of formal schooling. The behaviors rated by teachers were LRS, externalizing problem behaviors, and interpersonal skills. At each time point, teachers who taught children participating in the ECLS-K study were asked to indicate how often each of the children exhibited the classroom behaviors mentioned previously. Each child was rated on a 4-point Likert scale from one (*never*) to four (*very often*). The items used to measure these behaviors were adapted from the widely used Social Skills Rating Scale (Gresham and Elliott, 1990). Due to copyright restrictions, NCES did not release the individual items used on the teacher questionnaire. However, the following are descriptions of the categories of child behaviors that teachers were asked to evaluate as provided by NCES (2001).

Learning approaches (six items). The behaviors evaluated included attentiveness, task persistence, eagerness to learn, learning independence, flexibility, and organization.

Externalizing problem behaviors (five items). The behaviors evaluated included the extent to which the child argued, was involved in fights, became angry, acted impulsively, and disturbed ongoing activities.

Interpersonal skills (five items). The behaviors evaluated included the extent to which the child formed and maintained friendships, got along with people who were different, comforted or helped other children, expressed sensitivity to others' feelings, and expressed ideas and opinions in positive ways.

Higher scores on learning approaches and interpersonal skills indicated more positive behaviors, while high scores on externalizing problem behaviors indicated problematic behaviors. These social rating measures had a high split-half reliability and construct validity (NCES, 2001, 2005). Although the ECLS-K study refers to attentiveness, persistence, organization, learning, and independence as *learning approaches*, we use the label *learning-related skills* (LRS), as this term is used most consistently in the research literature.

The ECLS-K data set provides a continuous SES variable, which was utilized for our analyses. This variable was computed at the household level and reflects SES at the time of data collection for the spring of the kindergarten year. The components used for the creation of this variable were mother's and father's education and household income. The values of each SES component were normalized and then averaged across the component to derive a final SES score.

As discussed previously, we also assessed the role of home literacy environment. Though SES and home literacy environment overlap empirically, they are distinct constructs, and many scholars consider home literacy environment to be a more precise indicator of academic cognitive stimulation and school preparation in the home (Payne et al., 1994; van Steensel, 2006). We assessed

home literacy environment by combining into one scale the scores of two variables: “How often do you read to your child,” and “[What is] the frequency with which your child reads books outside of school.” We used the mean score between these two variables as our home literacy environment measure. Finally, we used age at the time of first assessment in kindergarten.

We decided against the use of sample weight available in the ECLS-K because their accuracy for long-term longitudinal studies is uncertain. Our primary purpose of the analyses presented in this article was to investigate possible causal links between long-term learning trajectories and explanatory factors during the early school years. Sample weights rarely affect these types of analyses substantially but can cause biases in the estimation of standard errors. The latter are of critical importance here as we relied on inferential statistics. Note that by omitting the weights, we forego the possibility to estimate overall population parameters (e.g., the average literacy competence of students in the United States), but we retain robustness for the significance tests used.

Analytical Strategy

First, independent-samples *t* tests were conducted to establish group differences on literacy achievement and our independent variables. Gender and racial differences in literacy achievement were examined across six time points: fall of kindergarten, spring of kindergarten, fall of first grade, spring of first grade, spring of third grade, and spring of fifth grade.

Growth curve analyses were used to examine growth in literacy over time and to examine the effect of LRS, problem behaviors, and interpersonal skills on literacy growth through the spring of fifth grade. Three models were estimated. The first model estimated race and gender effects on literacy growth trajectories from the fall of kindergarten through the spring of fifth grade. The interaction of race and gender was also estimated to determine whether African American boys were at greater risk for literacy difficulty than would be expected by the additive effects of race and gender. Child age, family SES, and home learning environment were included as well. The relationship of these variables to the intercept (kindergarten literacy levels) and slope (linear change in literacy over time) were estimated. For exploratory purposes, we

estimated the effects of these variables on the quadratic trend component as well. A quadratic effect indicates whether the growth rate over time is significantly decelerating or accelerating. It is normal to expect a deceleration in literacy growth with time, due to the fact that large gains are often attained in the early years, and later learning is often more specific and less impactful overall.

One of our goals in this study was to ascertain which factors exercised the most influence on literacy development and explained racial and gendered discrepancies in achievement. With the focal hypothesis of this study, we sought to evaluate the unique contribution of LRS in accounting for the gender and racial gaps. Model 2 included race and gender as well as the variables introduced in Model 1. In addition, Model 2 included LRS to assess its role on the influence of race and gender on literacy performance and its predictor power for literacy development compared with SES and home literacy environment.

Prior research has suggested that a range of social-behavioral variables influences academic achievement. Therefore, Model 3 included all three social skills variables (LRS, externalizing problem behaviors, and interpersonal skills) in addition to the background variables in Model 1. This model tested the extent to which these social behavioral factors explained race and gender gaps in kindergarten and through the fifth grade in concert as well as in comparison to one another. We hypothesized that LRS would take a primary role, accounting for a substantial portion of the variance between the race and gender gaps in literacy achievement in comparison to the other mediators. Finally, on an exploratory basis, we explored a series of interactions between race and gender and the independent variables on the intercept, slope, and quadratic components. We explored significant interactions further and elucidated them through descriptive statistics. Effect sizes were calculated for all of our analysis; because of the large sample size, we adopted .01 as the threshold for significance.

Results

Descriptive Statistics

The large majority of study variables showed moderate to strong correlations (Table 2). Descriptive statistics and independent

Table 2
Correlations for Literacy Achievement, Background Variables, and Mediators

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Literacy achievement (K—fall)	—	.83**	.79**	.68**	.54**	.50**	.38**	-.15**	.22**	.36**	.20**	.18**
2. Literacy achievement (K—spring)		—	.91**	.77**	.58**	.54**	.40**	-.16**	.23**	.33**	.19**	.13**
3. Literacy achievement (First grade—fall)			—	.83**	.60**	.55**	.42**	-.19**	.25**	.33**	.21**	.14**
4. Literacy achievement (First grade—spring)				—	.18*	-.05	.44**	-.19**	.26**	.35**	.17**	.10**
5. Literacy achievement (Third grade—spring)					—	-.54**	.44**	-.20**	.27**	.42**	.14**	.07**
6. Literacy achievement (Fifth grade—spring)						—	.42**	-.19**	.26**	.42**	.12**	.05**
7. Learning-related skills							—	-.56**	.72**	.22**	.13**	.13**
8. Externalizing behaviors								—	-.64**	-.13**	-.07**	-.02
9. Interpersonal skills									—	.18**	.10**	.04**
10. Socioeconomic status										—	.14**	-.02*
11. Home literacy environment											—	-.06*
12. Age												—

* Correlation is marginally significant at the 0.05 level (Note: Due to large sample size, .01 is adopted as the threshold for significance). ** Correlation is significant at the 0.01 level.

sample *t* tests confirmed the existence of an achievement gap in literacy between African American boys and White boys at all six time points. The gap in literacy achievement scores increased between African American boys and White boys from the beginning of kindergarten through the end of fifth grade, and literacy scores significantly favored White boys at the fall of kindergarten, $t(5620) = 14.2, p < .001$, Cohen's $d = 0.43$; spring of kindergarten, $t(6168) = 14.0, p < .001$, Cohen's $d = 0.42$; fall of first grade, $t(1867) = 8.0, p < .001$, Cohen's $d = 0.40$; spring of first grade, $t(6012) = 18.3, p < .001$, Cohen's $d = 0.54$; spring of third grade, $t(4993) = 22.7, p < .001$, Cohen's $d = 0.81$; and spring of fifth grade, $t(3915) = 19.1, p < .001$, Cohen's $d = 0.87$. White boys also had higher scores on LRS, $t(6217) = 12.9, p < .001$, Cohen's $d = 0.42$, and interpersonal skills, $t(6171) = 12.7, p < .001$, Cohen's $d = 0.41$. African American boys were rated by teachers as higher on externalizing problem behaviors, $t(6212) = -10.2, p < .001$, Cohen's $d = 0.36$. The boys in the sample also differed marginally in home literacy environment, $t(5482) = 2.1, p < .05$, Cohen's $d = 0.10$, and significantly in SES, $t(6117) = 24.0, p < .001$, Cohen's $d = 0.76$, favoring White boys.

The existence of an achievement gap in literacy between African American boys and African American girls favoring girls was also confirmed in the fall of kindergarten, $t(2220) = 3.2, p < .01$, Cohen's $d = 0.13$; spring of kindergarten, $t(2403) = 3.4, p < .001$, Cohen's $d = 0.15$; fall of first grade, $t(772) = 2.7, p < .01$, Cohen's $d = 0.17$; spring of first grade, $t(2347) = 5.4, p < .001$, Cohen's $d = 0.18$; spring of third grade, $t(1818) = 4.0, p < .001$, Cohen's $d = 0.16$; and spring of fifth grade, $t(1272) = 3.0, p < .01$, Cohen's $d = 0.14$. The gender gap between African American boys and girls was roughly half the size of the racial gap between African American boys and White boys though it increased in magnitude from the kindergarten year. African American girls had higher scores than African American boys on LRS, $t(2448) = 10.3, p < .001$, Cohen's $d = 0.44$, and interpersonal skills, $t(2424) = 8.2, p < .001$, Cohen's $d = 0.37$. African American boys were rated higher than girls on externalizing problem behaviors, $t(2442) = -10.0, p < .001$, Cohen's $d = 0.43$. There were no differences in SES, $t(2336) = 0.8, p = .40$, although African American girls did tend to come from richer home literacy environments, $t(2063) = 6.5, p < .001$, Cohen's $d = 0.28$, than African American boys.

Growth Curve Analysis

Model 1. Model 1 assessed race and gender differences in literacy at the start of kindergarten and growth in literacy ability through fifth grade, with relevant background factors controlled. Race and gender effects were significant predictors of the intercept ($b = 4.40, p < .001$, for race and $b = 3.52, p < .001$, for gender). As expected, Whites outperformed African Americans and girls outperformed boys. Home literacy environment ($b = 4.09, p < .001$) and SES ($b = 7.39, p < .001$) were also significant predictors of reading achievement. A nonsignificant interaction term ($b = -0.67, p = .45$) suggested that the magnitude of the race effect did not differ by gender.

Effects on the slope were similar, with significant race ($b = 1.2, p < .001$), gender ($b = 0.24, p < .01$), and SES ($b = 0.58, p < .001$) effects; however, interaction of the Race and Gender Effects \times SES Effects was nonsignificant ($b = -0.09, p = .40$).

Thus, African American youths and boys start with lower literacy scores than White youths and girls; these trajectories also diverge over time such that the gaps increase over time (see Figure 1).

A quadratic effect was measured to ascertain whether growth rates in literacy significantly decelerated or accelerated with time. Growth in reading for students was generally linear, with a slight quadratic deceleration. On the quadratic slope, all of the independent variables (age, race, gender, SES, and home literacy environment) were significant except for the Race \times Gender interaction (see Table 3); however, all of the coefficients for these variables were relatively small ($b < .15$), which suggests that influence of these variables on the quadratic component was negligible.

Model 2. As hypothesized, LRS proved to be the strongest predictor of literacy performance and development. In Model 2, the solitary contribution of LRS to the gaps in literacy achievement was assessed, along with the background variables included in Model 1. In kindergarten, LRS ($b = 6.88, p = .001$) were significantly predictive of literacy achievement and reduced the size of the race effect by almost a half ($b = 2.54, p < .001$, compared with $b = 4.40$ in Model 1). The effect of gender on literacy achievement was no longer significant ($b = 0.32, p = .67$). Home literacy environment ($b = 3.44, p < .001$) and SES ($b = 5.77, p < .001$) remained significant, and the Race \times Gender interaction ($b = -0.49, p = .56$) remained insignificant.

Over time, LRS ($b = 0.45, p < .001$) decreased the effect of race ($b = 1.11, p < .001$), although race still remained significant. In addition, the effect of gender on literacy development through Grade 5 remained nonsignificant ($b = 0.05, p = .56$) with the inclusion of LRS (see Figure 2). Home literacy environment and SES were significant as well (see Table 3). The quadratic slope revealed a similar trend to that of Model 1. Race, SES, home literacy environment, and LRS were significant, showing slight deceleration rates in their effects on reading achievement.

Model 3. In Model 3, we added all three social behavioral variables to Model 1 to determine the extent to which race and gender effects were affected by these variables. At the beginning of kindergarten, the main effects of both race and gender were significantly reduced with the addition of the five behavioral mediators. Similar to Model 2, the effect of gender became nonsignificant ($b = -0.06, p = .88$), and although race remained significant, the effect was cut by a quarter (regression weight fell from 4.40 to 3.06) on the intercept. LRS were significantly related to literacy scores in kindergarten ($b = 8.59, p < .001$). Interpersonal skills ($b = -1.97, p < .01$) were influential on literacy achievement in kindergarten at a relatively marginal level but were not considered important as the relative effect size was quite small (see Table 3). Only LRS were significantly related to growth in literacy ($b = 0.56, p < .001$) through the fifth grade. In both cases, LRS were associated with better outcomes and accounted for more variance between the race and gender gaps in comparison to the other mediators. Significant predictors on the quadratic slope showed a similar slight deceleration pattern to those in Models 1 and 2.

A significant three-way interaction among race, gender, and LRS was found on the intercept and linear slope ($b = 1.05, p < .01$, and $b = -.13, p < .01$, respectively). The three-way interaction on the intercept indicates that White students in general and White girls specifically experience a greater initial boost for having strong LRS. In kindergarten, White girls who are one standard

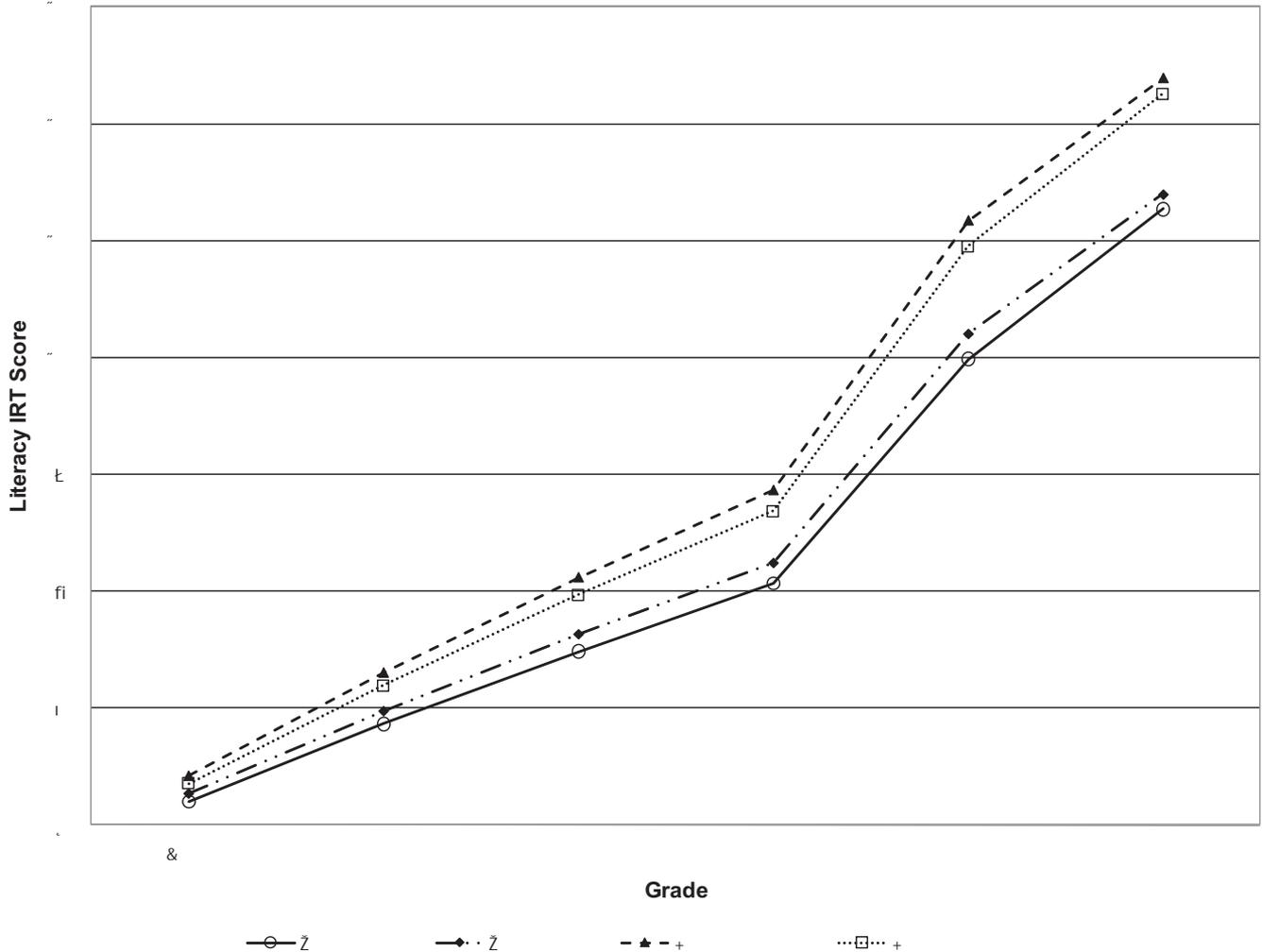


Figure 1. Achievement in literacy by race and gender (K–5) with background variables included (age, socioeconomic status, and home literacy environment). IRT = item response theory.

deviation above the mean on LRS experience a 6.09-point increase on their literacy achievement score compared with White boys (5.36 points), African American girls (4.47 points), and African American boys (4.2 points) who are high on LRS. However, for the slope, the trend is different. Here high-LRS African Americans girls (0.70 points) and boys (0.67 points) experience more growth in literacy achievement per time unit compared with White girls (0.41 points) and boys (0.52 points).

Finally, through a comparison of means and standard deviations, we find that African American boys who were one standard deviation above the mean on LRS experienced more growth in literacy than their peers by race or gender in the early elementary grades and had achievement trajectories similar to those of the highest achieving students, despite simultaneously being below the mean on SES and home literacy environment (see Table 4 and Figure 3). These boys high on LRS also tended to be around the sample mean on externalizing problem behaviors. Compared with the entire sample, these boys experienced more growth in literacy through the first grade; however, by the end of the third grade,

their growth rate was slightly behind the mean for the sample and by the end of the fifth grade, the sample on average experienced more literacy growth than that of African American boys high on LRS.

Discussion

Our purpose in this study was to identify aspects of classroom behavior and social skills that prove to be most influential on the trajectories of literacy development by race and gender from kindergarten into the fifth grade, particularly for African American boys. The results of this study confirmed prior accounts of the general academic underperformance of African American boys relative to their White and female counterparts as a result of the additive effects of race and gender.

Our central focus in the study was to move beyond *identifying* the gaps to *explaining* them. To that end, we included a set of social and behavioral mediators. The results suggested that differences in LRS explain these gaps to a large extent already at the

Table 3
Growth Curve Analysis of the Effects of Social Skills Mediators on Racial and Gender Gaps in Literacy Achievement

Variable	Intercept		Linear growth		Quadratic growth		Effect size	
	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	<i>b</i>	<i>SE</i>	Intercept	Linear
Model 1								
Intercept	40.36**	0.58	9.43**	0.07	-0.45**	0.01	n/a	n/a
Age	0.62**	0.04	-0.02**	0.00	-0.01**	0.00	.03	.01
Race	4.40**	0.65	1.22**	0.08	-0.13**	0.01	.27	.81
Gender	3.52**	0.79	0.24*	0.10	-0.09**	0.02	.22	.16
SES	7.39**	0.27	0.58**	0.02	-0.11**	0.00	.45	.39
HLE	4.09**	0.29	-0.07	0.03	-0.05**	0.00	.25	n/a
Race × Gender	-0.67	0.89	-0.10	0.11	0.02	0.02	n/a	n/a
Model 2								
Intercept	43.29**	0.60	9.60**	0.07	-0.51**	0.02	n/a	n/a
Age	0.39**	0.04	-0.04**	0.01	-0.001	0.001	.03	.03
Race	2.54**	0.66	1.11**	0.08	-0.10**	0.02	.17	.76
Gender	0.32	0.83	0.05	0.10	-0.03	0.02	n/a	n/a
SES	5.77**	0.24	0.48**	0.01	-0.09**	0.01	.38	.33
HLE	3.44**	0.28	-0.11**	0.03	-0.04**	0.01	.23	.08
Race × Gender	-0.49	0.19	-0.10	0.10	0.02	0.02	n/a	n/a
LRS	6.88**	0.91	0.45**	0.02	-0.14**	0.01	.46	.31
Model 3								
Intercept	42.67**	0.56	9.61**	0.07	-0.50**	0.02	n/a	n/a
Age	0.35**	0.04	-0.04**	0.01	-0.001	0.001	.02	.03
Race	3.06**	0.61	1.11**	0.08	-0.11**	0.02	.21	.77
Gender	0.76	0.74	0.04	0.10	-0.03	0.02	n/a	n/a
SES	5.76**	0.26	0.48**	0.02	-0.08**	0.01	.38	.33
HLE	3.40**	0.27	-0.12**	0.03	-0.04**	0.01	.23	.08
Race × Gender	-0.84	0.83	-0.05	0.11	0.03	0.02	n/a	n/a
LRS	8.49**	0.30	0.56**	0.04	-0.16**	0.01	.57	.39
Externalizing	1.04	0.23	-0.02	0.03	-0.01	0.01	n/a	n/a
Interpersonal	-1.97*	0.29	-0.07	0.03	-0.03*	0.01	.13	n/a
Race × Gender × LRS	1.11*	0.38	-0.13*	0.05	-0.02†	0.01	n/a	n/a

Note. $n = 10,384$. SES = socioeconomic status; HLE = home literacy environment; LRS = learning-related skills.

† $p < .05$. * $p < .01$. ** $p < .001$.

onset of the study in kindergarten and continue to be most influential on the literacy growth through the fifth grade, accounting for a substantial portion of the growth differences between African American and White students.

Explaining the Gaps

Consistent with prior research (Chatterji, 2006; Fryer & Levitt, 2005), our results confirm the existence of a race (African American vs. White) and gender (boys vs. girls) gap in literacy in the beginning of kindergarten. Although the race gap was more pronounced, both gaps increased in magnitude through the end of the fifth grade. Our results also confirmed previous evidence of higher prevalence of behavior problems and lower levels of positive social and emotional skills among African American boys. When compared with White boys and African American girls, respectively, African American boys were rated by teachers as higher on externalizing behaviors and lower on learning-related and interpersonal skills. Further, African American students tended to come from poorer SES and home literacy environments. Although gender differences in these variables within African American samples have been examined in a very few studies, our results are in line with results from those studies (McClelland et al., 2000). We found the gender gap within African Americans to be similar to the normative gender gap (e.g., Raver, Gershoff, & Aber, 2007). Not

confirmed by our analyses was the notion that the gender gap may be more pronounced in ethnic minority populations as suggested by Hefner (2004) or Kleinfeld (1998).

LRS accounted for a large part of both the race and gender gaps. These skills also had the most substantial effect on literacy achievement in kindergarten and for achievement development through fifth grade in comparison to the other social and behavioral variables. This overall trend is similar to prior findings by McClelland et al (2006).

Although LRS completely explained the gender gap in kindergarten and through the fifth grade, such skills did not completely explain racial differences over time. Reasons for this may be that in this study, LRS were only assessed in the kindergarten year. Growth in LRS over the course of the years may be of crucial importance and may also speak to race differences in achievement in the later grades. This should be considered in future work.

Further, an interaction among race, gender, and LRS revealed that academic persistence, organization, and learning independence may be of particular importance for the literacy growth for African American students. Further, African American boys who are one standard deviation above the mean on LRS outperform their peers by race and gender through the first grade, although this trend becomes less favorable by the fifth grade. It is important to note that African American boys who are one standard deviation

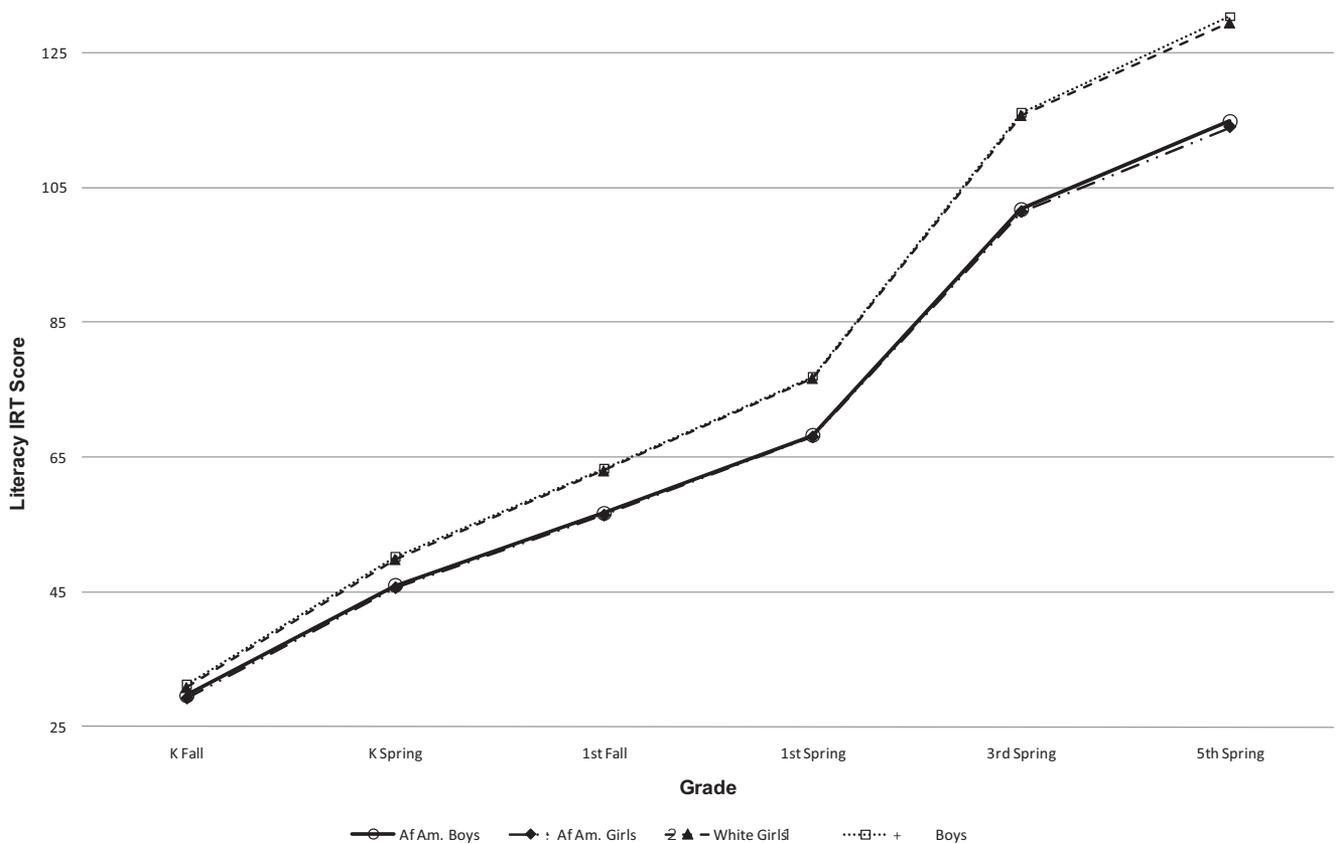


Figure 2. Achievement in literacy by race and gender accounting for learning-related skills (K–5), with original background variables included (age, socioeconomic status, and home literacy environment). IRT = item response theory.

above the mean on LRS show achievement trends similar to those of the most privileged students who have the advantage of coming from significantly higher socioeconomic contexts as well as richer home literacy environments. African American boys who are low on LRS, on the other hand, actually learn less over time compared with their peers who are also low on LRS. All things considered, White boys and girls still have a slightly higher literacy growth rate than African Americans through the fifth grade, even after LRS is controlled, which suggests that factors other than initial LRS (e.g., social resources, teacher quality, school quality, growth in LRS) may play an additional role.

The other proposed explanatory variables were not, by and large, significant predictors of literacy growth compared to the role of LRS. SES and home literacy environment were influential for achievement as expected; however, they only explain a fraction of the variance that LRS explains. Within the school setting, punitive disciplinary actions and stringent behavior modification techniques for African American boys have been the primary approach for reducing classroom behavior problems (McCadden, 1998; Skiba et al., 2000) as a way of improving academic achievement; however, our findings show that externalizing behavioral factors play an insignificant role in the academic performance and literacy development of African American boys. In this data, it was the case that African American boys were reported by teachers as

higher on externalizing behavior than comparison groups by race or gender, but problem behaviors did not significantly predict either mean levels of reading ability or growth in reading achievement. These findings are consistent with previous work (Duncan et al., 2007), and they are provocative in that they challenge prevalent notions of the association between behavioral deficits and academic underachievement for African American boys.

The effect sizes were reported for all predictors. LRS, measured only in the kindergarten year, produced a medium-to-large effect size in kindergarten and through the fifth grade and surpassed the effect of SES and race (in kindergarten only). It may prove encouraging and informative to examine the effect that growth in these LRS may have on the academic development of African American students through the years, particularly boys.

Implications and Limitations

In light of these findings, emphasis currently placed on the behavior problems and disciplining of African American boys (McCadden, 1998; Skiba et al., 2000) may be better directed toward facilitating opportunities to exercise and improve LRS in the classroom. This skill set moves children toward internal academic regulation, which has proven its positive effects for achievement. Unfortunately, many inner city and low-resourced schools

Table 4
Comparison of African American Boys Rated High on Learning-Related Skills and the Rest of the Study Sample

Variable	African American boys rated high on LRS (<i>n</i> = 143)		Rest of the sample (<i>n</i> = 12,197)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Learning-related skills	3.8	0.1	3.0	1.0
Externalizing behaviors	1.4	0.4	1.5	1.1
Home literacy environment	2.9	1.7	3.1	0.8
Socioeconomic status	-1.9	0.7	0.1	0.8
Literacy achievement				
First grade—Spring	76.1	21.4	72.9	22.4
Third grade—Spring	117.0	22.7	120.0	27.1
Fifth grade—Spring	135.9	22.9	141.9	23.7
Literacy growth				
Through first grade	43.8	17.0	43.1	17.3
Through third grade	85.2	19.3	90.0	23.4
Through fifth grade	105.8	19.3	111.9	20.7

Note. High rating = 1 standard deviation above the mean.

that serve African American students rely on authoritarian disciplinary systems and external regulation to manage and educate students. The implications of these findings are not to minimize the importance of self-control and managing problem behaviors in classroom environments, as previous literature has highlighted the influence of these behavioral aspects on school success (Henricson & Rydell, 2006; Maughan, Rowe, Loeber, & Stouthamer-Loeber, 2003). However, LRS are known to have an immediate effect on achievement and hence should be considered an important element of a comprehensive intervention strategy. We do not claim that LRS is a “silver bullet” for alleviating the underperformance trends for African Americans and boys in general. However, these results do suggest that LRS are most proximal for improving early literacy outcomes specifically, particularly in comparison to other behavioral and social variables examined in our study. Although zero-order correlations between literacy achievement and all the behavioral mediators were significant, only LRS and interpersonal skills remained significant when entered simultaneously and in the presence of race, gender, and the other covariates. Other work (Duncan et al., 2007) has revealed similar outcomes, showing skills like LRS or SRL are most proximal for student achievement in math and literacy in the elementary grades, only to be preceded by prerequisite math and literacy skills.

Although these results make a compelling story about the importance of LRS to the literacy development of African American boys, some limitations must be acknowledged. First, we considered only a small range of potential behaviors as factors that contribute to these achievement gaps. Other variables such as preschool literacy experiences, parental socialization, prior academic skills, and pedagogical quality surely play a role but were beyond the scope of the article. Second, the large size of the ECLS-K data set ensures a broad view of the population and nationally representative trends but may also mask local effects. For example, African American boys may be particularly vulnerable in urban settings with fewer resources or school districts that

adopt more authoritarian discipline methods and less culturally relevant instruction.

A third limitation is that the predictor variables examined were not evaluated in a time-varying manner due to a substantial amount of missing data on behavioral variables in the later grades. We tested the effects of scores in the beginning and end of kindergarten on trajectories through fifth grade. Kindergarten is an important grade to study as this period sets the stage for later educational experiences and competence. Still, research has shown that LRS continue to be malleable in addition to being important predictors of achievement in math and literacy through the sixth grade (McClelland et al., 2006), and children have the potential to grow considerably in these skills as they progress through the grades. Thus, it is important to examine the continued influence of LRS on achievement in the later elementary years through secondary school, as well as how students may grow over the years in their LRS.

Finally, in some respects the current study may be perceived as focusing on the deficiencies of African Americans and boys—their poor performance relative to their White and female counterparts. However, we want to assert that LRS and the like are not innate traits, rather skills that need to be developed within students over time through the consistent and appropriate efforts of teachers and parents. In this work, we conceptualized LRS as internal development assets that wield power to promote academic success despite social or systemic odds and risk factors. We demonstrated this point by illustrating the development of African American boys who score high on these skills and their subsequent literacy development despite the presence of risk factors (i.e. SES, externalizing behavior, home literacy environment). In the future, researchers should continue to study African American boys who are excelling in literacy areas and in LRS. Stinson (2006) noted that the study of the achievement (vs. deficiency or rejection) of African American males is an understudied, rich, and useful perspective to examine. This perspective highlights the strengths and achievement of historically marginalized but successful students.

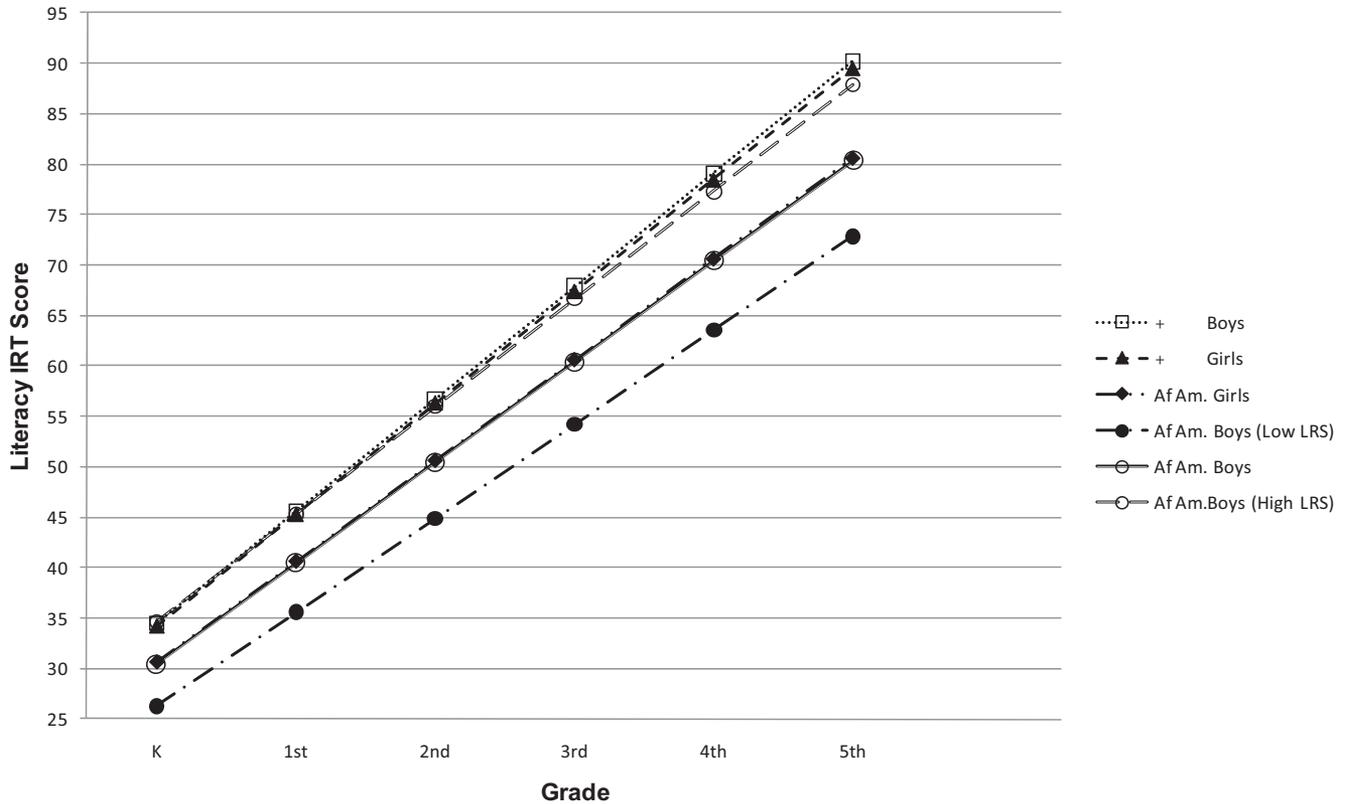


Figure 3. Race, gender, and learning-related skills (LRS)—An expanded profile of the literacy development of African American boys. This graph does not model the quadratic effect. *African American boys (low LRS)* indicates African American boys who scored one standard deviation below the mean for African American boys on LRS. *African American boys (high LRS)* indicates African American boys who scored one standard deviation above the mean scores for African American boys on LRS. IRT = item response theory.

Further, we do not want to simply connote that African Americans and boys are unregulated students, by and large. Rather, we believe many of these students possess quite extraordinary regulatory capacities that often go unacknowledged within the classroom context. For example, many African American children from low-resourced communities have important family responsibilities such as taking care of sick or elderly guardians, caring for and tutoring younger siblings, household chores, cooking, work, extracurricular leadership roles, and many other examples that demonstrate tremendous regulatory capacity; however, these skills may not always be effectively transferred to the classroom context and often times teachers may miss opportunities in identifying and building on these pre-existing regulatory skills.

Thus, further research is needed to determine best practices and pedagogy for teachers in supporting the development of LRS. There is ample research to suggest that teachers can play a facilitative role in the development of LRS in young learners (Diamond, Barnett, Thomas, & Munro, 2007; McClelland, Cameron, Wanless, & Murray, 2007; Rueda, Rothbart, McCandliss, Saccamanno, & Posner, 2005). In the classroom, teachers can emphasize self-regulation, persistence, organization, and the like through their assignments, activities, and cooperative group work. Educators should also be keen to move all children from externally imposed controls and standards to internal regulatory behaviors.

More specifically, teachers can provide opportunities for playing games with complex rules in order to promote executive functioning and inhibitory control skills, which help children become independent, organized, and well-regulated thinkers and learners. Further, teachers should encourage students to solve complex problems through explicit self-talk until children learn how to regulate themselves and their thinking without the mediator of self-talk. Additionally, high-quality classrooms that tend to produce children proficient in LRS and related constructs have been characterized as those in which teachers cultivate strong and meaningful teacher-student relationships, provide ample and consistent emotional support on academic endeavors, and provide opportunities for children to practice academic regulatory behaviors (McClelland et al., 2007). For example, complex sociodramatic play or purposeful “pretend play” has been found to develop behavioral self-regulation in preschoolers (Elias & Berk, 2002). Some of these techniques have been utilized in intervention research with positive effects (Diamond et al., 2007; Rueda et al., 2005).

Academic organization, learning independence, responsibility, and attentiveness should be explicitly taught along with other social and academic skills in the first years of school. However, at least as important as curricular adaption of teaching in the classroom may be a paradigm shift in the minds of educators on moving

beyond simple child management and understanding LRS as primary and reinforcing learning-related objectives in all classroom interactions.

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