ABSTRACT

OERTWIG, DEJAH AMBER. How Kindergarten Assessments and School Climate Contributeto Shaping Student Achievement in Elementary School. (Under the direction of Dr. Amy G. Halberstadt).

Students' academic achievement and efficacy are influenced in the early years of schooling. The skill level at which a student enters school along with teachers' perceptions of these skills may strongly influence academic trajectory throughout elementary school. From an ecological developmental perspective, this study will investigate general trends as to whether or not academictrajectories remain stable throughout elementary school. Data from the Early Childhood Longitudinal Study (ECLS-K 2011), which surveyed a nationally representative sample of over 18,000 children measuring their academic and social development as they entered kindergarten and continued through fifth grade was utilized. Student race, SES, gender, teacher assessed academics and social skills, and school climate measured at Kindergarten were used in combination to understand how these characteristics affected standardized academic achievement through 5^{th} grade. Black students and lower SES students were evaluated through teachers' and standardized assessments as having lower academic abilities in literacy and math than White and higher SES students. Overall, achievement gaps between White and Black and lower-SES and higher-SES established in Kindergarten increased over time. For Black and lower-SES children, however, how they enter Kindergarten showed stronger consequences than for White and higher-SES students. These results suggest that programs and interventions targeted at decreasing the achievement gap between non-marginalized and marginalized populations should begin before entry into Kindergarten.

Keywords: Race, SES, gender, social skills academic trajectory, elementary school

How Kindergarten Assessments and School Climate Contribute to Shaping Student Achievement in Elementary School

by
Dejah Amber Oertwig

A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy

Psychology

Raleigh, North Carolina
2021

APPROVED BY:

Dr. Amy G. Halberstadt Committee Chair	Dr. Lynne Baker-Ward
Dr. Kelly Lynn Mulvey	Dr. Jason Allaire

DEDICATION

I dedicate this dissertation to my Mom, Dr. Sam Oertwig, and my husband, Jesse Legun,who holistically supported me through graduate school and made this dissertation possible.

BIOGRAPHY

Dejah Oertwig graduated with a B.F.A in Theatre from the College of Santa Fe. After a decade long stint in Los Angeles, CA pursuing a career in acting and comedy, her passions switched to psychology. She began her graduate education at North Carolina State University in the Lifespan Developmental Psychology program in Fall 2015 under the mentorship of Dr. Amy G. Halberstadt. Dejah's doctoral training focused on how emotion beliefs, cross-culturally, develop and manifest and how differences between cultures can and may lead to discrimination. Her dissertation focused on how student demographics and school climate act to shape teachers' perceptions of their students and if these perceptions are predictive of academic trajectory through elementary school.

ACKNOWLEDGMENTS

I would like to acknowledge and thank my mentor and friend Dr. Amy Halberstadt, who took a big risk by accepting me into her lab. Her distinctive style, support and guidance have taught me to be an excellent researcher and advocate for marginalized populations. I would like to thank my committee, Drs. Lynne Baker-Ward, Kelly Lynn Mulvey and Jason Allaire for their thoughtful contributions to this dissertation and to my education. I would like to thank my lab mates and cohort, who kept me sane and motivated with their emotional and academic support. I would also like to thank my family for supporting my dreams and making sure I reached the finish line. Finally, I would like to thank my two-year-old son, Max, for bringing my developmental education to life.

TABLE OF CONTENTS

LIST OF TABLES 52
LIST OF FIGURES 61
Introduction 1
Student Characteristics Impact Teachers' Perception 3
Student Race 3
Student Socioeconomic Status (SES) 5
Student Gender 6
Student Social Skills 6
School Climate Impacts Teachers' Perceptions 7
The Present Study 8
Method 9
Sample 9
Procedure 10
Measurements 10
Direct Cognitive Assessment 10
Academic Rating Scale (ARS) 11
Social Rating Scale (SRS) 11
Race and Gender 12
Socioeconomic Status (SES) 12
School Climate 12
Planned Analyses 13
Results 15
Discussion 27
Limitations and Future Directions 35
Conclusions 39
References 41

LIST OF TABLES

Table 1 Student Demographics and teacher (T) assessment and Standardized (S) Score Means (SD) for Literacy, Math, and Social Skills 51
Table 2 Mean Scores for Standardized Math (Z scores) 51
Table 3 Multiple Comparisons of SES for Standardized Math 52
Table 4 Unstandardized Coefficients (and Standard Errors) of Multilevel Models of Race and Social Skills over Time 53
Table 5 Unstandardized Coefficients (and Standard Errors) of Multilevel Models of SES and Social Skills over Time 54
Table 6 Unstandardized Coefficients (and Standard Errors) of Multilevel Models of Gender and Social Skills over Time 55
Table 7 Unstandardized Coefficients (and Standard Errors) of Multilevel Models of Race and School Climate (SC) over Time 56
Table 8 Unstandardized Coefficients (and Standard Errors) of Multilevel Models of SES and School Climate (SC) over Time 57
Table 9 Unstandardized Coefficients (and Standard Errors) of Multilevel Models of Gender and School Climate (SC) over Time 58
Table 10 Cell Numbers for Teacher-Assessed and Standardized Literacy and Math ANOVA comparisons 59

LIST OF FIGURES

Figure 1 Standardized Math Mean Score Comparisons by Race, SES, and Gender 60

Figure 2 Interaction Between Teacher Assessments, Time, and Standardized Literacy Scores..... 60

Figure 3 Interaction Between Teacher Math Assessments, Time, and Standardized Math Score 61

Figure 4 Change in Standardized Literacy Scores by Racial Category over Time..... 61

Figure 5 The Interaction Between Social Skills, Race, and Standardized Literacy Scores over Time 62

Figure 6 Change in Standardized Math Scores by Racial Category over Time 62

Figure 7 The interaction between Social Skills, Race, and Objective Math Scores over Time..... 63

Figure 8 The Interaction between SES and Standardized Literacy Score over Time..... 63

Figure 9 The Interaction between Social Skills, SES and Objective Literacy Scores Over Time..... 64

Figure 10 The Effect of SES on Standardized Math Scores over Time 64

Figure 11 The Interaction Between Social Skills, SES and Standardized Math Scores over Time..... 65

Figure 12 Cross Level Interaction between Social Skills, Gender, and Standardized Literacy Scores over Time..... 66

Figure 13 How Standardized Math Scores Change over Time Depending on Gender 66

Figure 14 How Literacy Scores Changed over Time Depending on School Climate 67

Figure 15 The Interaction Between School Climate, Race, and Standardized Literacy Scores Over Time 68

Figure 16 How Standardized Math Scores Change over Time Depending on School Climate 69

Figure 17 The interaction between school climate, SES, and standardized literacy scores over time..... 69

INTRODUCTION

Entrance into elementary school offers the promise of equal learning opportunities for children, so that all children can realize their full potential regardless of race, socioeconomic background, and gender. This is an ideal promise, a lofty one at best, when introducing many different backgrounds and abilities into a standardized environment. Teachers are the frontline facilitators of this noble promise, which is shaped not just by them but also by the social and political climate in which they reside, thereby bringing in different experiences and beliefs that may help or hinder the learning process.

Once in school, teacher-student relationships can meaningfully impact children's academic and social development (Garner & Mahatmya, 2015; McKown & Weinstein, 2008; Rosenthal & Jacobson, 1968). A student who has a negative relationship with their teacher is more likely to have emotional and academic shortcomings in subsequent years than a student whose teacher-student relationship is positive (Hamre & Pianta, 2001). Further, if a child is thought to be well-behaved, they are more likely to form a stronger student-teacher relationship than a child who is perceived as defiant (Hamre & Pianta, 2001; Howes, 2000).

Teachers, independently, are not solely responsible for these relationships because students also bring experiences and beliefs that may or may not be congruent with the teachers or the schools they represent. It would be comforting to believe that all children, no matter their background, would receive equal treatment and attention; however, teacher-student relationships can be influenced by children's backgrounds (Chang & Stanley, 2003). Demographics, like race, socioeconomic status, and gender are characteristics that impact how "school-ready" a child is perceived to be and can determine the type of relationship they have with their teacher. Additionally, the intersectionality of demographic characteristics should also be noted in that

these categories are interdependent and should be treated as such, in that one characteristic alone may not be able to explain teachers' expectations and perceptions of their students without the intersectionality of both. In other words, being Black *and* poor may lead to additively worse school outcomes than just being characterized as Black *or* poor. Further, class privilege may confer some degree of "immunity" to a Black child in terms of teacher perceptions about the child's abilities, whereas being Black and "from the projects" may activate many negative stereotypes based on fear-based rhetoric regarding inability, lack of motivation, and even danger. Likewise, the saying "boys will be boys" favors Whites boys' high energy, mischievousness, and impulsivity whereas Black boys with similar characteristics are perceived as troublesome and problematic (Yates & Marcelo, 2014).

Given that academic tracking/grouping and student efficacy are usually developed early on (Hamre & Pianta, 2001), the skill level at which a student enters school may strongly influence their academic trajectory through all of elementary school. As past research has shown, foundational cognitive development happens even before children enter Kindergarten, meaning that skill sets can vary dependent on experience and enrichment (Casey, Tottenham, Liston & Durston, 2005; Duncan et al., 2007; Watts, Duncan, Siegler, & Davis-Kean, 2014). Additionally, the skill sets a student possesses at the beginning of kindergarten are based on actual ability as well as teachers' perceptions; therefore, it is important to understand if kindergarten teachers' subjective assessments do indeed become part of predictive patterns of student objective academic outcomes. To determine how school and student characteristics predict academic achievement over time, studying the onset of formal education is fitting. From an ecological developmental perspective (i.e., Bronfenbrenner's ecological systems theory, 1979), this study investigates general trends as to whether or not academic trajectories for White and Black

children are indeed established in kindergarten and remain stable throughout elementary school. It will shed light into how student characteristics and school climate may enhance or worsen student elementary success trends.

Student Characteristics Impact Teachers' Perceptions

Student Race

For decades, the achievement gap between Black and White students has been well documented, beginning before kindergarten and widening through middle school into high school, with Black students consistently performing worse than their White peers. Past literature has exposed some reasons for why such discrepancies may exist: (a) Black children are assessed as having lower academic and social skill (Ford, 2002; Minor, 2014; Pigott & Cowen, 2000), (b) Black children are seen as older and, therefore, more culpable for their misbehaviors than their White peers (Goff et al., 2014); and (c) the misinterpretation of anger in Black students when anger was not felt/shown leading to increased disciplinary consequences (Halberstadt et al., 2020).

In addition, culture incongruencies likely exist between Black students and predominately White teachers. Due to socioenvironmental factors, such as poverty, lack of education attainment, and many experiences with racism, Black families may not discourage aggressive and assertive behaviors to the extent that White families do, as these behaviors may serve them well in certain contexts (McLoyd, 1998, Nelson, Leerkes, O'Brien, Calkins, & Marcovitch, 2012). On the other hand, many Black families may work hard to suppress these behaviors, knowing the dangers that they entail in school life, where teachers may leap to assumptions about Black children, problematizing them as aggressive or troublesome (Neal & McCray, 2003; Rowley et al., 2014). Additionally, many Black families tend to foster more

interactive relationships and expressiveness (Oyserman, Grant, & Ager, 1995). These cultural behaviors may be challenging to White teachers, leading to lower social skill assessments, when their assumptions of "white" ways of behaving are not recognized. For example, higher achieving compared to lower achieving Black students described themselves as being less expressive and more submissive (Shade, 1981), having acculturated more to the White norm, which is a style generally insisted upon in educational systems.

Despite years of improvement efforts (e.g., racially sensitive training and multi-cultural curricula) implemented to decrease the academic discrepancies between Black and White students, the pattern persists. In 1995 Ladson-Billings and Tate argued that multiculturalism, in trying to be all inclusive, placing all cultural differences and experiences as equivalent, perpetuating the status quo. Ten years later, these sentiments were echoed in the beliefs of pre-service teachers that Black students needed to conform to "Whiteness" in order to succeed and that merely being aware of racial/cultural inequities was sufficient for them to become good teachers (Gay & Kirkland, 2003). Using general attrition rates, we can assume that the majority of the teachers in that study are still practicing and reverberating these beliefs to incoming teachers. In addition, preservice teachers continue to have a variety of implicit beliefs about Black versus White students, as evidenced in their greater degree of implicit associations of "unpleasant" with Black and "pleasant" with White faces and their racialized anger bias toward Black children's faces compared to White children's faces even when no anger is present (Halberstadt et al., 2020). These signal that some degree of racial bias continues in the preservice teaching workforce and may remain well-entrenched despite attempts to alert preservice teachers to these issues.

Socioeconomic Status (SES)

Teachers tend to view lower-SES children, especially boys, as having less successful futures than their higher-SES peers and they have lower academic expectations for these students, separate from actual abilities (Jussim, 1986; Auwarter & Aruguette, 2008). In addition, lower-SES students and those coming from poverty are more likely to be less school-ready and score cognitively and academically lower on formal assessments than their higher-SES peers (Coley, 2002). These results are likely due to environmental and economic deficits that are synonymous with being poor. For example, higher-SES families have the financial resources to provide stimulating and enriching environments, along with providing balanced nutrition that support cognitive development. Additionally, maternal education level has been positively associated with sensitive parenting (Tamis-LeMonda, Shannon, Cabrera, & Lamb, 2004), which has also been linked to school readiness (Connell & Prinz, 2002; Mistry, Biesanz, Taylor, Burchinal, & Cox, 2004.)

Socially, children from lower-SES groups were often perceived to display more internalizing (e.g., depression and social withdrawal) and externalizing (aggression, lability) social behavior, than their higher-SES peers (see Bradley & Corwyn, 2002). Children are also agents of stereotype reinforcement. Developmentally, as children mature, their beliefs become more nuanced and align more with those of the adults around them (Chafel, 1997; Cozzarelli, Wilkinson, & Tagler, 2001). For example, young children generally have very rigid beliefs that favor the rich in academic, music, and physical domains. These beliefs become less rigid by middle-school; however, higher-SES children are still considered, by their peers, to be better academically than lower-SES children (Mistry, Brown, White, Chow, & Gillen-O'Neel, 2015; Kurtz-Costes, & Rowley, 2005). In addition, SES is highly confounded with race stereotypes and beliefs, attributing the lowest teacher expectations to poor, minority students. In other words,

being Black *or* poor is disadvantageous, but being Black *and* poor would be worse through the compounded experiences of institutional, systemic racism and lack of financial and educational resources. Additionally, differences in how social characteristic (e.g., race and SES) influence academic achievement may be initially negligible; however, over time these initial discrepancies may grow larger than the sum of their parts.

Student Gender

Teachers continue to have different expectations for children based on gender. Studies have revealed teacher preferences in favor of boys' academic abilities and attainment. For example, boys received more praise and feedback then girls (Kelly, 1988) and boys were believed to have more acumen for math than equally achieving girls (Li, 1999; Tiedemann, 2000). In contrast, when considering socioemotional skills, maturity, and organization, teachers tend to consider girls to be more school-ready than male peers (Ring et al. 2016) and, overall, they view girls as displaying higher levels of emotion-related skills and socialization (Schmidt, Demulder & Denham, 2002; Maguire, Neins, McCann & Connolly, 2016).

Student Social Skills

The positive association between academic achievement and social skills has been well established (Caprara, Barbarenelli, Pastorelli, Bandura & Zimbardo, 2000; Malecki & Elliot, 2002; Wentzel, 1993). Students who are perceived by their teacher to be obedient and concerned about their education are provided with praise, encouragement, and greater opportunities for academic advancement compared to children who are perceived to be disobedient (Hamre & Pianta, 2001; Howes, 2000). Teacher beliefs and attitudes act to shape student-teacher relationships, students' academic identity, and students' critical thinking (Jennings & Greenberg, 2009; Kuklinski & Weinstein, 2000; Severson & Walker, 2002). In turn, these positive outcomes

are important predictors of children's motivation for learning, classroom engagement, school adjustment, language development, and writing competence (Commodari, 2013; Crosnoe, Johnson, & Elder, 2004; Davis & Dupper, 2004; Garner & Waajid, 2008). Unfortunately, positive student-teacher relationships are formed less frequently for low income, Black students than for their higher income, White peers (Hamre & Pianta, 2001; Hill & Taylor, 2004; Kohl, Weissberg, Reynolds, & Kasprow, 1994; Ladd, Birch & Buhs, 1999).

School Climate Impacts Teachers' Perceptions

School climate is often used as a barometer to assess aggregated opinions about the school's mood (Marsh, Lüdtke, Nagengast, Trautwein, Morin, Abduljabbar, & Köller, 2012; Brault et al., 2014). The National School Climate Council (2007) defines school climate as the "quality and character of the school life". Central tenants of school climate consist of building professional and peer relationships, connection to the school, and job satisfaction (Thapa, Cohen, Guffey & Alessandro, 2013; Wang & Degol, 2016). School climate is widely believed to influence behaviors, attitudes, and values of the individuals working within the school (Brookover Schweitzer, Schneider, Beady, Flood & Wisenbaker, 1978; Zullig, Koopman, Patton and Ubbes, 2010). Throughout the literature, there are many aspects that constitute school climate (see Thapa, Cohen, Guffey, Higgins & Dallesandro, 2013). This study focuses on the relational aspect of school climate in that shared values, goals, and norms help to foster stronger teacher-to-teacher connectivity and higher perceived parental support. Consequently, teachers' perceptions of school climate then influence (consciously or sub-consciously) how a teacher feels about themselves and their students. For example, teachers who reported a positive school climate also reported higher levels of teacher efficacy than teachers who report a negative school climate (Hosford and O'Sullivan, 2015). In turn, teacher efficacy is positively associated with

student engagement and academic performance resulting in stronger teacher-student relationships (Rubie-Davies, 2007).

THE PRESENT STUDY

This study seeks to investigate general trends in whether or not academic trajectories for White and Black students are indeed established in kindergarten and remain stable throughout elementary school. Also investigated are how student characteristics and school climate may impact student elementary success trends. To explore how student and school characteristics assessed in kindergarten shape standardized academic scores from kindergarten through fifth grade, I utilized Kindergarten teacher assessments of students' academic and social skills, and a school climate measure, along with student race, socioeconomic status, and gender.

I utilized data from the Early Childhood Longitudinal Study (ECLS-K 2011), which surveyed a nationally representative sample of over 18,000 children measuring their academic and social development as they entered kindergarten and continued through fifth grade. This data set is ideal as the measurement tools to analyze the following hypotheses includes student demographics as reported by parents, teacher-perceived student academic abilities and social skills, teacher-rated school climate and standardized academic assessments. The research was guided by the following questions:

1. *Do Black compared to White students and those with lower SES compared with higher SES receive significantly lower initial teacher assessments? Are there gender differences?*
2. *Are standardized academic scores different between student demographic groups?*
3. *Are teachers' initial assessments of social and academic skills in Kindergarten positively associated with objective academic trajectory through 5th grade?*
4. *Do teacher assessed social skills in Kindergarten support children's academic trajectories?*

5. *Do students perform better in "warmer" rather than "cooler" school climates?*

METHOD

Sample

The data utilized for this study came from the Early Childhood Longitudinal Study (ECLS-K:2011), which followed a representative cohort of children starting in kindergarten through 5th grade. In the base year, about 900 schools were sampled (80% public) representing the Northeast, Midwest, Southern and Western regions in the U.S. This sample included approximately 18,000 students (46% White, 13% Black, 41% other). Children in the base year (i.e., Kindergarten) were selected using a multistage probability design. In the first stage, 90 sampling clusters containing counties or multiple counties were selected. The second stage selected the schools that would be used from within the 90 clusters and lastly, students within the schools were chosen using systematic sampling, therefore ensuring that the students selected are representative of their school. For the purposes of this study only the Black (n=1,183) and White (n=5,127) children included in the Kindergarten data collection were included. Children who, in subsequent years, moved or were no longer participants in data collection were not excluded. This decision was made in order to retain as many children as possible, especially from demographic groups that had very low cell numbers (i.e., Black high SES students). For example, four high SES Black boys (out of 29) moved after Kindergarten, reducing the number of representative students by 14%. Additionally, children who were identified as having a learning disability were excluded.

Data were collected in the fall and spring of Kindergarten, first and second grade, and then in the spring of third, fourth and fifth grade. The fall first-and second-grade data collections were not included because they only surveyed a third of the student participants.

Procedure

The sampled children's primary teacher (i.e., the teacher with the child for most of the day) completed questionnaires assessing each student's academic and socioemotional attainment along with questionnaires pertaining to school characteristics. Data from school administrators and parents were also collected. For more information on all the data collected and participants, please refer to the ECLS-K:2011 research manual (Tourangeau et al., 2015)

Measurements

Direct Cognitive Assessment

The direct cognitive assessment contained items on literacy, mathematics, and general knowledge at all time points being used. In each subject area, children received a routing test that guided the selection to one of several alternative second-stage tests based on performance. The second-stage test reflected appropriate difficulty as indicated by the routing items. Reliability estimates for literacy and math tests were high ranging from .86 to .95 and .91 to .94 depending on grade, respectively. For the purpose of this study, only the reading and math portions were used. The ECLS-K provides multiple types of scores to be used to describe children's performance on these tasks. I chose the standardized score because it estimates level of achievement relative to the whole population. In other words, this score represents different subgroups compared to the national average and how these ranking change over time (Tourangeau et al., 2009).

Testing content reflected the framework of the National Assessment of Educational Progress (NAEP). Since the NAEP only developed testing for fourth grade and beyond, early elementary educators and curriculum specialists were consulted for kindergarten, first and third grade test content.

Academic Rating Scale (ARS)

In kindergarten, the ARS included teacher assessments of literacy and math. Teachers rated each of their participating students on a scale of 1-5 (1=Not yet, 5=proficient) for observations like "*uses complex sentence structure*" and "*understands and interprets a story or other text read to him/her"* for language and literacy (9 questions), and "*shows an understanding of the relationship between quantities"* and "*uses a variety of strategies to solve a math problem*" for math (7 questions). It is important to note that the ARS is subjective in nature, in that teachers are relying on their memory of students' class performance to complete these assessments. If 40 percent or more of the items in a scale were not rated, then the score was set to missing. Fewer than 1 percent of literacy and 2 percent of the math scores failed to meet the completeness threshold.

Social Rating Scale (SRS)

The SRS is an adaptation of the frequently used and well-validated Social Skills Rating Scales (SSRS: Gresham and Elliot, 1990). Composite variables derived from the SSRS subscales are *self-control* (4 items), *interpersonal* (5 items), *approaches to learning* (6 items), *externalizing behavior* (5 items), and *internalizing behavior* (4 items). Self-control (e.g., *the child's ability to control temper* and *the child's ability to accept peer ideas in group activities*), interpersonal (e.g., *child's skills in forming and maintaining friendships* and *comforting and helping other children*) and approaches to learning (e.g., *shows eagerness to learn new things* and *works independently*) are the subscales that I used, as they have been identified by teachers as critical to classroom success (Lane, Pierson, & Givner, 2003; Meier, DiPerna, & Oster, 2006).

Teachers were asked to rate their students on a scale of 1-4 (1=never, 4=very often). For this sample, internal reliability for self-control, interpersonal and approaches to learning

subscales ranged from .79 to .82, .85 to .88, and .91 to .92 respectively from kindergarten to fifth grade. In the initial data set, composite scores were computed only if the student was rated on at least two-thirds of the items in that scale. Because these three scales were significantly correlated ($p < .01$), I combined them for more stable and parsimonious analyses. Internal reliability for the combined scale was .89.

Race and Gender

Race and gender identifiers were reported by parents at child's entry into school.

Socioeconomic Status (SES)

SES was computed using information from parents and included parent/guardian education, occupation prestige score, household income, and number of people in the family. For further information on the creation of the variable and methodology, please refer to the user manual (Tourangeau et al., 2015).

School Climate (SC)

The ECLS-K:2011 SC measure consisted of seven questions: (a) *I feel accepted and respected as a colleague by most staff members,* (b) *Teachers in the school are continually learning and seeking new ideas*,(c) *Parents are supportive of the school staff, (d) There is a great deal of cooperative effort between the staff members, (e) In this school, staff members are recognized for a job well done, (f) There is broad agreement among the entire school faculty about the central mission of the school, and (g) The school administration's behavior towards the staff is supportive and encouraging.* Questions that were not utilized were *(a) The level of child misbehavior (for example, noise, horseplay, or fighting in the halls or cafeteria) in this school interferes with my teaching, (b) Many of the children I teach are not capable of learning the material I am supposed to teach them, (c) Routine administrative duties and paperwork*

interfere with my job of teaching. (d) The academic standards at this school are too low, and (e) The school administrator sets priorities, makes plans, and sees that they are carried out. These questions were left out because, theoretically, they dealt with other constructs (i.e., beliefs about schools academics and role of administration). The seven questions included all address relationships between teachers, administration and parents. Teachers were asked to indicate to what extent they agreed with these statements on a five-point Likert scale (1=strongly disagree, 5=strongly agree). ECLS-K:2011 provided questions pertaining to school climate, however the questions asked were independent of a composite variable and touched on multiple aspects of school climate. Hence, for the purposes of this study, I combined these seven questions to create a school climate composite variable. This scale established acceptable reliability (α=.86). If more than 1 item in the scale was not rated, then the score was set to missing.

Planned Analyses

First, the needed variables were extracted from the much larger data set and examined to evaluate descriptive and correlational characteristics. Second, the data were transposed to be compliant with multilevel modeling. Null models for outcome variables were run, establishing that within and between person variability exists. Questions utilizing multilevel modeling (MLM; Raudenbush & Bryk, 2002) used multilevel mixed procedures (SAS software 9.4). These analyses began with fully unconditional models and included only the intercept (standardized literacy and math scores) to partition the variance within and between persons. Listed below are analytic plans that accompany the questions guiding this research.

Q1: *Do Black compared to White students and those with lower SES compared with higher SES receive significantly lower initial teacher assessments? Are there gender differences?*

To test teacher assessment mean differences between student demographics in Kindergarten, three 3-way ANOVAs were conducted, using IBM SPSS Statistics 27. The first two were a race X SES (high, mid, low) X gender ANOVA for literacy and math followed by a race X SES X gender ANOVA for social skills (approaches to learning, interpersonal and self-control). Since ANOVAs only allow for categorical IVs, the continuous SES (described above) was transformed into a categorical variable representing high (≥ + 1*SD*) middle (+ 1*SD* < > -1*SD*) and low (≤ -1*SD*). Math and literacy scores were transformed into Z scores across all teacher ratings. Teacher-level standardization was not conducted due to Kindergarten teachers being randomly selected for the ECLS:2011. Social skills were not transformed.

Q2: *Are standardized academic scores different between student demographic groups?*

To test for standardized assessment mean differences between students, two 3-way ANOVAs were conducted, using IBM SPSS Statistics 27, for race X SES (high, mid, low) X gender for literacy and math.

Q3: *Do teachers' initial assessments of social and academic skills in Kindergarten positively reflect objective academic trajectory through 5th grade?*

To test if teachers' initial perceptions of academic and social skills positively predicted objective academic trajectory, multilevel modeling (MLM) was used.

Level 1: OBJ ACADit = β0it + β1it (TIME) + rit
Level 2: β0i = γ00 + γ01 (IV) + u0i
B1i= γ10 + γ11 (IV) + u1i

Q4: *Do social skills support children's academic trajectories?*

To answer this question, I tested the interaction between social skills, race, SES, gender and subsequent objective academic assessments using MLM.

Level 1: OBJ ACADit = β0it + β1it (TIME) + rit
Level 2: β0i = γ00 + γ01 (RACE) + γ02 (SOC SKILL) + γ03 (RACE*SOC SKILL) + u0i

$\beta 1i = \gamma 10 + \gamma 11$ (RACE) + $\gamma 12$ (SOC SKILL) + $\gamma 13$ (RACE*SOC SKILL) + u1i

Level 1: OBJ ACADit = $\beta 0it + \beta 1it$ (TIME) + rit
Level 2: $\beta 0i = \gamma 00 + \gamma 01$ (SES) + $\gamma 02$ (SOC SKILL) + $\gamma 03$ (SES*SOC SKILL) + u0i
$\beta 1i = \gamma 10 + \gamma 11$ (SES) + $\gamma 12$ (SOC SKILL) + $\gamma 13$ (SES*SOC SKILL) + u1i

Level 1: OBJ ACADit = $\beta 0it + \beta 1it$ (TIME) + rit
Level 2: $\beta 0i = \gamma 00 + \gamma 01$ (GENDER) + $\gamma 02$ (SOC SKILL) + $\gamma 03$ (GENDER*SOC SKILL) + u0i
$\beta 1i = \gamma 10 + \gamma 11$ (GENDER) + $\gamma 12$ (SOC SKILL) + $\gamma 13$ (GENDER*SOC SKILL) + u1i

Q5: *Do students perform better in "warmer" rather than "cooler" school climates?*

To test whether positive school climate in Kindergarten supported students' academic trajectories, I tested to see how the interactions of race, SES, gender and school climate predicted objective academic trajectory using MLM.

Level 1: OBJ ACADit = $\beta 0it + \beta 1it$ (TIME) + rit
Level 2: $\beta 0i = \gamma 00 + \gamma 01$ (RACE) + $\gamma 02$ (SCHOOL CLIMATE) + $\gamma 04 + \gamma 05$ (RACE*SCHOOL CLIMATE) + u0i
B1i = $\gamma 10 + \gamma 11$ (RACE) + $\gamma 12$ $\gamma 13$ (SCHOOL CLIMATE) + + $\gamma 15$ (RACE*SCHOOL CLIMATE) + u1i

Level 1: OBJ ACADit = $\beta 0it + \beta 1it$ (TIME) + rit
Level 2: $\beta 0i = \gamma 00 + \gamma 01$ (SES) + $\gamma 02$ (SCHOOL CLIMATE) + $\gamma 03$ (SES*SCHOOL CLIMATE) + u0i
$\beta 1i = \gamma 10 + \gamma 11$ (SES) + $\gamma 12$ (SCHOOL CLIMATE) + $\gamma 13$ (SES*SCHOOL CLIMATE)+ u1i

Level 1: OBJ ACADit = $\beta 0it + \beta 1it$ (TIME) + rit
Level 2: $\beta 0i = \gamma 00 + \gamma 01$ (GENDER) + $\gamma 02$ (SCHOOL CLIMATE) + $\gamma 03$ (GENDER*SCHOOL CLIMATE) + u0i
$\beta 1i = \gamma 10 + \gamma 11$ (GENDER) + $\gamma 12$ (SCHOOL CLIMATE) + $\gamma 13$ (GENDER*SCHOOL CLIMATE)+ u1i

RESULTS

I begin by presenting demographic information for both students whose data were utilized in this study. Then I provide descriptives for predictor and outcome variables (see Table

1). To test standardized score and teacher assessment mean differences between students' race, SES, and gender, ANOVAs were conducted to establish baseline differences between student populations using IBM SPSS Statistics 27. Statistical significance was accepted at $p<.05$ for 3-way interactions and $p<.025$ for two-way interactions and simple main effects.

Results from the literacy scores analysis indicated that 7% of the variability was explained between students ($\tau_{00} = 71.30$, $z = 13.19$, $p < .001$) and 93% within students ($\sigma^2 = 1011.68$, $z = 118.45$, $p < .001$). For math, 10% of the variability was explained between students ($\tau_{00} = 113.87$, $z = 18.35$, $p < .001$) and 90% within students ($\sigma^2 = 1023.59$, $z = 118.93$, $p < .001$). The percentage differences between within and between student variability can be explained through change over time. Academic assessments were developmentally appropriate but were scored in a manner that showed improvement over time. Because the between student variability was significant, further analysis was warranted.

Question 1: Do Black compared to White students and those with lower SES compared to higher SES receive significantly lower initial teacher assessments? Are there gender differences?

To test teacher assessment mean differences, three 3-way ANOVAs were conducted using student demographics as the independent variables. The effects of race, SES (high, middle, low) and gender on teacher-assessed literacy, math, and social skills (approach to learning, interpersonal and self-control) were determined. Cell numbers ranged from 27 to 1854, violating Levene's test of homogeneity; however, researchers have warned against using this test due to the possibility of Type 1 errors (Zimmerman, 2004). Additionally, some authors have pointed out that these tests may not be necessary because *F* tests are robust to heterogeneity (see Zimmerman, 2005). Because the cell numbers are substantially different, Fields (2013) recommends looking at the variability provided by the statistical output and manually comparing

variances. For this study, homogeneity of variance was established with ratios of variance between each group at less than or equal to 1:1.30 variance ratio (Fields, 2013). For 2-way interactions and main effects, race and gender were coded as follows: 0=White and boy, 1=Black and girl.

Teacher-Assessed Literacy and Math

For literacy and math, main effects for SES ($F(1, 5376)=6.76$, $p=.009$, $\eta^2=.001$; $F(1, 5427)=5.01$, $p=.025$, $\eta^2=.001$; respectively) and gender ($F(1, 5376)=46.07$, $p=.017$, $\eta^2=.002$; $F(1, 5427)=17.84$, $p<.001$, $\eta^2=.007$; respectively) emerged, showing that as SES increased, Kindergarten teacher-assessed literacy and math scores also increased. Additionally, girls were assessed with higher scores in both subjects compared to boys.

Social Skills Assessments

Main effects for race ($F(1, 4885)=13.60$, $p<.001$, $\eta^2=.003$), SES ($F(2, 4885)=33.97$, $p<.001$, $\eta^2=.014$), and gender $F(1, 4885)=42.11$, $p<.001$, $\eta^2=.009$) emerged; overall, White students and girls were assessed as having stronger social skills than Black students and boys, and as SES increased so did social skill assessments.

Question 2: *Are standardized academic scores different between student demographic groups?*

To answer this question, I conducted two 3-way ANOVAs with standardized literacy and math scores as my dependent variable and race, SES and gender as my independent ones. Similarly, to how teacher assessed literacy and math were analyzed I standardized (i.e., z scores) the literacy and math scores for comparability to the teacher assessments to allow trend comparisons. Race and gender were coded as follows: 0=White and boy, 1=Black and girl.

Standardized Literacy and Math Scores

For literacy, only a main effect of SES $F(1,5740)=116.10$, $p<.001$, $\eta^2=.039$) was present, showing that as SES increased so did standardized literacy scores. For math, main effects of race ($F(1, 5734)=40.32$, $p<.001$, $\eta^2=.007$) and SES ($F(2, 5734)=137.59$, $p<.001$, $\eta^2=.046$) emerged, meaning that for both literacy and math, scores were positively associated with SES and for math White students accrued higher scores than Black students. For math, however, these main effects were qualified by a significant 2-way interaction between race and SES ($F(2, 5734)=6.20$, $p=.002$, $\eta^2=.002$; see Figure 1, Table 2 for means, and Table 3 for pairwise comparisons). The interaction shows that for White students, increases in math scores were linearly associated with SES. For higher SES Black students, although the sample was small, results suggest an advantage for these students over lower- and middle-SES Black students (see Figure 1).

Question 3: Do teachers' initial perceptions of academic skills in Kindergarten positively reflect objective academic trajectories through 5th grade?

Literacy. Students who received higher teacher assessments in Kindergarten also received higher standardized assessments throughout elementary school ($\gamma01= 6.51$, $t = 40.71$, $p <.001$) compared to students who received lower academic assessments. There was a significant interaction between teacher assessments and time ($\gamma11= -0.38$, $t = -11.54$, $p <.001$; see Figure 2) showing that as children progressed through elementary school, the literacy gap between those who were assessed by teachers as having low literacy skills and those assessed to have high literacy skills decreased.

Math. Similar to the literacy scores, higher teacher math assessments were associated with higher objective math scores ($\gamma01= 4.10$, $t = 25.30$, $p <.001$), and this relationship did change over time ($\gamma11= -0.13$, $t = -3.80$, $p <.001$; see Figure 3). That is to say, the initial

academic gap between students assessed by teacher to have higher math skills compared to those assessed with lower math skills increased over time.

Question 4: Do social skills support children's academic trajectories?

Race and social skills

Literacy. I tested to see if higher social skills helped to strengthen objective test scores As expected, students acquired more literacy skills over time, with White students progressing at a higher rate than Black students (see Model 1 in Table 4). There was an interaction between race and time (see Model 1 in Table 4) showing that as time goes on the literacy score discrepancies between White and Black children widen (see Figure 4). An additional model testing for differences in social skills (i.e., replacing race with social skills in the previous model) indicated that those with higher social skills performed better on standardized literacy tests (see Model 2 in Table 4). However, there was no interaction between social skills and time, meaning that score discrepancies observed between low and high socially skilled students did not change through 5th grade.

Lastly, these findings were qualified by a three-way cross-level interaction (i.e., simultaneously adding race, social skills, and race X social skills in both Level 2 equations). In order to interpret this interaction, two additional models were conducted: one for White students and one for Black students. The slopes of time for the two additional models were plotted for students with high social skills (1 standard deviation above the sample mean) and for students with low social skills (1 standard deviation below the sample mean). Together, these indicate that social skills had little to no impact on literacy improvement for White students whereas Black students with low social skills did not tend to progress as well as their Black peers who were assessed as having higher social skills (see Figure 5 and Model 3 of Table 4).

Math. For math, the same statistical steps were taken as were with literacy. Similarly, math scores increased over time (see Model 1 in Table 4). An interaction between time and race (see Model 1 in Table 4) showed that math score discrepancies between White and Black children increased over time (see Figure 6 and Model 1 in Table 4). When social skills were substituted for race, higher social skills were associated with higher math scores (see Model 2 in Table 4). Similarly, no interaction between time and social skills was observed (see Model 2 in Table 4).

Lastly, these findings were qualified by a three-way cross level interaction. To interpret this interaction, two additional models were conducted: one for White students and one for Black students. The slopes of time for the two additional models were plotted for students with high social skills (1 standard deviation above the sample mean) and for students with low social skills (1 standard deviation below the sample mean). Together, these indicate that social skills had little to no impact on math improvement for White students whereas Black students assessed as having low social skills did not progress at the same rate as their Black peers who were assessed with high social skills (see Figure 7 and Model 3 in Table 4).

SES and social skills

Literacy. I tested to see if higher social skills helped to strengthen literacy test scores for students coming from low SES families. As expected, students acquired more literacy skills over time with higher scores associated with higher SES (see Model 1 in Table 5). An interaction between time and SES (see Model 1 in Table 5) showed that literacy score discrepancies between higher and lower SES children became more prominent over time (see Figure 8). An additional model testing for differences in social skills (i.e., replacing SES with social skills in the previous model) indicated that those with higher social skills performed better on

standardized tests, and this relationship did not change over time (see Model 2 in Table 11). In other words, score discrepancies observed between low and high socially skilled students stayed consistent throughout elementary school.

Lastly, these findings were qualified by a three-way cross level interaction (i.e., simultaneously adding SES, social skills, and SES X social skills in both Level 2 equations). To interpret this interaction, two additional models were conducted: one for low SES (1 standard deviation below the sample mean) and one for high SES (1 standard deviation above the sample mean). The slopes of time for the two additional models were plotted for students with high social skills (1 standard deviation above the sample mean) and for students with low social skills (1 standard deviation below the sample mean). Together these indicate that high SES appeared to be a protective factor for children who are assessed as having low social skills, meaning that by 5th grade, high SES students perceived to be low in social skills performed almost as well as children initially assessed as having high social skills by 5th grade. The opposite trend emerges for low SES students, with students assessed with low social skills not progressing as much as those assessed with high social skills (see Figure 9 and Model 3 in Table 5).

Math. For math, the same statistical steps were taken as were with literacy. Similarly, math skills increased over time (see Model 1 in Table 5), and an interaction between time and SES indicated that math score discrepancies between high and low SES children increased over time (see Figure 10 and Model 1 in Table 5). Additionally, higher social skills were associated with higher math scores, and this relationship stayed consistent over time (see Model 2 in Table 5).

These findings were qualified by a three-way cross level interaction. To interpret this interaction, two additional models were conducted: one for low SES (1 standard deviation below

the sample mean) and one for high SES (1 standard deviation above the sample mean). The slopes of time for the two additional models were plotted for students with high social skills (1 standard deviation above the sample mean) and for students with low social skills (1 standard deviation below the sample mean). As with literacy, high SES appeared to be a protective factor for children who are assessed as having low social skills, meaning that over time, low socially skilled children from high SES families performed almost as well as children initially assessed as having high social skills by 5th grade. The opposite trend emerges for low SES students, with students assessed with low social skills developing math skills at a slower pace than those assessed with high social skills (see Figure 11 and Model 3 in Table 5).

Gender and social skills

Literacy. Regarding gender differences, I tested to see if higher social skills were associated with better literacy score trajectories. As expected, students acquired more literacy skills over time, and overall girls scored higher than boys (see Model 1 in Table 6). An additional model testing for differences in social skills (i.e., replacing gender with social skills in the previous model) indicated that those with higher social skills performed better on literacy standardized tests (see Model 2 in Table 6). No interactions between time and gender (see Model 1 in Table 6) and time and social skills (see Model 2 in Table 6) were observed; literacy score differences between gender and social skills were consistent at all time points.

These findings were qualified by a three-way cross level interaction (i.e., simultaneously adding gender, social skills, and gender X social skills in both Level 2 equations). To interpret this interaction, two additional models were conducted: one for boys and one for girls. The slopes of time for the two additional models were plotted for students with high social skills (1 standard deviation above the sample mean) and for students with low social skills (1 standard

deviation below the sample mean). Both boys and girls assessed as having high social skills in Kindergarten ultimately continued to perform better on subsequent literacy tests compared to the students who were assessed as having low social skills. However, as time goes on the addition of gender paints a more nuanced picture. By 5th grade, boys with high social skills tended to perform better in literacy than girls with high social skills. In contrast low social skill girls tended to perform better over time than boys with low social skill (see Figure 12 and Model 3 in Table 6).

Math. For math, the same statistical steps were taken as were with literacy. A main effect of gender emerged indicating that boys scored higher in math (see Model 1 in Table 6). Additionally, there was an interaction between time and gender showing that the discrepancies between boys' and girls' math scores increased over time (see Figure 13 and Model 1 in Table 6). Similar to literacy, higher social skills were associated with stronger math score trajectories (see Model 2 in Table 5). No other interactions were observed (see Model 2 & 3 in Table 6). In other words, social skills had little to no bearing on standardized math test scores, but overall boys tended to perform slightly better than girls with the gap increasing over time.

Question 5: Do students perform better in "warmer" rather than "cooler" school climates.

Race and School Climate

Literacy. I tested whether positive school climate helped to elevate literacy scores Literacy scores increased over time, and White students performed at a higher level than Black students (see Model 1 in Table 7). As before, an interaction between race and time emerged revealing that as time goes on the literacy score discrepancies between White and Black children widen (see Model 1 in Table 7). An additional model testing for differences in school climate (i.e., replacing race with school climate in the previous model) indicated that "warmer" school

climates were associated with higher literacy scores than schools with "cooler" climates and this relationship changed over time indicating that as time goes by, literacy score discrepancies between warm and cool schools slowly widens (see Figure 14 and Model 2 in Table 7).

These findings were qualified by a three-way cross level interaction (i.e., simultaneously adding race, school climate and race X school climate in both Level 2 equations). To interpret this interaction, two additional models were conducted: one for White students and one for Black students. The slopes of time for the two additional models were plotted for schools with warm climates (1 standard deviation above the sample mean) and for schools with cool climates (1 standard deviation below the sample mean). Taken together, results indicate that for both Black and White students in Kindergarten, climate does not significantly impact standardized literacy scores and this trend remains for White students. However as Black students move through elementary school, the achievement gap widens between students in relatively cool and warm climates, with students initially in warmer school climates scoring higher than those who initially started in cooler school climates (see Figure 15).

Math. For math, the same statistical steps were taken as with literacy. White students received higher math scores than their Black peers (see Model 1 in Table 7). And this relationship changed over time indicating that math score discrepancies between White and Black children increased over time (See Figure 4 and Model 1 in Table 7). Additionally, warmer school climate was associated with higher math scores than schools with a cooler climate and this relationship changed over time (see Figure 16 and Model 2 in Table 7). In other words, as time goes on math score discrepancies widen. There was no three-way cross level interaction, implying that the initial relationships between race and math proficiency did not change regardless of school climate.

SES and School Climate

Literacy. Literacy scores increased over time, and student SES was positively associated with scores (see Model 1 in Table 8). As before, an interaction between SES and time emerged, revealing that as time goes on the literacy score discrepancies between White and Black children widen (Model 1 in Table 8). An additional model testing for differences in school climate (i.e., replacing SES with school climate in the previous model). "Warmer" school climates were associated with higher literacy scores than schools with "cooler" climates and this relationship changed over time, indicating that the achievement gap increased between warm and cool school climates (see Model 2 in Table 8).

These findings were qualified by a three-way cross level interaction (i.e., simultaneously adding social skills and school climate and social skills X school climate in both Level 2 equations). To interpret this interaction, two additional models were conducted: one for White students and one for Black students. The slopes of time for the two additional models were plotted for school with warm climates (1 standard deviation above the sample mean) and for schools with cool climates (1 standard deviation below the sample mean). Together, these results indicate that, overall, students from lower-SES families tested lower than students from schools with a warm climate. However, over time for higher-SES students the initial achievement gap seen in Kindergarten decreased, whereas, for lower-SES students the achievement gap widened (see Figure 17 and Model 3 in Table 17).

Math. For math, the same statistical steps were taken as with literacy scores. Similar to literacy, SES was positively associated with math scores (see Model 1 in Table 8). This relationship changed over time (See Model 1 in Table 8) indicating that math score discrepancies between higher- and lower-SES children increased over time (see Figure 13). Again, a warmer

school climate was associated with higher math scores than schools with a cooler climate, and this relationship changed over time (see Model 2 in Table 8). In other words, math score discrepancies between high and low SES students increased over time (See Figure 10). There was no three-way cross-level interaction, implying that the initial relationships between SES and math proficiency did not change regardless of school climate.

Gender and School Climate

Literacy. I tested whether school climate affected literacy scores between genders. Literacy scores increased over time and boys performed at a higher level than girls and this relationship did not change over time (see Model 1 in Table 9). An additional model testing for differences in school climate (i.e., replacing gender with school climate in the previous model). *"*Warmer" school climates were associated with higher literacy scores than schools with "cooler" climates and this relationship changed over time indicating that that the achievement gap increased between warm and cool school climates (see Model 2 in Table 9).

Math. For math, the same statistical steps were taken as with literacy. Similar to literacy, SES was positively associated with math scores (see Model 1 in Table 9). This relationship changed over time (See Model 1 in Table 9), indicating that math score discrepancies between boys and girls increased over time. Additionally, a warmer school climate was associated with higher math scores than schools with a cooler climate, and this relationship changed over time (see Model 2 in Table 9). In other words, math score discrepancies between boys and girls increased over time. There was no three-way cross level interaction, implying that the initial relationships between gender and math proficiency did not change regardless of school climate.

DISCUSSION

Question 1: *Do Black compared to White students and those with low SES compared with high SES receive significantly lower initial teacher assessments? Are there gender differences?*

In Kindergarten, teachers assessed Black students and lower-SES students as having lower academic abilities in literacy and math than White and higher-SES students. This is not surprising given previous work documenting these academic trends recorded over the last 50 years. Additionally, White students were assessed as having higher social skills than Black students. Taken together, these results reveal that teachers continue to see children from different demographics as having different skill sets. These skill sets are discerned differently dependent on children's characteristics, and this study reflects those strong patterns. However, one caveat of these findings is that students were not nested within teachers, due to the way the ECLS-K:2011 data were collected. Therefore, this does not take into consideration teachers who may be very lenient (i.e., rate all of their students with high academic and social skills) or harsher (i.e., rate all of their students with low academic and social skills) in their reporting, and that these teachers may have differential impact on groups with small cell sizes. This is particularly important regarding the Black high-SES groups (see Table 10). Because this group had the smallest sample, one or two teachers could substantially skew the results.

Literacy. For all student sub-categories (i.e., White boys, Black boys, White girls, Black girls), SES was significantly associated with teacher-assessed literacy scores, and, overall, girls were given higher scores.

Surprisingly, there was no significant main effect for race, however, the trending results (p=.054) revealed that teachers assessed White students as being more skilled in Literacy than Black students with the exception of higher-SES Black girls and lower-SES White boys. Higher-SES Black girls were assessed as coming into Kindergarten with the highest literacy

fluency of any group and lower-SES White boys received the lowest scores of all the groups. Additionally, higher-SES Black boys were assessed as being on par with their higher-SES Whitemale and female peers. This contrasts with past patterns that have shown White students being scored higher than their Black SES peers, and only higher-SES Black students scoring within or below the range of the White students (Fryer & Levitt, 2004; Strand, 2014). However, interpretation of these findings should be taken with caution given the relatively small cell sizes for some of these groups (see Table 10).

Math. Similar to assessed literacy, math scores were positively associated with SES and girls received higher math assessments than boys. Although my initial hypothesis was that higher SES would relate to score discrepancies between Black and White children, higher-SES Black female students received the highest scores. One reason for this may be that Black girls coming from higher-SES families may be prepped more for the start of school than their White SES peers. Higher-SES Black families may be more conscientious of the struggles their children may face in school and invest their resources into ensuring their daughters are well-prepared for the school environment and expectations. However, why this reasoning would only apply to girls (because high SES Black boys were scored similarly to their low SES peers) warrants further thought.

Social Skills. Overall, social skill assessments were positively associated with SES, and White students and female students were assessed with higher social skills than Black students and male students. It is interesting that high SES Black boys and girls were assessed as having similar social skills given the teacher-assessed academic discrepancies, particularly since past literature suggests a strong positive relationship between social skills and academic abilities. One possible explanation for why this finding emerged is that different types of social skills may have

more influence over perceived academic ability compared to others. In this study, social skills were measured using a composite score of three social domains. Although the three categories of social skills were significantly correlated and therefore combined for the sake of parsimony and increased stability, the correlations ranged from .29 to .48, indicating that each score is measuring a somewhat different construct. This suggests that one of the social skill domains may be more causally linked to academic assessments than others. Although social skill mean scores for Black boys and girls are negligibly different, girls may be stronger in a particular social skill that more directly predicts academic achievement. Future research should seek to disentangle types of social skills and their associations with academic achievement.

Question 2: Are standardized academic scores different between student demographic groups?

Overall patterns for standardized scores and teacher assessments were similar, indicating that teachers are generally able to accurately assess their students' abilities. For literacy, White and Black girls were assessed and scored consistently higher than their male racial peers. For math, however, some inconsistencies appeared. Overall, girls, were assessed by teachers to have greater math skills compared to the boys; however, standardized math tests revealed that, overall, boys performed better in math than girls. The differences found in girls' math scores may be due to stereotype threat which has been found in early elementary school (K-2) children (Ambady, Shih, Kim, and Pittinsky, 2001), however, it is unclear at exactly which age stereotype threat begins. For example, Bian and colleagues (2017), in a sample of 5–7-year old's found that 6-year-old girls labeled boys as "more brilliant" than girls, however, at age 5 this was not the case.

Although mean differences between groups were not statistically analyzed, meaning can be drawn from the patterns that emerged between teacher assessments and standardized scores. For Black students, noteworthy inaccuracies appeared in the high SES categories. For

standardized literacy and math skills, Black male students scored higher compared to Black female students, which is in direct opposition to teacher assessments. Additionally, for literacy, Black high SES boys scored higher than any other student sub-groups. Black girls, however, were assessed by teachers to have the highest literacy and math scores but scored similarly to the White SES students in standardized literacy and worse in standardized math.

These differences between how teacher perceive academic competencies and standardized test results can have a cascading effect for the students. Girls may be the benefactors because they are being assessed by teachers as having higher scores and will most likely reap the benefits of being seen as "smart" and placed in higher level skill groups. Here again, social skills may be the determinant for these differences between Black boys and girls. In other words, Black girls may be seen as having higher social skills than Black boys and therefore having higher academic abilities.

High achieving Black students, however, may fall victim to stereotype threat. Steele's (1997) stereotype threat hypothesis posits that Black students who highly identify with academics (leading to higher academic achievement) are more likely to either emulate the stereotype (i.e., underperform) or drop out. Although this hypothesis is fairly old, it still reverberates today with continued data to support the effects and underlying mechanisms involving working memory being drawn from the task at hand (see Kellow & Jones, 2005 & 2010; Osbourne & Walker, 2006; Taylor & Walton, 2011; Hernandez et al., 2013). Black high SES families most likely encourage academic achievement and success; thus, inaccurate teacher assessments may lay the foundation for or reinforce the consequences of stereotype threat.

Question 3: Do teachers' initial assessments of social and academic skills in Kindergarten positively reflect objective academic trajectory through 5th grade?

For academic assessments the answer is yes, over time students' trajectories changed. From Kindergarten to 5th grade, the children in this study continued to score higher in standardized assessments suggesting that school is educating children from all backgrounds and cultures. For literacy there was positive change in that children who were evaluated by teachers as having lower literacy skills than their peers were able to decrease the objective score discrepancy between themselves and their higher assessed peers. This suggests that students who come in with weaker literacy are able to make up some of the deficit throughout elementary school, granting them more equal footing when entering into middle school. For math, the pattern was the opposite, with the score discrepancies increasing over time suggesting that students who come in with low math skills continue to acquire skills but at a much slower rate than those students coming in with more math acumen. This puts lower achieving math students at an increased deficit when entering middle school.

One possible reason for these opposing patterns between literacy and math is that much more time is spent on literacy than math in the classroom. This makes sense since literacy is the gateway to learning other subjects (e.g., history, science and social studies) but doing so can, and does, mean little time for the teaching of math. Additionally, there are many interventions (Slavin, Lake, Cheung, Chambers, & Davis, 2010 for review) and programs focused on literacy, but little effort has focused on math, especially in elementary school. This is troubling since math, along with literacy, is a strong predictor of future academic and financial achievement (Claessens, Duncan, & Engel, 2009; Rivera-Batiz, 1992)

Additionally, outside of the classroom, children in our society are bombarded with words, whether through conventional ways (e.g., book) or nonconventional ways, such as signs and food packaging. Children are constantly hearing language and accumulating words to effectively

communicate their needs. For families who cannot afford to own literacy resources, government (e.g., public libraries) and private (e.g., pediatricians handing out book during check-ups) organizations are in place to fill these needs. Math, on the other hand, does not appear as frequently in day-to-day life nor is made readily available to the masses. Outside of number recognition, for most elementary school children, math is probably encountered only in school.

Regarding social skills, being perceived as having higher social skills was associated with higher objective academic assessments, and this relationship did not change over time. In other words, academic and social skills increase at a similar rate from Kindergarten through 5th grade. These results contribute to the multiple studies focused on the relationship between social skills and academic achievement.

Lastly, another variable (i.e., executive function) may be driving these results. A central component of executive function is inhibitory control, which is positively associated with social skills, concurrently and longitudinally (Doebel, 2020). Because executive function is considered a higher-order process, and involves delegating tasks to lower cognitive processes, it may be useful to consider whether the combination of inhibitory control, task shifting, and working memory may be more predictive of academic outcomes than one social skill domain or the combination of several domains. Social skills may only skim the surface of the cognitive influences that predict academic achievement.

Question 4: *Do social skills support children's academic trajectories?*

In general, the relationship between social skills and objective academic assessment did not change over time; however, when race was entered into the equation, this relationship changed. For White students, by the time they reach 5th grade, those rated as having low Kindergarten social skills scored closer in both literacy and math to their peers who were initially

rated as having high social skills. In other words, by the close of elementary school, White students with low Kindergarten social skills were able to reduce the achievement gap in both literacy and math.

For Black students, however, this was not the case. In general, Black children initially received lower objective literacy scores than their White peers, and this discrepancy widened with time. For Black students, those possessing high social skills did achieve higher literacy scores than their less socially skilled Black peers. However, when compared to White students, these higher socially skilled Black students scored only as well as the less socially skilled White children by 5th grade.

This same pattern occurred in math except that by 5th grade, the more socially skilled Black children no longer achieved at the same level as less socially adept White students. This suggests that being perceived to have poor social skills in kindergarten is much more detrimental for Black students than White students. One reason for these findings is that Black students perceived to have poor social skills may internalize this assessment to a greater degree than their White SES peers, activating self-fulfilling prophecy beliefs. Being White and perceived to have low social skills does not seem to have the same deleterious effects that it has for the Black students, suggesting that simply being White helps to mitigate academic discrepancy by 5th grade. This likely reflects the White middle-class culture that most schools perpetuate (Hytten & Warren, 2003; McIntyre, 1997) and as children age, cultural behavior differences may be more apparent, thus granting the White students the privilege of being White.

When SES was included, high SES students received higher objective academic assessments compared to their low SES peers initially and this remained true over time. For high SES students, assessed with low social skills in kindergarten, by 5th grade the academic gap

decreased. For low SES students, however, this was not the case. Low SES children initially received lower objective literacy scores than their high SES peers, and this discrepancy widened with time. Additionally, for the low SES students, academic achievement differences between low and high socially skilled students increased. Similar to Black students, for low SES students, social skills present in kindergarten were much more impactful than for students coming from high SES families. These findings suggest that the in-classroom benefits associated with social skills (e.g., better student-teacher relationships) are not enough to counteract the benefits that money and prestige offer.

Question 5. Do students perform better in "warmer" rather than "cooler" school climates?

Kindergarten literacy scores between Black students coming from a "warmer" school compared with Black students coming from a "cooler" school show no significant difference. However, by 5th grade, there is a significant difference between literacy scores for Black children. This suggests that school climate in Kindergarten has lasting longitudinal effects; however, it is important to note that school climate in 5th grade was not controlled for. Therefore, it cannot be concluded if it is indeed the climate in Kindergarten or the additive influence of being in a "warmer" or "cooler" school throughout elementary school that is driving these results. Interestingly, White students received the benefits of warmer school climates initially, and this relationship remained through 5th grade. Additionally, White students starting in a cooler school climate still scored higher than Black students regardless of climate. Nevertheless, Black children from warmer school climates did score higher than Black students enrolled in cooler schools climates and this academic gap widened over time.

For math, warmer school climates produced better math scores than cooler climate schools and White students consistently scored higher. This relationship did not change over

time, suggesting that there is no academic improvement or gain brought about by a warmer school climate. For SES, school climate did not act as a protective factor for low SES students.

Limitations and Future Directions

Although this study explored the relationship between multiple variables and sought to answer complex questions, there are some limitations that need to be addressed.

The first limitation is that this study focused on general trends across the United States. These results are not representative of all schools and school districts. The purpose of this study was to examine (using some of the newest longitudinal data available) if the same academic trends for White and Black students, observed for decades, persisted. What I found was that they do, despite increased emphasis on cultural sensitivity and the adoption of multiculturalism. Additionally, this study also teased out some basic student and school characteristics that can influence a student's academic achievement throughout elementary school. Again, these trajectories are general. Of course, some schools and areas are able to decrease and even close the achievement gap between marginalized and non-marginalized students; however, before focusing on smaller populations, it is important to establish general population differences and then narrow one's focus. Because of this study's findings, there are more questions than answers. Hopefully, future research will generate questions based on my findings and explore how other variables, sub-populations, and schooling practices from this data set may reveal other patterns.

An additional limitation in interpreting general academic trends is the assumption that all schools follow the same curricula. Although the No Child Left Behind Act (NCLB, 2002) mandated that all students score "proficiently" in reading and math in 3rd and 8th grade and once in high school, states individually choose what tests are administered and what constitutes proficiency. Due to the longitudinal design, uniform direct cognitive tests needed to be designed

for each ECSL-K:2011 time point. To do this, project staff consulted with child development and education experts' recommendations of what cognitive knowledge and skills were typical at each grade based on the National Assessments of Educational Progress (NAEP) framework for 2011 and current curriculum standards from Texas, California, New Jersey, Florida and Virginia. These states were selected by Educational Testing Service (ETS) content staff as being representative of the U.S. state standards.

As mentioned earlier, states, individually defined proficiency from the tests they chose to administer. In other words, students from some states may not be learning the same skill sets at the same time and with the same proficiency as students from other states. Therefore, from time point to time point, academic results may not be based solely on student and school characteristics, but by differing state standards as well.

The second limitation it that only a subset of the population was studied. This was done to acknowledge the historical academic discrepancies between Black and White students that have defined the American school system for decades. However, by removing the children of other races and ethnic origins from the analyses, this study disregards other potential inequities and how their presence may impact the classroom. For example, teacher perceptions may be more influenced by classroom racial makeup than how they perceive individual groups of students. As White people move further away from majority status, it is important to consider how a more racially and culturally diverse classroom may affect teachers' perceptions.

In addition to using a subset of the population, analyses used for between group differences had substantial cell size differences (see Table 10). Although variance homogeneity was established, generalizability for the much smaller sub populations, particularly Black high SES students, is challenging and should be taken with caution. The population of Black higher-

SES children did straddle many different regions and schools, however, many of the schools had only one Black high SES student participant.

Third, only baseline measurements of SES and school climate were used. The ECLS-K:2011 collected these data at each time point, and it is important to consider that these variables may change over time, influencing the development of academic and social abilities. These considerations, however, are beyond the focus of this study which was designed to capture how initial assessments of students may influenced student assessments by 5th grade. However, the ways in which Socioeconomic Status and School Climate were measured come with weighty considerations.

Socioeconomic Status. The composite variable created for the ECLS-K:2011 was a combination of parents' education, parents' occupational prestige and household income. Parents' occupational prestige scores reflect the *General Social Survey* (GSS) prestige scores (1989). Although the ECLS-K:2011 manual claims that these are still relevant due to their highly stable nature, occupational rankings do change based on societal values For example, from 1960 to 1989, 44% of the occupations significantly changed prestige ranking (Nakao & Treas, 1991). Based on these findings, it can easily be assumed that from 1989 to 2021, changes in rankings also occurred. These changes may also be more rapid in regions in the United States in which other changes are occurring compared to other regions which are experiencing population or economic stability. Future research should consider updating the GSS to reflect current societal beliefs and to incorporate the greatly expanding technology professions that did not exist in 1989.

Additionally, taking income at face value is a sticky wicket. Although the ECLS-K:2011 considered household size and utilized the U.S. Census Bureau poverty threshold for 2011, an

income of $50,000 for a three-person household (well above the national poverty threshold) will most likely provide a more comfortable lifestyle in certain suburbs than others or in smaller surrounding towns than cities, some of which will themselves vary dramatically in cost of living. Further, a family of three with relatives who can provide a financial safety net compared to a family with no safety net can mean the difference between an unplanned financial burden (e.g., car breaking down) being an inconvenience as opposed to a monetary catastrophe. In 2019, 69% of Americans reported having less than $1000 in their savings account, providing little to no financial stability (Huddleston, 2019).

School climate. Although "school climate" has been found to be a strong predictor of academic achievement, there is a lack of consistency in its definition. It is, however, agreed upon that school climate is the aggregate of individual perceptions about what others believe and do (Hoy, Hannum & Tschannen-Moran, 1998; Marsh et al., 2012; Moos, 1979; Zullig et al., 2010). Although I used this definition, this definition also relies on some agreement and accuracy across teachers within a school. Van Houtte and Van Maele (2011) found that questions that were "perceptual" (e.g., *Teachers in the school are continually learning and seeking new ideas*) tended to be rated more extremely than those of personal beliefs (*I am continually learning and seeking new ideas*) and were less related to student achievement than personal beliefs. This incongruency between perceptions of others and self-reporting one's personal beliefs is important. Teachers may perceive other teachers as receiving administrative/parental support, while reporting a different supportive experience. Therefore, perceptions about the school may not be as influential to students' experiences as a teacher's personal beliefs. This may be why school climate, in this study, was not a strong predictor of academic achievement.

Lastly, although significant findings emerged, effect sizes were small. Therefore, significant results could be a product of statistical power (i.e., sample size), especially for the MLM analyses; however, large sample effect sizes tend to be less variable and more reliable and replicable than smaller samples (Slavin & Smith, 2009). Additionally, many of this study's findings showed that Black children, generally start out with lower standardized skills and this academic gap widens through elementary school. It is fair to assume that the pattern will continue, and the academic gap between White and Black students will widen into Middle and High school.

CONCLUSION

This study used data that were gathered in an effort to be as representative of the overall school population as possible. Thus, when looking at the stratification of SES across White and Black families, it is unevenly distributed with more Black students being part of the lowest SES groups and more White students in the higher SES groups.

The consequences of this economic division are clearly represented in the results with high SES students, and White students in particular, scoring better regardless of social skills and school climate. This cycle is perpetuated because higher SES students who receive higher objective academic assessment scores will mostly likely seek out higher education, garner higher salaries, and raise children who will do the same. Throughout United States' history, this economic power struggle has been continually fostered through legislature that has withheld physical and intellectual properties from Black Americans (Lanson-Billings & Tate, 1995) creating an inequitable norm permeating American society. It is erroneous to believe that an emphasis on multi-cultural training can uproot or significantly change these norms in our American education system.

In addition, this study shows that for Black and low SES children how they enter school may have stronger ramifications then what happens once in school. Psychological and educational research has indicated the critical importance of cognitive and social/emotional development in the first six years. Therefore, if we want to see change, nationwide interventions and programs may need to increase their focus to children's enrichment and development prior to Kindergarten.

REFERENCES

Ambady, N., Shih, M., Kim, A., & Pittinsky, T. L. (2001). Stereotype susceptibility in children: Effectsof identity activation on quantitative performance. *Psychological science*, *12*(5), 385-390.

Auwarter, A. E., & Aruguete, M. S. (2008). Effects of student gender and socioeconomic status onteacher perceptions. *The Journal of Educational Research*, *101*, 242-246.

Bian, L., Leslie, S. J., & Cimpian, A. (2017). Gender stereotypes about intellectual ability emerge earlyand influence children's interests. *Science*, *355*(6323), 389-391.

Bradley, R. H., & Corwyn, R. F. (2002). Socioeconomic status and child development. *Annual review ofpsychology*, *53*, 371-399.

Brault, M. C., Janosz, M., & Archambault, I. (2014). Effects of school composition and school climate on teacher expectations of students: A multilevel analysis. *Teaching and Teacher Education*, *44*,148-159.

Brookover, W. B., Schweitzer, J. H., Schneider, J. M., Beady, C. H., Flood, P. K., &Wisenbaker, J. M. (1978). Elementary school social climate and school achievement. American Educational Research Journal, 15, 301e318. http:// dx.doi.org/10.3102/00028312015002301.

Bronfenbrenner, U. (1979). *The ecology of human development*. Harvard university press.

Caprara, G. V., Barbaranelli, C., & Pastorelli, C. Bandura, A., & Zimbardo, P. G. (2000). *Prosocial Foundations of Children's Academic achievement. American Psychological Society*, *11*, 302-306.

Casey, B. J., Tottenham, N., Liston, C., & Durston, S. (2005). Imaging the developing brain: what havewe learned about cognitive development?. *Trends in cognitive sciences*, *9*, 104-110.

Chafel, J. A. (1997). Societal images of poverty: Child and adult beliefs. *Youth & Society, 28*, 432-463.

Chang, D. F., & Sue, S. (2003). The effects of race and problem type on teachers' assessments of studentbehavior. *Journal of consulting and clinical psychology, 71*, 235.

Claessens, A., Duncan, G., & Engel, M. (2009). Kindergarten skills and fifth-grade achievement:Evidence from the ECLS-K. *Economics of Education Review*, *28*, 415-427.

Coley, R. J. (2002). An Uneven Start: Indicators of Inequality in School Readiness. Policy InformationReport.

Commodari, E. (2013). Preschool teacher attachment, school readiness and risk of learningdifficulties. *Early Childhood Research Quarterly*, *28*, 123-133.

Connell, C. M., & Prinz, R. J. (2002). The impact of childcare and parent–child interactions on school readiness and social skills development for low-income African American children. *Journal ofschool psychology, 40*, 177-193.

Cozzarelli, C., Wilkinson, A. V., & Tagler, M. J. (2001). Attitudes toward the poor and attributions forpoverty. *Journal of social issues*.

Crosnoe, R., Johnson, M. K., & Elder Jr, G. H. (2004). Intergenerational bonding in school: The behavioral and contextual correlates of student-teacher relationships. *Sociology of education*, *77*,60-81.

Davis, K. S., & Dupper, D. R. (2004). Student-teacher relationships: An overlooked factor in schooldropout. *Journal of human behavior in the social environment*, *9*, 179-193.

Doebel, S. (2020). Rethinking executive function and its development. *Perspectives on PsychologicalScience, 15*, 942-956.

Driessen, G. (2007). The feminization of primary education: effects of teachers' sex on pupil achievement, attitudes and behaviour. *International Review of Education, 53*, 183-203.

Duncan, G. J., Dowsett, C. J., Claessens, A., Magnuson, K., Huston, A. C., Klebanov, P., et al. (2007). School readiness and later achievement. *Developmental Psychology,43*, 1428-1446. doi: 10.1037/0012-1649.43.6.1428

Field, A. (2013). *Discovering statistics using IBM SPSS statistics*. sage.

Ford, D. Y. (2002). The recruitment and retention of African American students in gifted education:Beyond deficit ideologies.

Fryer Jr, R. G., & Levitt, S. D. (2004). Understanding the black-white test score gap in the first twoyears of school. *Review of economics and statistics*, *86*, 447-464.

Halberstadt, A. G., Cooke, A. N., Garner, P. W., Hughes, S. A., Oertwig, D., & Neupert, S. D. (2020). Racialized emotion recognition accuracy and anger bias of children's faces. *Emotion*.

Hytten, K., & Warren, J. (2003). Engaging whiteness: How racial power gets reified ineducation. *International Journal of Qualitative Studies in Education*, *16*, 65-89.

Garner, P. W., & Mahatmya, D. (2015). Affective social competence and teacher–child relationship quality: race/ethnicity and family income level as moderators. *Social Development*, *24*, 678-697.

Garner, P. W., & Waajid, B. (2008). The associations of emotion knowledge and teacher–child relationships to preschool children's school-related developmental competence. *Journal ofApplied Developmental Psychology*, *29*, 89-100.

Gay, G., & Kirkland, K. (2003). Developing cultural critical consciousness and self-reflection inpreservice teacher education. *Theory into practice*, *42*, 181-187.

Goff, P. A., Jackson, M. C., Di Leone, B. A. L., Culotta, C. M., & DiTomasso, N. A. (2014). The essence of innocence: consequences of dehumanizing Black children. *Journal of personality andsocial psychology*, *106*, 526.

Gresham, F. M., & Elliot, S. N. (1990). Manual for the social skills rating system. *Circle Pines, MN:American Guidance Service*.

Hamre, B. K., & Pianta, R. C. (2001). Early teacher–child relationships and the trajectory of children'sschool outcomes through eighth grade. *Child development*, *72*, 625-638.

Hernandez, P. R., Schultz, P., Estrada, M., Woodcock, A., & Chance, R. C. (2013). Sustaining optimal motivation: A longitudinal analysis of interventions to broaden participation of underrepresentedstudents in STEM. Journal of educational psychology, 105, 89.

Hill, N. E., & Taylor, L. C. (2004). Parental school involvement and children's academic achievement:Pragmatics and issues. *Current directions in psychological science*, *13*(4), 161-164.

Hosford, S., & O'Sullivan, S. (2016). A climate for self-efficacy: the relationship between school climate and teacher efficacy for inclusion. *International Journal of Inclusive Education*, *20*, 604-621.

Howes, C. (2000). Social-emotional classroom climate in childcare, child-teacher relationships andchildren's second grade peer relations. *Social development*, *9*, 191-204.

Hoy, W. K., Hannum, J., & Tschannen-Moran, M. (1998). Organizational climate and student achievement: A parsimonious and longitudinal view. *Journal of School Leadership*, *8*, 336-359.

Huddleston, C. (2019, December 16). *Survey: 69% of Americans have less than $1,000 in savings*.

GoBankingRates. https://www.gobankingrates.com/saving-money/savings-advice/americans-have-less-than-1000-in-savings/

Hytten, K. & Warren, J. (2003) Engaging whiteness: How racial power gets reified in education,International Journal of Qualitative Studies in Education, 16:1, 65-89, DOI: 10.1080/0951839032000033509a

Jennings, P. A., & Greenberg, M. T. (2009). The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of educational research*, *79*,491-525.

Jussim, L. (1986). Self-fulfilling prophecies: A theoretical and integrative review. *Psychologicalreview*, *93*, 429.

Kellow, J. T., & Jones, B. D. (2005). Children's stereotype threat in African-American high schoolstudents: An initial investigation. *Current Issues in Education*, *8*.

Kelly, A. (1988) Gender differences in teacher–pupil interactions: a meta-analytic review. *Research inEducation*, *39*, 1–24.

Kohl, G. O., Weissberg, R. P., Reynolds, A. J., & Kasprow, W. J. (1994, August). Teacher perceptionsof parent involvement in urban elementary schools: Sociodemographic and school adjustment correlates. In *annual meeting of the American Psychological Association, Los Angeles, CA*.

Kuklinski, M., & Weinstein, R. (2000). Classroom and grade level differences in the stability of teacher expectations and perceived differential teacher treatment. *Learning Environments Research*, *3*, 1-34.

Ladd, G. W., Birch, S. H., & Buhs, E. S. (1999). Children's social and scholastic lives in kindergarten:Related spheres of influence?. *Child development*, *70*, 1373-1400.

Lanson-Billings, G., & Tate, W. F. (2016). Toeard a critical race theory in education. In *Critical race theory in education* (pp. 10-31). Routledge.

Lane, K. L., Pierson, M. R., & Givner, C. C. (2003). Teacher expectations of student behavior: Whichskills do elementary and secondary teachers deem necessary for success in the classroom?. *Education and Treatment of Children*, 413-430.

Li, Q. (1999). Teachers' beliefs and gender differences in mathematics: A review. *EducationalResearch*, *41*(1), 63-76.

Maguire, L. K., Niens, U., McCann, M. and Connolly, P. (2016) Emotional Development Among EarlySchool-Age Children: Gender Differences in the Role of Problem Behaviours, *Educational Psychology,* Vol. 38, pp. 1408-28.

Malecki, C. K., & Elliot, S. N. (2002). Children's social behaviors as predictors of academicachievement: A longitudinal analysis. *School Psychology Quarterly*, *17*, 1.

Marsh, H. W., Lüdtke, O., Benjamin Nagengast, Ulrich Trautwein, Alexandre J. S. Morin, Adel S. Abduljabbar, and Olaf Köller, "Classroom Climate and Contextual Effects: Conceptual and Methodological Issues in the Evaluation of Group-Level Effects," Educational Psychologist,Vol. 47, No. 2, 2012, pp. 106– 124.

McKown, C. & Weinstein, R. S. (2008). Teacher expectations, classroom context, and the achievementgap. *Journal of School Psychology*, *46*, 235-261.

McLoyd, V. C. (1998). Socioeconomic disadvantage and child development. *American psychologist*, *53*,185.

McIntyre, A. (1997). Making meaning of whiteness: Exploring racial identity with white teachers. Albany: SUNY Press.

Minor, E. (2014). Racial differences in teacher perception of student ability. *Teachers College Record.*

Meier, C. R., DiPerna, J. C., & Oster, M. M. (2006). Importance of social skills in the elementary grades. *Education and treatment of children*, 409-419.

Mistry, R.S., Brown, C.S., White, E.S., Chow, K.A., & Gillen-O'Neel, C. (2015). Elementary school children's reasoning about social class: A mixed-methods study. *Child Development, 86,* 1653 –1671.

Moos, R. H. (1979). *Evaluating educational environments.* San Francisco: Jossey-Bass.

Nakao, K., & Treas, J. (1994). Updating occupational prestige and socioeconomic scores: How the newmeasures measure up. *Sociological methodology*, 1-72.

National School Climate Council. (2007). The School Climate Challenge: Narrowing the gap between school climate research and teacher education policy. Retrieved http://www.schoolclimate.org/ climate / advocacy.php

Neal, L. V. I., McCray, A. D., Webb-Johnson, G., & Bridgest, S. T. (2003). The effects of AfricanAmerican movement styles on teachers' perceptions and reactions. *The Journal of Special Education*, *37*, 49-57.

Nelson, J. A., Leerkes, E. M., Perry, N. B., O'Brien, M., Calkins, S. D., & Marcovitch, S. (2013). E uropean-A merican and A frican-A merican Mothers' Emotion Socialization Practices RelateDifferently to Their Children's Academic and Social-emotional Competence. *Social Development*, *22*, 485-498.

Osborne, J. W., & Walker, C. (2006). Stereotype threat, identification with academics, and withdrawalfrom school: Why the most successful students of colour might be most likely to

withdraw. *Educational psychology*, *26*, 563-577.

Oyserman, D., Gant, L., & Ager, J. (1995). A socially contextualized model of African Americanidentity: Possible selves and school persistence. *Journal of personality and social psychology*, *69*, 1216.

Pigott, R. L., & Cowen, E. L. (2000). Teacher race, child race, racial congruence, and teacher ratings ofchildren's school adjustment. *Journal of School Psychology*, *38*, 177-195.

Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysismethods* (Vol. 1). sage.

Ring, E., Mhic Mhathuna, M., Moloney, M., Hayes, N., Stafford, P., Keegan, S., ... & Madden, R. (2016). An examination of concepts of school readiness among parents and educators in Ireland.

Rivera-Batiz F. L., (1992). Quantitative literacy and the likelihood of employment among young adults in theUnited States. *Journal of Human Resources,* 313–328.

Rosenthal, R., & Jacobson, L. (1968). Pygmalion in the classroom. *The urban review*, *3*, 16-20. Rowley, S. J., Ross, L., Lozada, F. T., Williams, A., Gale, A., & Kurtz-Costes, B. (2014). Framing

Black boys: Parent, teacher, and student narratives of the academic lives of Black boys. *Advances in child development and behavior*, *47*, 301-332.

Rubie-Davies, C. M. (2007). Classroom interactions: Exploring the practices of high- and low-expectation teachers. *British journal of educational psychology*, *77*, 289-306.

Schmidt, M., Demulder, E., & Denham, S. (2002). Kindergarten social-emotional competence:Developmental predictors and psychosocial implications. *Early Child Development andCare*, *172*, 451-462.

Severson, H. H., & Walker, H. M. (2002). Proactive approaches for identifying children at risk for sociobehavioral problems. *Interventions for children with or at risk for emotional and behavioraldisorders,* 33-53.

Shade, B. J. (1981). Personal traits of educationally successful black children. *The Negro EducationalReview, 32,* 6.

Slavin, R. E., Lake, C., Chambers, B., Cheung, A., & Davis, S. (2010). Effective reading programs forthe elementary grades. *Review of Educational Research*.

Strand, S. (2014). School effects and ethnic, gender and socio-economic gaps in educationalachievement at age 11. *Oxford Review of Education, 40,* 223-245.

Tamis-LeMonda, C. S., Shannon, J. D., Cabrera, N. J., & Lamb, M. E. (2004). Fathers and mothers atplay with their 2-and 3-year-olds: Contributions to language and cognitive development. *Childdevelopment, 75,* 1806-1820.

Thapa, A., Cohen, J., Guffey, S., & Higgins-D'Alessandro, A. (2013). A review of school climateresearch. *Review of educational research, 83,* 357-385.

Tiedemann, J. (2000). Gender-related beliefs of teachers in elementary school mathematics. *EducationalStudies in Mathematics, 41,* 191-207.

Tourangeau, K., Nord, C., Lê, T., Sorongon, A. G., Hagedorn, M. C., Daly, P., & Najarian, M. (2015). Early Childhood Longitudinal Study, Kindergarten Class of 2010-11 (ECLS-K: 2011). User's Manual for the ECLS-K: 2011 Kindergarten Data File and Electronic Codebook, Public Version.NCES 2015-074. *National Center for Education Statistics*.

Tourangeau, K., Nord, C., Le, T., Sorongon, A. G., & Najarian, M. (2009). Early Childhood Longitudinal Study, Kindergarten class of 1998–199 (ECLS-K), combined user's manual for theECLS-K eighth grade and K-8 full sample data files and electronic codebooks

(NCES 2009- 004). Retrieved fromNational Center for Education Statistics, Institute of Education Sciences (website: http://nces.ed.gov/ecls/data/ECLSK_K8_Manual_part1.pdf).

Van Houtte, M., & Van Maele, D. (2011). The black box revelation: In search of conceptual clarity regarding climate and culture in school effectiveness research. *Oxford Review of Education*, *37*,505-524.

Wang, M. T., & Degol, J. L. (2016). School climate: A review of the construct, measurement, andimpact on student outcomes. *Educational Psychology Review*, *28*, 315-352.

Watts, T. W., Duncan, G. J., Siegler, R. S., & Davis-Kean, P. E. (2014).

What's past is prologue: Relations between early mathematics knowledge and high school achievement. *Educational Researcher*, *43*, 352-360. doi: 10.3102/0013189X14553660

Wentzel, K. R. (1993). Does being good make the grade? Social behavior and academic competence inmiddle school. *Journal of Educational Psychology*, *85*(2), 357.

Woods, T. A., Kurtz-Costes, B., & Rowley, S. J. (2005). The development of stereotypes about the richand poor: Age, race, and family income differences in beliefs. *Journal of Youth and Adolescence*, *34*, 437-445.

Yates, T. M., & Marcelo, A. K. (2014). Through race-colored glasses: Preschoolers' pretend play andteachers' ratings of preschooler adjustment. *Early Childhood Research Quarterly*, *29*, 1-11.

Zimmerman, D. W. (2004). A note on preliminary tests of equality of variances. *British Journal ofMathematical and Statistical Psychology*, *57*, 173-181.

Zullig, K. J., Koopman, T. M., Patton, J. M., & Ubbes, V. A. (2010). School climate: Historical review, instrument development, and school assessment. *Journal of Psychoeducation Assessment*, 28.

TABLES

Table 1

Student Demographics and teacher (T) assessment and Standardized (S) Score Means (SD) for Literacy, Math, and Social Skills

Demographic Characteristics	*n*	T Lit	T Math	T Social Skills	S Lit	S Math
Race						
White	4,687	0.02(0.99)	0.02(0.99)	3.13(0.54)	0.05(1.01)	0.11(1.00)
Black	869	-0.07(1.04)	-0.09(1.04)	2.96(0.61)	-0.24(0.90)	-0.48(0.84)
Socioeconomic Status						
Low	964	-0.29(0.98)	-0.21(0.96)	2.92(0.59)	-0.46(0.71)	-0.57(0.83)
Middle	3,795	0.00(0.98)	0.01(0.99)	3.12(0.55)	-0.01(0.96)	0.00(0.95)
High	995	0.26(1.02)	0.18(1.05)	3.22(0.52)	0.48(1.16)	0.54(1.04)
Gender						
Male	2,779	-0.05(1.00)	-0.01(1.00)	2.99(0.56)	-0.03(1.02)	0.06(1.07)
Female	2,964	.05(1.00)	0.01(1.00)	3.25(0.53)	0.03(0.98)	-0.05(0.93)
Total	6,312	0.00(1.00)	0.00(1.00)	3.10(0.56)	0.00(1.00)	0.00(1.00)

Note: Due to missing data points, not all categories will add up to total *n.*

Table 2

Mean Scores for Standardized Math (Z scores)

Race	SES Category	*n* Math	Math *M(SD)*
White	Low	251	-0.51(0.87)
	Middle	1537	0.14(1.02)
	High	473	0.66(1.15)
Black	Low	211	-0.69(0.77)
	Middle	278	-0.39(0.82)
	High	33	0.46(0.91)

Table 3
Multiple Comparisons of SES for Standardized Math

(I) SES Category	(J) SES Category	Mean Diff (I-J)	*SE*	95% CI
White				
Low	Middle	-0.64***	.06	-0.80, -0.49
	High	-1.16***	.07	-1.23, -1.10
Middle	High	-0.52***	.05	-0.56, -0.74
Black				
Low	Middle	-0.29**	.09	-0.09, -0.50
	High	-1.14***	.18	-1.56, -0.73
Middle	High	-0.85***	.17	-1.26, -0.44

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

Table 4

Unstandardized Coefficients (and Standard Errors) of Multilevel Models of Race and Social Skills over time

Fixed Effects	Model 1	Model 2	Model 3
Literacy, β0			
Intercept, γ00	48.34***(0.21)	26.03***(1.12)	26.42***(1.27)
Race, γ01	-4.33***(0.48)		1.74 (2.68)
Social Skills, γ02		6.82***(0.35)	6.86***(0.40)
Race x Social Skills, γ03			-1.47 (0.88)
Time slope, β1			
Intercept, γ10	14.62***(.09)	14.58***(0.21)	15.33***(0.24)
Race, γ11	-0.99***(.09)		-3.04***(0.54)
Social Skills, γ12		0.00 (0.07)	-0.19** (0.08)
Race x Social Skills, γ13			0.66***(0.18)
Between person variance (%)	38.66	38.58	38.56
Within person variance (%)	61.42	61.42	61.44
R^2 Within (%)	87.82	90.15	90.29
Math, β0			
Intercept, γ00	28.19***(0.18)	7.32***(1.00)	8.33***(1.12)
Race, γ01	-6.63***(0.42)		1.72 (2.36)
Social Skills, γ02		6.31***(0.32)	6.31***(0.35)
Race x Social Skills, γ03			-2.42** (0.77)
Time slope, β1			
Intercept, γ10	15.15***(0.03)	14.49***(0.21)	15.79***(0.22)
Race, γ11	-1.61***(0.08)		-4.59***(0.49)
Social Skills, γ12		0.12 (0.06)	-0.18** (0.07)
Race x Social Skills, γ13			0.98***(0.16)
Between person variance (%)	60.80	60.85	60.81
Within person variance (%)	39.20	39.15	39.19
R^2 Within (%)	90.03	91.05	90.40

Table 5

Unstandardized Coefficients (and Standard Errors) of Multilevel Models of SES and Social Skills over time

Fixed Effects	Model 1	Model 2	Model 3
Literacy, β0			
Intercept, γ00	46.57***(0.18)	26.03***(1.12)	29.23***(1.10)
SES, γ01	5.81***(0.24)		2.65 (1.41)
Social Skills, γ02		6.82***(0.35)	5.54***(0.35)
SES x Social Skills, γ03			0.64 (0.45)
Time slope, β1			
Intercept, γ10	14.41***(0.03)	14.49***(0.21)	14.56***(0.23)
SES, γ11	0.25***(0.04)		1.75***(0.28)
Social Skills, γ12		0.00 (0.07)	-0.01 (0.07)
SES x Social Skills, γ13			-0.47***(0.09)
Between person variance (%)	38.65	38.58	38.54
Within person variance (%)	61.35	61.42	61.45
R^2 Within (%)	88.81	88.78	88.76
Math, β0			
Intercept, γ00	25.98***(0.16)	7.32***(1.00)	10.48***(0.97)
SES, γ01	5.79***(0.20)		4.31***(1.24)
Social Skills, γ02		6.31***(0.32)	5.03***(0.31)
SES x Social Skills, γ03			0.17 (0.39)
Time slope, β1			
Intercept, γ10	14.80***(0.03)	14.49***(0.21)	14.72***(0.21)
SES, γ11	0.50***(0.04)		1.86***(0.26)
Social Skills, γ12		0.12 (0.06)	0.06 (0.07)
SES x Social Skills, γ13			-0.45***(0.08)
Between person variance (%)	60.83	60.85	60.83
Within person variance (%)	39.17	39.15	39.17
R^2 Within (%)	92.84	92.84	92.84

Table 6

Unstandardized Coefficients (and Standard Errors) of Multilevel Models of Gender and Social Skills over time

Fixed Effects	Model 1	Model 2	Model 3
Literacy, β0			
Intercept, γ00	46.67***(0.27)	26.03***(1.12)	26.09***(1.54)
Gender, γ01	1.56***(0.30)		-0.41 (2.28)
Social Skills, γ02		6.82***(0.35)	6.84***(0.50)
Gender x Social Skills, γ03			0.05 (0.72)
Time slope, β1			
Intercept, γ10	14.44***(.05)	14.58***(0.21)	14.14***(0.30)
Gender, γ11	0.07 (.07)		1.06* (0.45)
Social Skills, γ12		0.00 (0.07)	0.13** (0.10)
Gender x Social Skills, γ13			-0.31* (0.14)
Between person variance (%)	38.55	38.58	38.58
Within person variance (%)	61.45	61.42	61.42
R^2 Within (%)	88.77	88.78	88.78
Math, β0			
Intercept, γ00	27.59***(0.24)	7.32***(1.00)	5.87***(1.36)
Gender, γ01	-1.37***(0.33)		-0.12 (2.02)
Social Skills, γ02		6.31***(0.32)	7.31***(0.45)
Gender x Social Skills, γ03			-0.96 (0.77)
Time slope, β1			
Intercept, γ10	15.07***(0.05)	14.59***(0.21)	14.50***(0.28)
Gender, γ11	-0.36***(0.06)		-4.59***(0.49)
Social Skills, γ12		0.12 (0.06)	0.22* (0.09)
Gender x Social Skills, γ13			-0.06 (0.16)
Between person variance (%)	60.84	60.85	60.85
Within person variance (%)	39.16	39.15	39.15
R^2 Within (%)	92.84	92.84	92.84

Table 7

Unstandardized Coefficients (and Standard Errors) of Multilevel Models of Race and School Climate (SC) over time

Fixed Effects	Model 1	Model 2	Model 3
Literacy, β0			
Intercept, γ00	48.36***(0.20)	41.82***(1.42)	43.29***(1.62)
Race, γ01	-4.32***(0.47)		-1.02 (3.45)
SC, γ02		1.39***(0.34)	1.22** (0.39)
Race x SC , γ03			-0.74 (0.86)
Time slope, β1			
Intercept, γ10	14.61***(0.04)	13.86***(0.26)	14.47***(0.29)
Race, γ11	-1.00***(0.09)		-2.20***(0.65)
SC, γ12		0.15* (0.06)	0.04 (0.07)
Race x SC, γ13			0.30 (0.16)
Between person variance (%)	38.42	38.45	38.59
Within person variance (%)	61.58	61.55	61.41
R^2 Within (%)	88.70	88.72	88.78
Math, β0			
Intercept, γ00	28.26***(0.18)	19.39***(1.30)	22.73***(1.41)
Race, γ01	-6.64***(0.43)		-6.51* (3.00)
SC, γ02		1.83***(0.32)	1.32***(0.34)
Race x SC, γ03			0.02 (0.74)
Time slope, β1			
Intercept, γ10	15.17***(0.03)	14.34***(0.26)	14.90***(0.27)
Race, γ11	-1.61***(0.09)		-1.33* (0.60)
SC, γ12		0.15* (0.07)	0.07 (0.15)
Race x SC, γ13			-0.07 (0.15)
Between person variance (%)	61.03	61.12	60.75
Within person variance (%)	38.97	38.88	39.25
R^2 Within (%)	92.90	92.92	92.81

Table 8

Unstandardized Coefficients (and Standard Errors) of Multilevel Models of SES and School Climate (SC) over time

Fixed Effects	Model 1	Model 2	Model 3
Literacy, β0			
Intercept, γ00	46.60***(0.18)	41.82***(1.41)	45.39***(1.39)
SES, γ01	5.81***(0.23)		3.44 (1.79)
SC, γ02		1.39***(0.34)	0.29 (0.34)
SES x SC , γ03			0.53 (0.43)
Time slope, β1			
Intercept, γ10	14.40***(0.03)	13.86***(0.26)	13.89***(0.26)
SES, γ11	0.26***(0.04)		1.06** (0.34)
SC, γ12		0.15* (0.06)	0.14* (0.06)
SES x SC, γ13			-0.20* (0.08)
Between person variance (%)	38.37	38.45	38.58
Within person variance (%)	61.63	61.55	61.42
R^2 Within (%)	88.68	88.72	88.78
Math, β0			
Intercept, γ00	25.96***(0.16)	19.39***(1.30)	22.82***(1.21)
SES, γ01	5.80***(0.21)		5.44***(1.55)
SC, γ02		1.83***(0.32)	0.78** (0.30)
SES x SC, γ03			0.03 (0.38)
Time slope, β1			
Intercept, γ10	14.82***(0.03)	14.34***(0.26)	14.50***(0.25)
SES, γ11	0.50***(0.04)		1.01** (0.32)
SC, γ12		0.15* (0.06)	0.08 (0.06)
SES x SC, γ13			-0.13 (0.08)
Between person variance (%)	61.04	61.11	60.78
Within person variance (%)	38.96	38.88	39.22
R^2 Within (%)	92.90	92.92	92.82

Table 9

Unstandardized Coefficients (and Standard Errors) of Multilevel Models of Gender and School Climate (SC) over time

Fixed Effects	Model 1	Model 2	Model 3
Literacy, β0			
Intercept, γ00	48.69***(0.26)	41.82***(1.41)	40.66***(2.01)
Gender, γ01	1.56***(0.37)		2.46 (2.86)
SC, γ02		1.39***(0.34)	1.47***(0.49)
Gender x SC , γ03			-0.21 (0.70)
Time slope, β1			
Intercept, γ10	14.42***(0.05)	13.86***(0.26)	14.14***(0.36)
Gender, γ11	0.07 (0.07)		-0.55 (0.53)
SC, γ12		0.15* (0.06)	0.08 (0.08)
Gender x SC, γ13			0.15 (0.13)
Between person variance (%)	38.51	38.45	38.62
Within person variance (%)	61.49	61.55	61.38
R^2 Within (%)	88.74	88.72	88.80
Math, β0			
Intercept, γ00	27.54***(0.25)	19.39***(1.30)	19.31***(1.76)
Gender, γ01	-1.36***(0.34)		0.28 (2.52)
SC, γ02		1.83***(0.32)	2.04***(0.43)
Gender x SC, γ03			-0.42 (0.61)
Time slope, β1			
Intercept, γ10	15.20***(0.05)	14.34***(0.26)	14.89***(0.34)
Gender, γ11	-0.40***(0.07)		-1.25** (0.49)
SC, γ12		0.15* (0.07)	0.05 (0.08)
Gender x SC, γ13			0.21 (0.12)
Between person variance (%)	60.84	61.12	60.79
Within person variance (%)	39.16	38.88	39.21
R^2 Within (%)	92.84	92.92	92.83

Table 10

Cell Numbers for Teacher-Assessed and Standardized Literacy and Math ANOVA comparisons

			Teacher		Standardized	
Race	Gender	SES Cat	*n* Lit	*n* Math	*n* Lit	*n* Math
White	Male	Low	235	242	251	251
		Middle	1142	1450	1540	1537
		High	448	455	473	473
	Female	Low	265	273	283	282
		Middle	1580	1592	1680	1680
		High	428	433	459	458
Black	Male	Low	210	199	211	211
		Middle	255	256	278	278
		High	29	29	33	33
	Female	Low	203	205	218	218
		Middle	274	277	269	295
		High	28	27	30	30

FIGURES

Figure 1

Standardized Math Mean Score Comparisons by Race, SES, and Gender

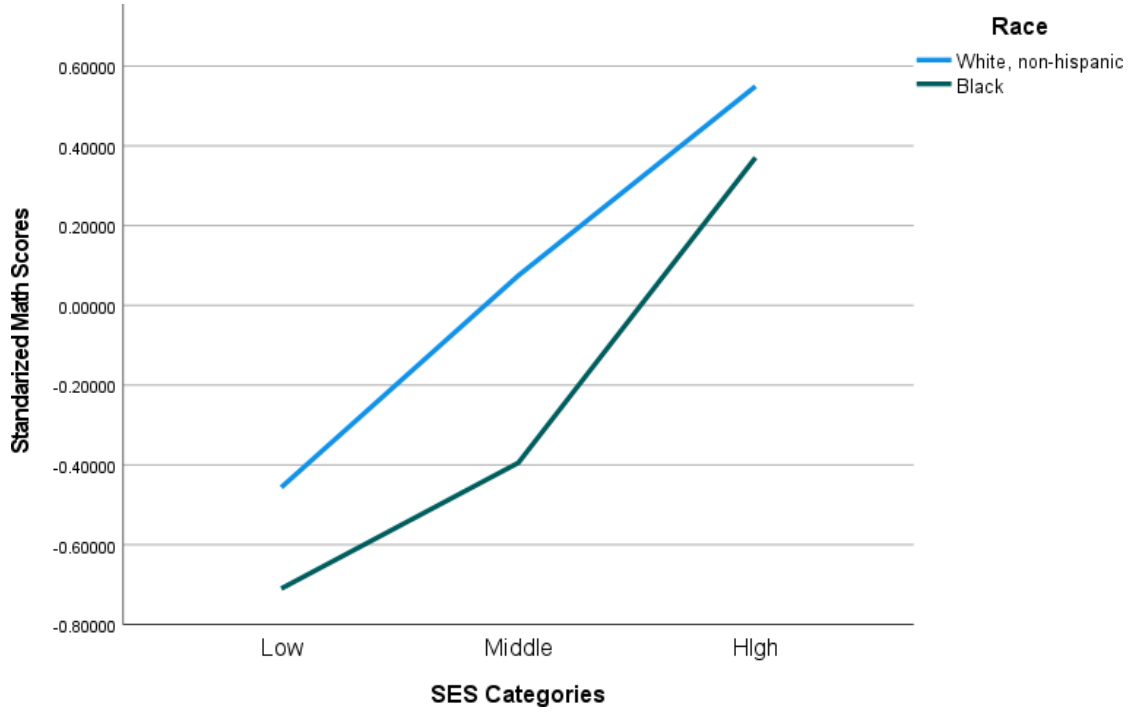

Figure 2

Interaction Between Teacher Assessments, Time, and Standardized Literacy Scores

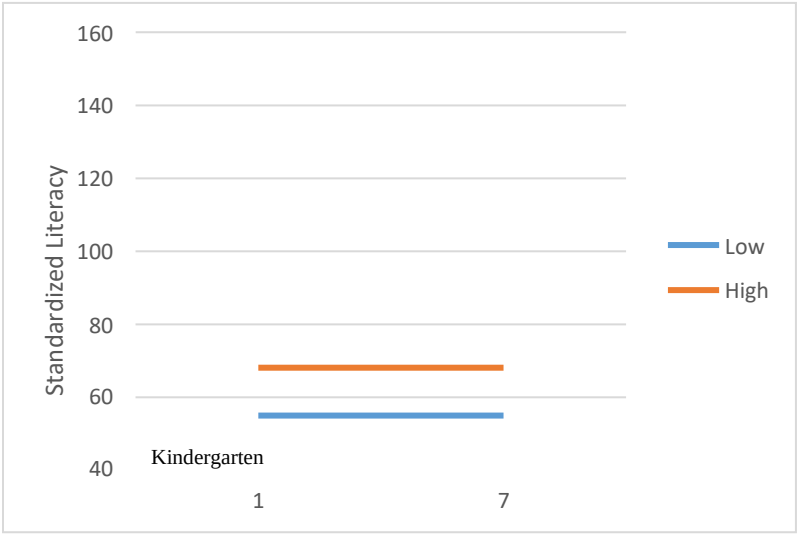

Figure 3

Interaction Between Teacher Math Assessments, Time, and Standardized Math Score

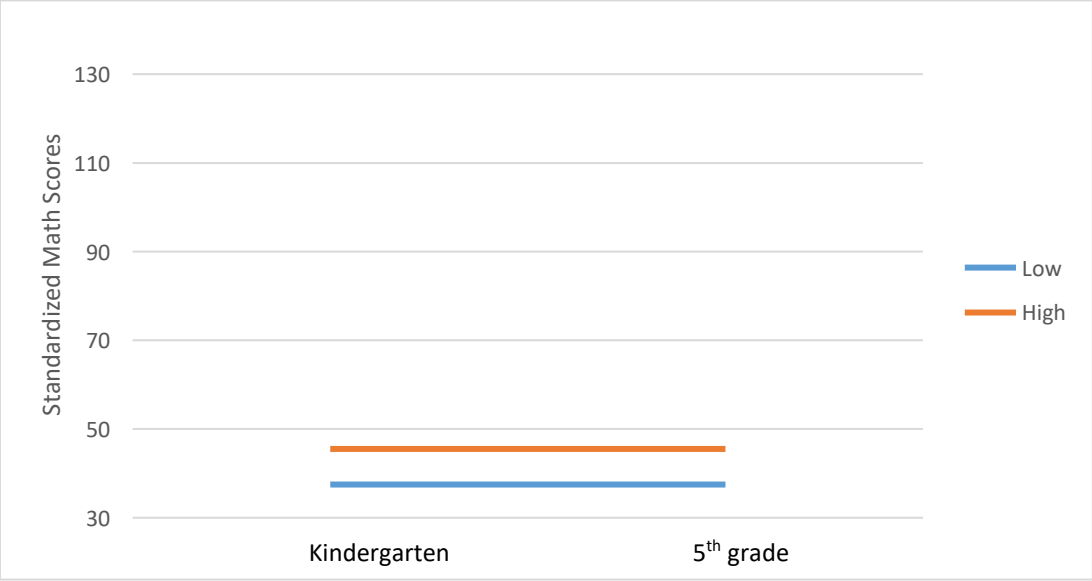

Figure 4

Change in Standardized Literacy Scores by Racial Category over Time

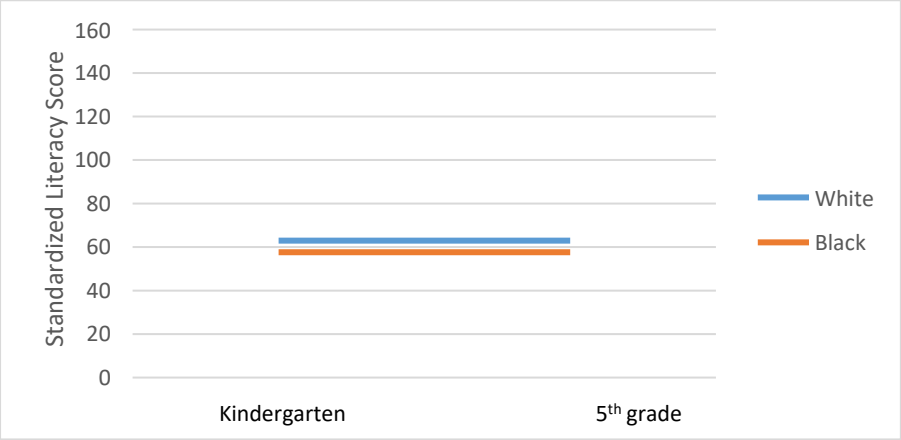

Figure 5

The interaction between social skills, race, and standardized literacy scores over time

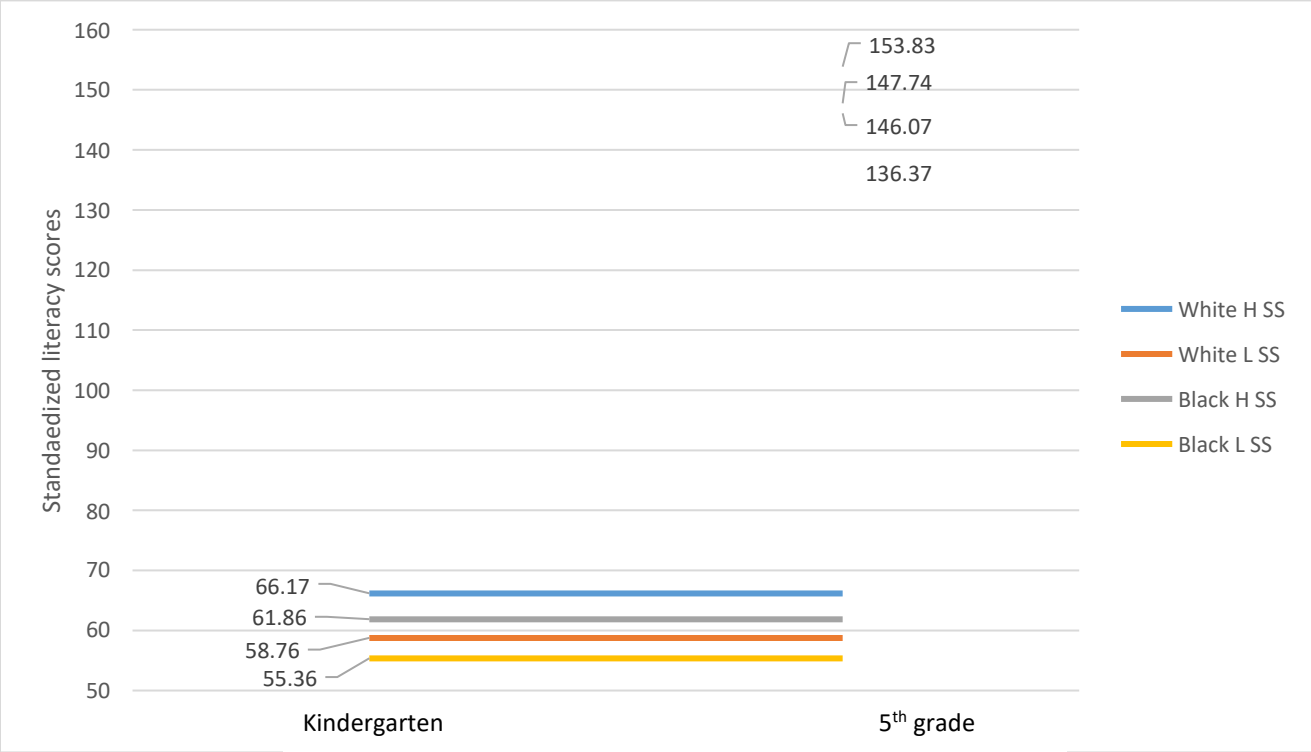

Figure 6

Change in Standardized Math Scores by Racial Category over Time

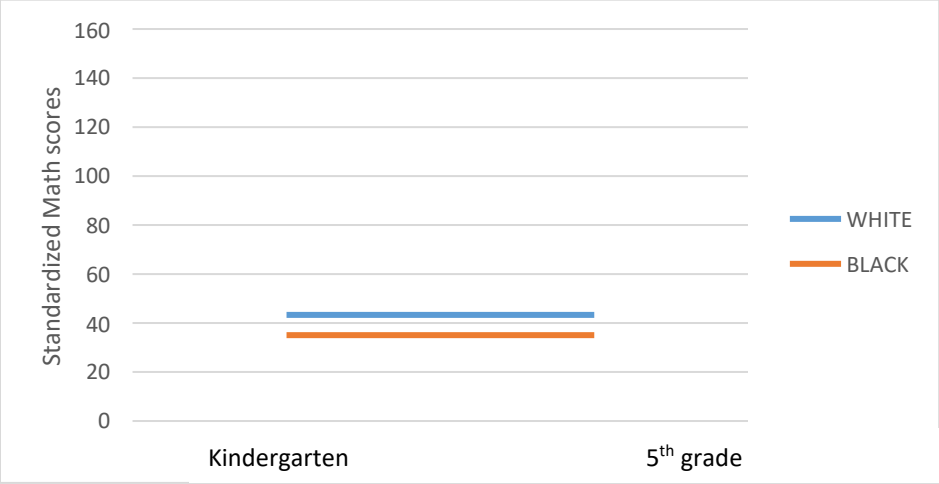

Figure 7

The Interaction between Social Skills, Race, and Objective Math Scores over Time

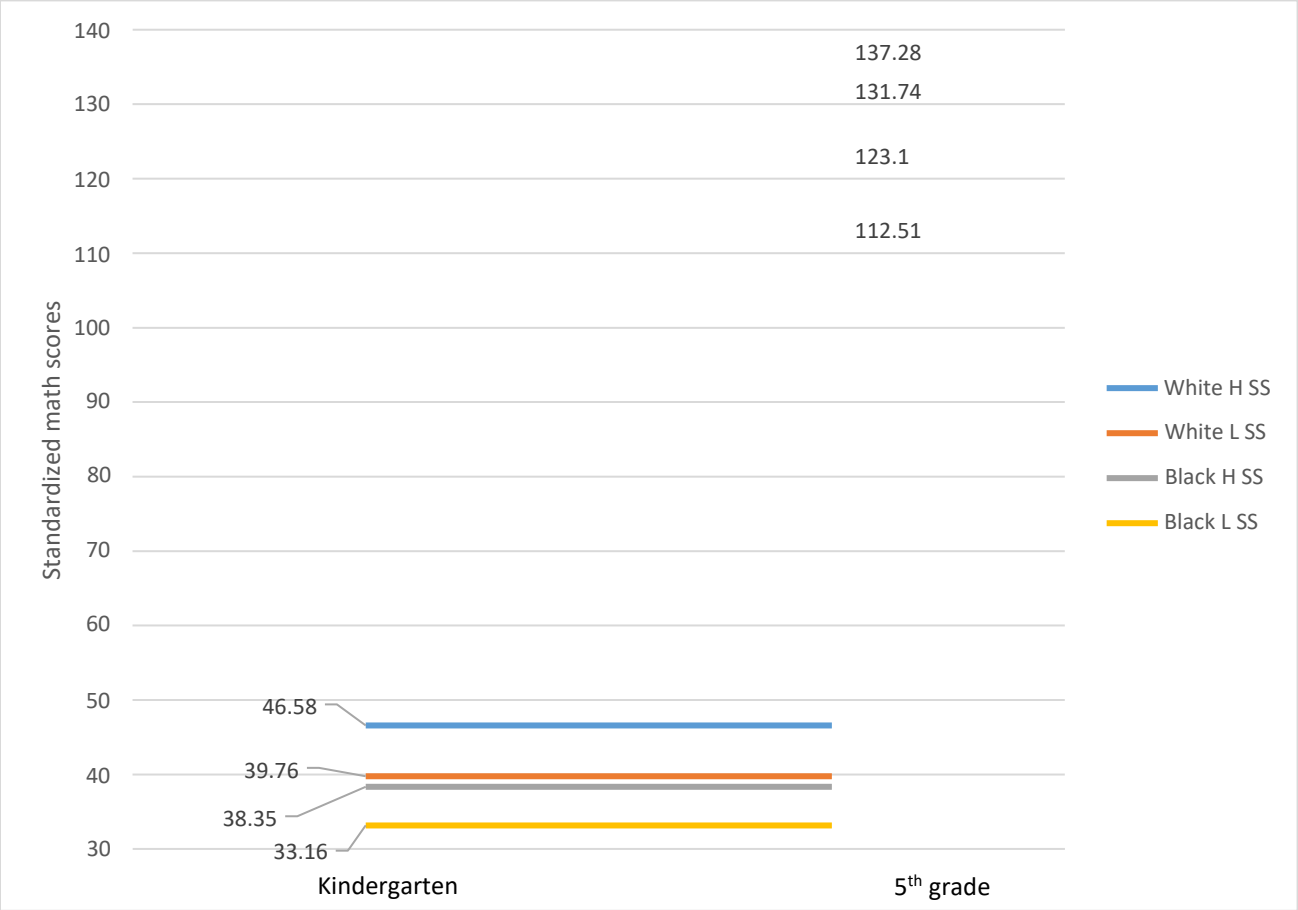

Figure 8

The Interaction between SES and Standardized Literacy Score over Time

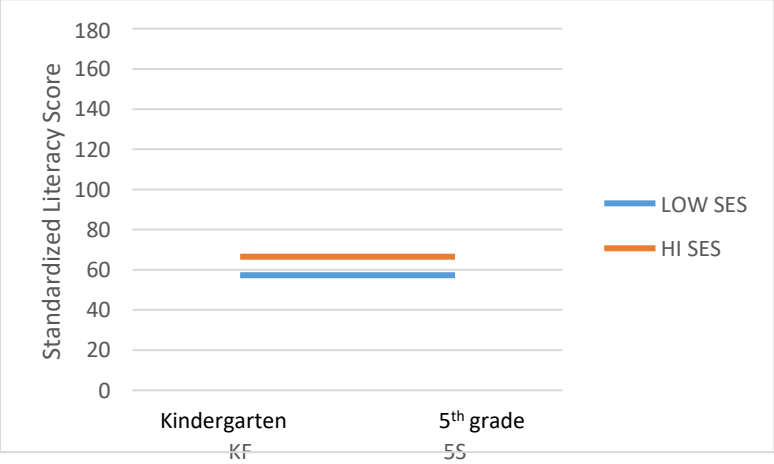

Figure 9

The Interaction between Social Skills, SES and Objective Literacy Scores over Time

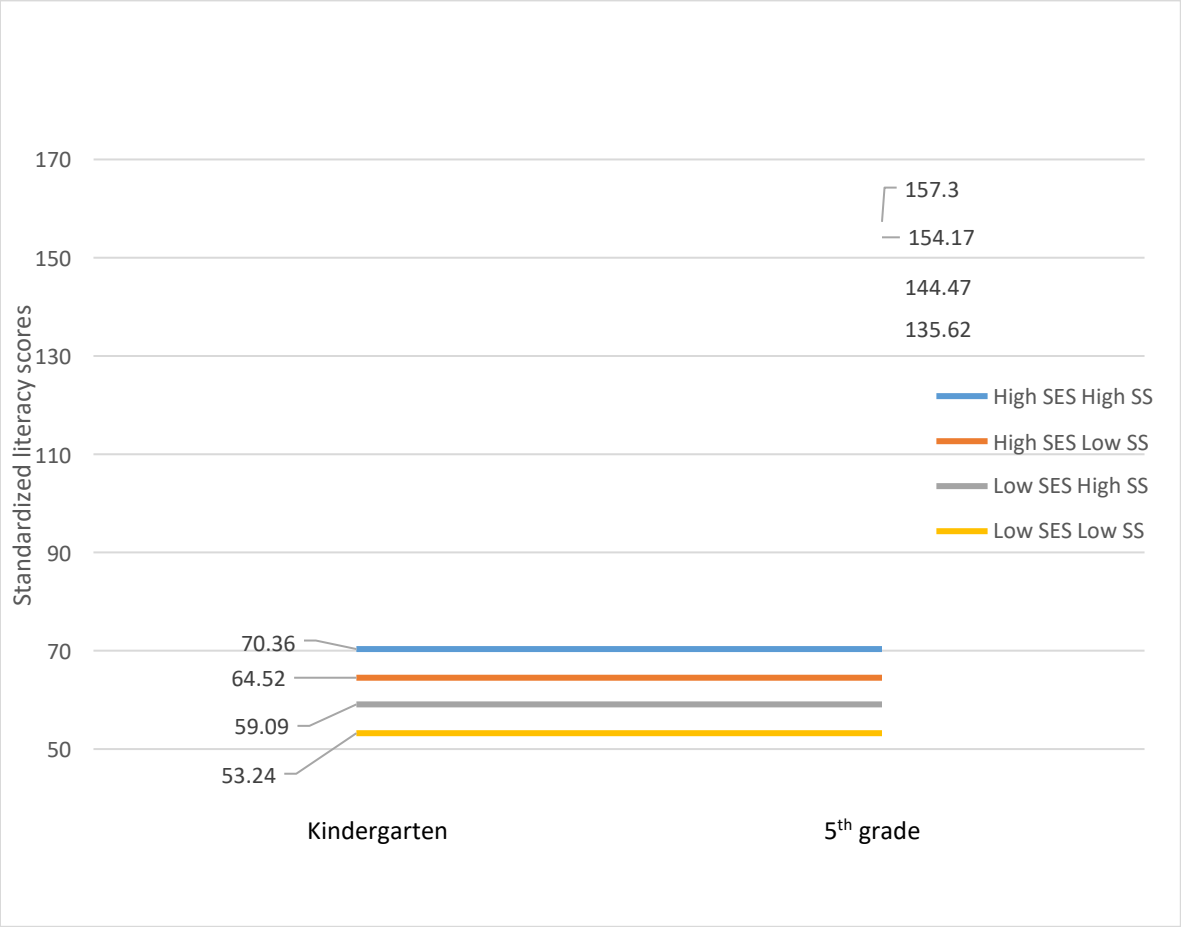

Figure 10

The Effect of SES on Standardized Math Scores over Time

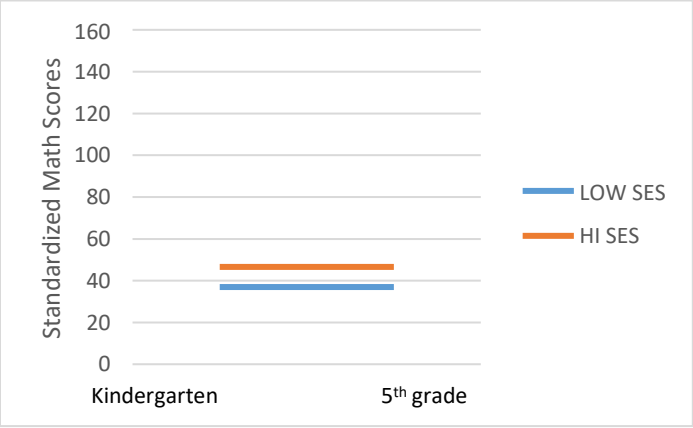

Figure 11

The Interaction between Social Skills, SES and Standardized Math Scores over Time

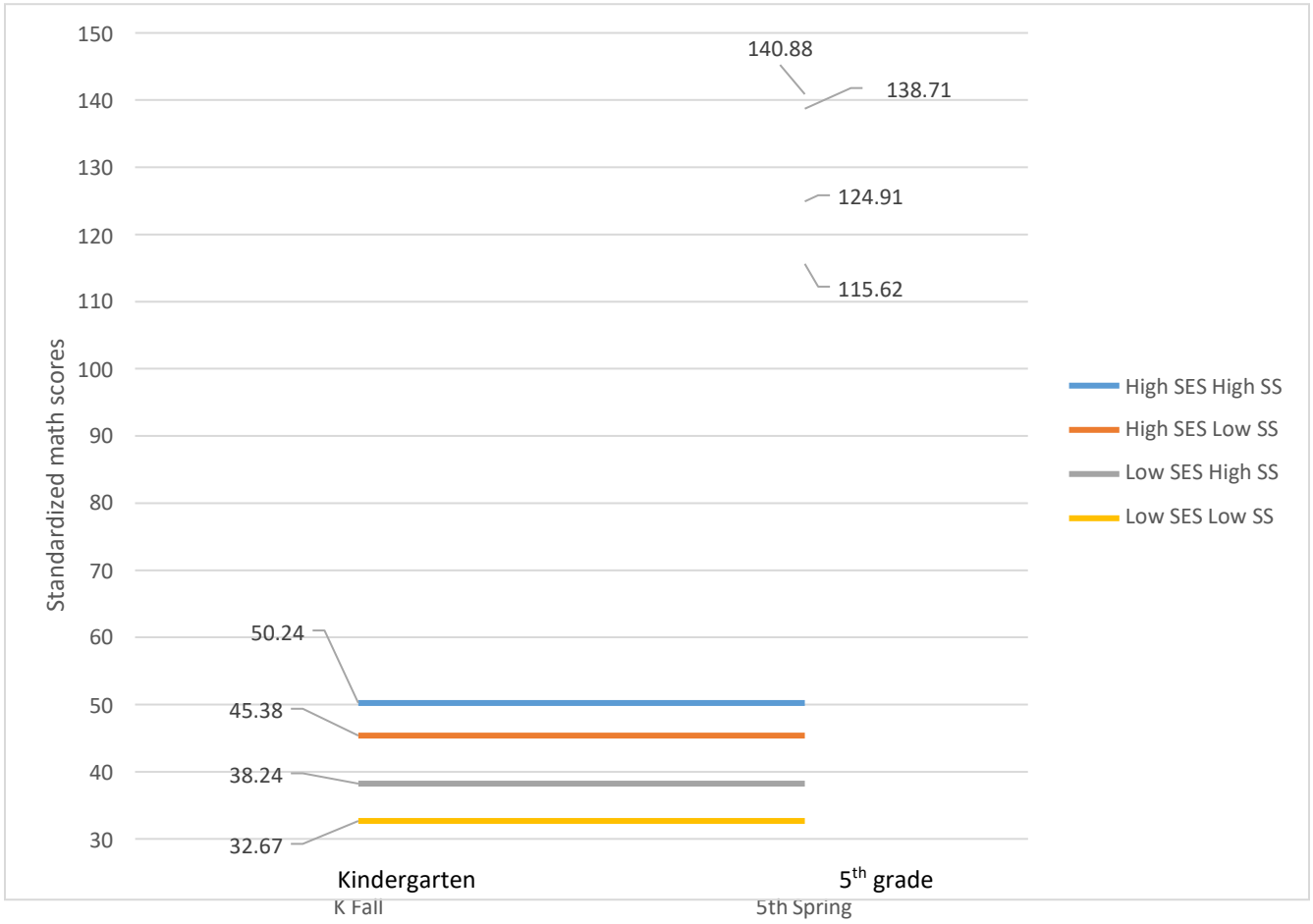

Figure 12

Cross Level Interaction between Social Skills, Gender, and Standardized Literacy Scores over Time

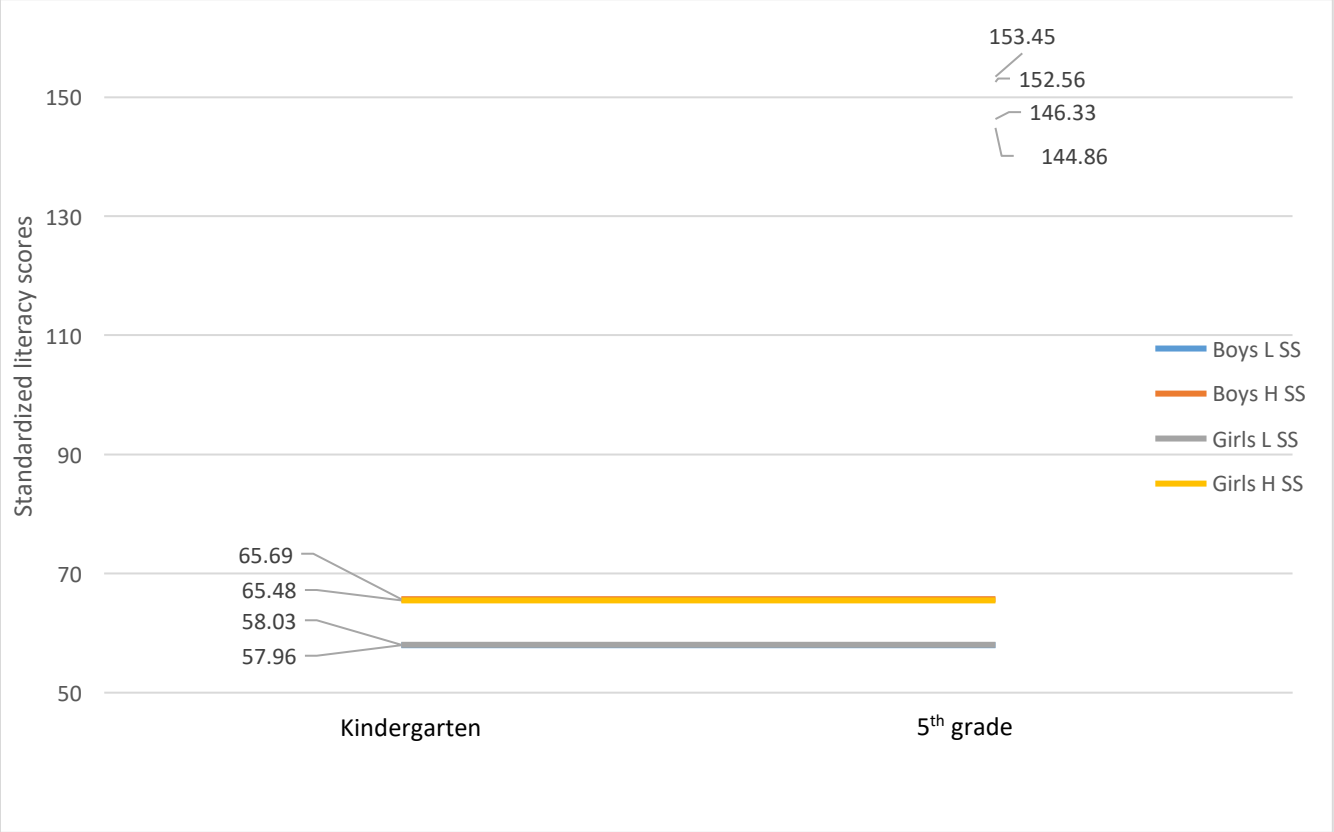

Figure 13

How Standardized Math Scores Change over Time Depending on Gender

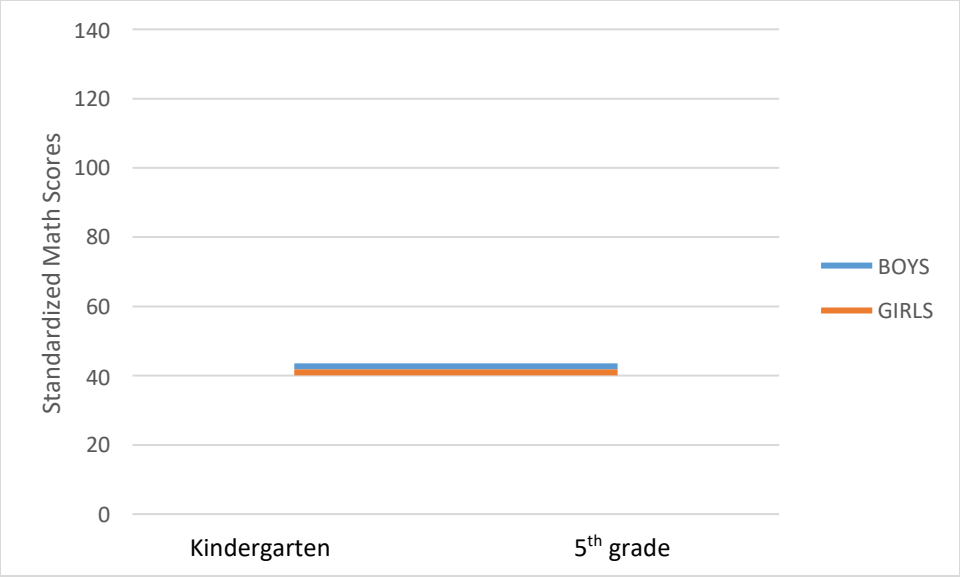

Figure 14

How Literacy Scores Changed over Time Depending on School Climate

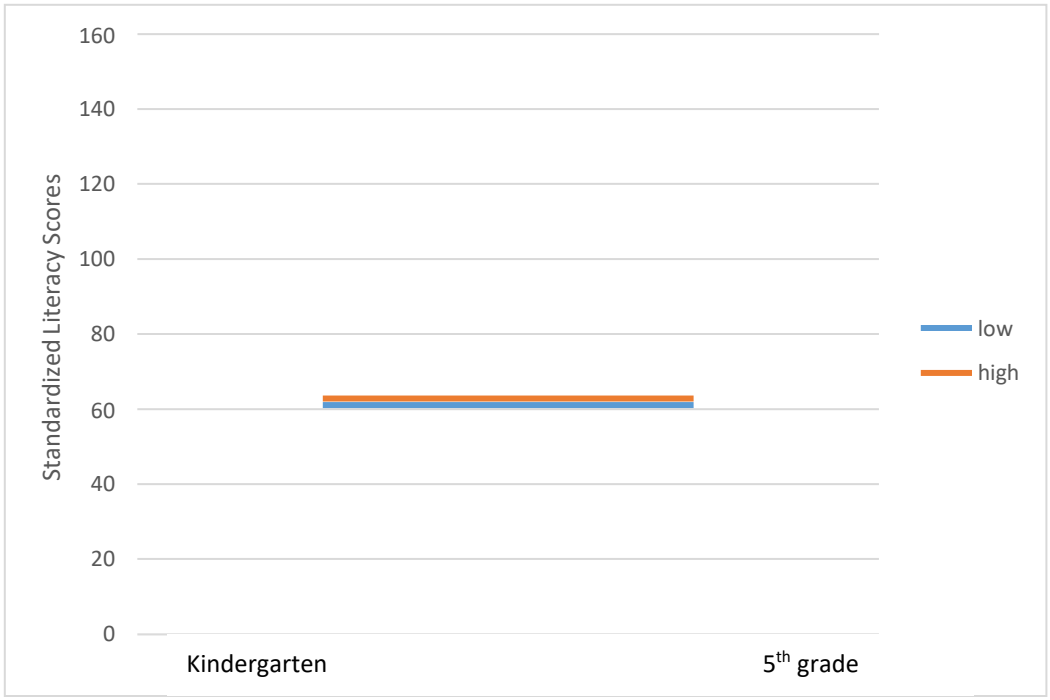

Figure 15

The Interaction between School Climate, Race, and Standardized Literacy Scores over Time

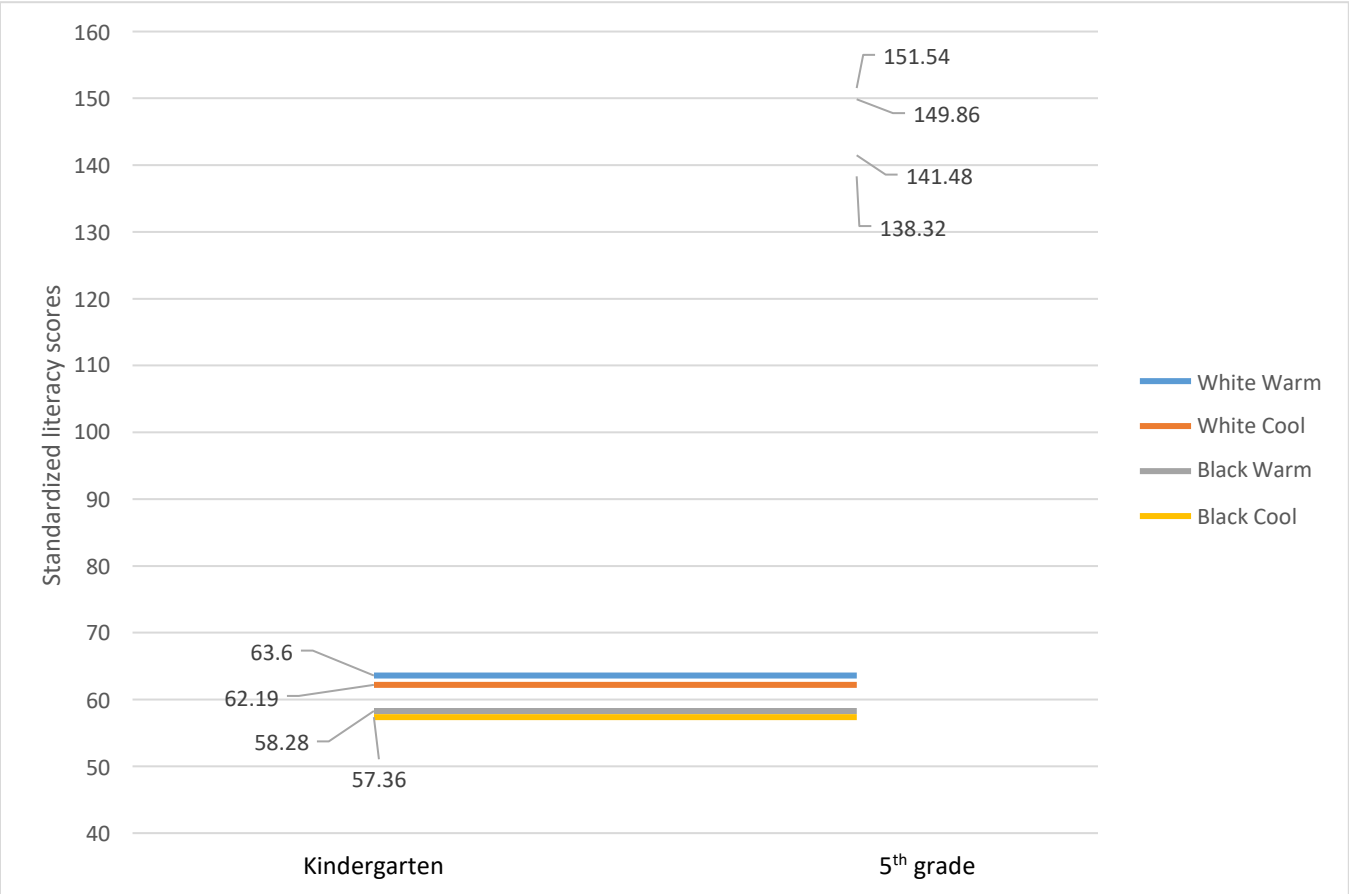

Figure 16

How Standardized Math Scores Change over Time Depending on School Climate

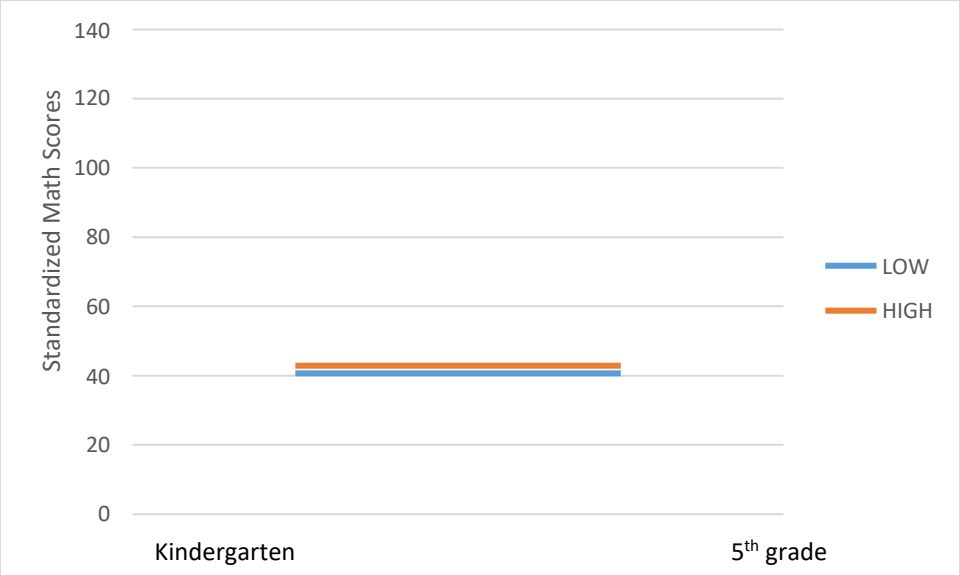

Figure 17

The Interaction between School Climate, SES, and Standardized Literacy Scores over Time