Race in the Preschool Classroom: Links Between Teacher/Child Race and Children's Outcomes

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APPROVAL OF THE DISSERTATION

This dissertation, "Race in the Preschool Classroom: Links Between Teacher/Child Race and Children's Outcomes," has been approved by the Graduate Faculty of the Curry School of Education and Human Development in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Children's experiences during their early years of education are strong predictors of their short- and long-term skill development and success in school and life (Blair, 2001/2002; Fantuzzo, Rouse, McDermott, & Sekino, 2005; Denham et al., 2003; Murray, 2015). The preschool period is a particularly favorable time to intervene in children's lives, when developmental trajectories are particularly malleable (Kazdin & Weisz, 2003; Phillips & Shonkoff, 2000) and with over two-thirds of 4-year-old children enrolled in preschool programs (National Center for Education Statistics [NCES], 2018). High-quality, positive early educational experiences have the potential to reduce or eliminate achievement gaps (Heckman, 2006; Loeb & Bassok, 2008) and set children on a trajectory of positive skill development into later school years (Fantuzzo et al., 2007; Ladd & Dinella, 2009). Children who are at higher risk for entering kindergarten behind their peers on academic and non-academic school readiness skills, including those living at or near the poverty line and racial and ethnic minority children, are those who are most likely to benefit from a high-quality preschool experience (Magnuson, Meyers, Ruhm, & Waldfogel, 2004). Unfortunately, racial and ethnic minority children are at higher risk for having a more negative experience in preschool, such as attending a lower-quality program (Bassok & Galdo, 2015), experiencing higher rates of suspension/expulsion (Gilliam et al., 2016), or having a lower-quality relationship with their teachers (Saft & Pianta, 2001; Wald & Kurlaender, 2003). These early disparities in educational experiences only further perpetuate later disparities in educational and social outcomes (Bates & Glick, 2013; Pascoe & Richman, 2009; Monahan, VanDerhei, Bechtold, & Cauffman, 2014). This is in direct opposition to one of the main goals of early childhood education; addressing achievement gaps and inequality by promoting and investing in early childhood skill development has increasingly been prioritized by federal and

states governments (Barnett, Carolan, Squires, & Brown, 2014; Knudsen, Heckman, Cameron, & Shonkoff, 2006).

Given this dilemma, there is a need to understand how the experiences of racial and ethnic minority children in preschool differ from those of White children in order to identify avenues to address these inequities. This three-paper dissertation explores differences in experiences and outcomes for Black and White children in preschool, with the goals of reducing disparities in disciplinary and educational outcomes for young children. Paper 1 examined the association between teacher and child race and teacher perceptions of children's disruptive behavior and the use of exclusionary discipline strategies. Results showed differences in how teachers rate students based on race, and teachers reported using higher rates of exclusionary discipline with students who did not share their race. Paper 2 is a research-to-practice paper written for an early childhood educator audience that provides background on the use of "soft" exclusionary discipline practices, implicit bias, and a teacher's role in combatting the racial discipline gap in their classrooms. It provides a number of practical suggestions for reducing the use of unhelpful, and often inequitably applied, discipline techniques. Paper 3 shifts focus to whether academic outcomes differ based on the races of the teacher and child, as well as whether differences in behavioral engagement are a possible mechanism for any relationship. Findings from this study indicate that preschool children's race and race match are not linked to academic skill gains or their interactions with preschool teachers. Taken together, these papers address gaps in the literature around how teacher and child race are linked to children's experiences and outcomes in preschool, as well as provide some preliminary suggestions of how to begin ameliorating the negative impacts of racial bias in the early childhood classroom.

Linkages Between Papers

Teacher and child race relate to children's outcomes. The integrative model of development for minority children (Garcia Coll et al., 1996) recognizes and emphasizes that there are environmental factors that uniquely influence the development of minoritized children that are often neglected in other models of development. Rather than being variables that need to be controlled for, factors such as race and socioeconomic status need to be attended to as critical aspects of how children experience and grow in the world. Teacher and child race have been shown to relate to a range of child outcomes, both academic and non-academic, with the majority of this research focused on elementary school and above. Research on K-12 students indicates that being randomly assigned to a same-race teacher improves academic achievement (Dee, 2004; Egalite, Kisida, & Winters, 2015; Gershenson et al., 2018). However, few studies have examined academic outcomes in preschool students as it relates to race. Although there is some evidence that teachers' perceptions of children's academic skills relate to the child's race (e.g., Downer, Goble, Myers, & Pianta, 2016), the lack of research in preschool remains a substantial gap in the literature.

Another important outcome linked to race is experiencing exclusionary discipline; minority students are disproportionately disciplined from preschool through high school, experiencing a significantly higher rate of suspensions and expulsions than White students (Gilliam, 2005; US Department of Education, 2014/2016). This has been a topic garnering increased attention due to recent efforts to address the racial discipline gap by states and school districts (Colombi & Osher, 2015; Gregory et al., 2017), but there remain significant gaps in the literature related to discipline outside of official school suspensions and expulsions and exploring the potential mechanisms for race matching effects.

This dissertation attempts to address these gaps by deepening the research on the racial discipline gap in preschool (Paper 1), exploring practical strategies for teachers to combat these negative outcomes (Paper 2), and extending the findings related to academic outcomes to younger students (Paper 3). While much of the teacher-child race literature has centered around K-12 students, these papers focus on the preschool context as a developmentally important time period that requires further study to clarify if and how teacher and child race relate to children's early education experiences.

Preschool as a developmentally critical time. Early childhood is a time of rapid brain development and a high level of *neuroplasticity*, or the ability for the brain to be shaped by experiences and learning (Kolb & Teskey, 2012; Phillips & Shonkoff, 2000; Zelazo, Blair, & Willoughby, 2016). This makes this age a sensitive period, when children are both particularly vulnerable to negative experiences and will more strongly benefit from positive experiences (Heckman & Masterov, 2007). With preschool occurring at a time when foundational school readiness and social-emotional skills are just developing, during a period of development in which skills are particularly malleable to intervention (Belsky & Pluess, 2009; Gorey, 2001), the preschool setting is a key context for development of academic and non-academic skills. A positive preschool experience can set the stage for children's future academic success (Rimm-Kaufman & Pianta, 2000). Preschool is often a child's first exposure to the classroom setting, providing a child with the opportunity to regularly interact with people outside of their families for the first time (Hay, Payne, & Chadwick, 2004; Rimm-Kaufman & Pianta, 2000), making these interactions and relationships serve as templates for future school experiences. Attending preschool is associated with stronger academic skills at kindergarten entry (Magnuson, Ruhm, & Waldfogel, 2007), and preschool children with positive relationships with their teachers are less

likely to display behavior problems and have greater academic skill growth (Broekhuizen, Mokrova, Burchinal, & Garrett-Peters, 2016; Domitrovich et al., 2010; Hamre & Pianta, 2005; Sabol & Pianta, 2012).

While early childhood is a time that children can particularly benefit from positive learning opportunities due to neuroplasticity, it is also a period of vulnerability to harmful influences (Shonkoff, 2011); negative experiences in early education, such as suspension or expulsion or a highly conflictual relationship with a teacher, can move children towards negative outcomes such as school drop-out, lower wages, and eventual incarceration (Monahan, VanDerhei, Bechtold, & Cauffman, 2014; Pascoe & Richman, 2009). Given the importance of preschool in setting the tone for children's future educational experiences, it is essential to understand what factors contribute to these disparate outcomes. It is essential that key ecological factors like institutional racism, implicit bias, and social stratification be investigated and integrated into our understanding of minoritized preschool students' experiences during this developmentally sensitive time (Garcia Coll et al., 2996). With race being linked to disparities in both academic and non-academic outcomes in K-12 students (e.g., Dee, 2004; Egalite, Kisida, & Winters, 2015; Gershenson et al., 2018; Gregory et al., 2017), race is important to consider as a factor that could impact the developmental trajectories of even younger children, given the higher levels of malleability and vulnerability during early childhood. This dissertation addresses this concerning gap in the literature by focusing on the preschool year. However, establishing the existence of links between race and differences in children's educational experiences and outcomes is only a preliminary step in understanding the importance of teacher and child race in preschool. While there are some studies that have examined possible mechanisms for race effects (e.g., Egalite & Kasida, 2017; Gershenson et al., 2018; Grissom & Redding, 2016), there is a

lack of this research even in the more substantial K-12 literature; very few studies on teacher/child race in preschool have examined possible mechanisms. In order to help address this lack, each paper in this dissertation conceptually examines possible mechanisms for teacher-child race effects, and Paper 3 has a research question focused on a potential mechanism.

Teacher-child interactions are essential to the preschool experience and vary based on race. Differences in interactions between children and teachers of varying races is one proposed mechanism for race matching effects. Children's skills develop within a context; the reciprocal, dynamic interactions that occur between a child and their immediate environments are the experiences that are the most influential in shaping a child's development (Bronfenbrenner & Morris, 1998; Vygotsky, 1978). In the context of classroom environment, teacher-child interactions are one of the most proximal processes driving children's learning (Hamre & Pianta, 2007). The quality of a teacher-child relationship is based on these daily interactions and serves a critical role in shaping a child's experience in the classroom (Hamre & Pianta, 2001). From an attachment perspective, high-quality teacher-child relationships are characterized by high levels of closeness (i.e., warm, supportive and mutually enjoyable), low levels of conflict, and nondependence on the teacher, which allow children to use their teachers as "secure base" from which to engage with and navigate the classroom environment (Birch & Ladd, 1997; Bowlby, 1969; Williford, Carter, & Pianta, 2016). Positive teacher-child relationships serve as resources for children's growth and development, leading to greater skill gains and better school adjustment (Broekhuizen et al., 2016; Ewing & Taylor, 2009, Palermo et al., 2007). In contrast, negative teacher-child interactions tend to escalate over time, leading to increasingly coercive patterns of interaction (Doumen et al., 2008; Reinke, Herman, & Newcomer, 2016). Poor teacher-child relationships are linked to a host of negative outcomes,

including negative attitudes towards school, academic disengagement, low attendance, and reduced academic skills (McGrath & Van Bergen, 2015).

Individual children's interactions with the same teacher varies significantly, for a variety of reasons (Sabol, Bohlmann, & Downer, 2018; Williford, Maier, Downer, Pianta, & Howes, 2013); one of the many factors that impacts teacher-child interactions is race. Racial and ethnic minority children are at-risk for lower quality relationships with their teachers (Ladd et al., 1999; Murray & Murray, 2004; McGrady & Reynolds, 2012; Sbarra & Pianta, 2001). It remains unclear in the literature what causes the lower quality of relationships and how differences in relationship quality translate into outcomes for children. Much of the research on teacher/child race is focused on teacher perceptions of and expectations for children of a different race; many studies have shown that White teachers are more likely to rate Black students in a negative way, including being inattentive (Dee, 2005; McGrady & Reynolds, 2013), displaying behavior problems (Bates & Glick, 2013; Rimm-Kaufman, Pianta, & Cox, 2000), and having less academic potential (Oates, 2009; Tenenbaum & Ruck, 2007). While it is often hypothesized that these discrepancies in how teachers perceive children translate to differences in how teachers interact with those children, there is little research on observed differences in teacher or child behavior based on race. There has been some observational research in older students, which has shown that teacher and child race relate to teachers' behaviors towards students, such as frequency of praise or questions directed towards a student (Casteel, 1998; Tenenbaum & Ruck, 2007). However, this remains unstudied in the preschool context, which is addressed in Paper 3 by examining whether observed teacher and child interactions are a potential mechanism for race effects.

Implicit bias impacts teachers' behaviors and perceptions of children. A concept underlying all three papers is that of implicit bias, which are unconscious biases that impact how a person thinks and behaves despite being out of the person's awareness and oftentimes in opposition to a person's consciously held beliefs (Staats, 2014). The majority of Americans have an anti-Black implicit bias (Carter et al., 2017; Staats, 2014), which holds true for teachers (Glock & Karbach, 2015; Hartlep, 2015; Van den Bergh et al., 2010). These biases, in combination with any explicit biases a teacher holds, are important to consider because they impact how a teacher perceives a child; the way in which a teacher perceives a child substantially impacts how that teacher then behaves towards that child (Coplan, Bullock, Archbell, & Bosacki, 2015; Dobbs & Arnold, 2009; Hamre et al., 2008; Myers & Pianta, 2008), making it a crucial component to understanding the experiences of racial and ethnic minority children (Garcia Coll et al., 1996). Many of the gaps in outcomes between White and racial/ethnic minority children are hypothesized to be related to implicit biases, but this is a theoretical mechanism rather than one that is directly tested in these studies. There have been some vignette- and lab-based experiments that provide evidence for the impact of implicit biases, showing that teachers perceive and make recommendations differentially based solely on manipulations to the hypothetical child's race (e.g., Gilliam et al, 2016; Goff et al., 2014; Okonofua & Eberhardt, 2015). Many researchers have argued that implicit bias is a key underlying mechanism to teacher/child race effects (Cook et al., 2018; Gregory et al., 2017; Okonfua et al., 2016), and is therefore discussed as it relates to the findings and recommendations across this dissertation. Paper 2 conceptually examines how implicit bias and exclusionary discipline relate, and while Papers 1 and 3 do not involve directly testing the relationship between bias and outcomes, bias is discussed as a possible mechanism for findings.

Overview of the Three Papers

Given the significant gaps in the literature in the preschool population, the recent interest in understanding the impacts of race in order to remediate the racial discipline and achievement gaps, and the demand for practical ways of addressing bias and race in the preschool classroom, this dissertation aims to further explore the importance of teacher and child race for preschool students and to provide practical suggestions for teachers and directions for further research. This consists of two empirical studies (Paper 1 and Paper 3) and one practitioner-oriented paper (Paper 2) synthesizing the research on exclusionary discipline and implicit bias for teachers.

Paper 1: The Relation Between Teacher and Child Race, Trajectories of Disruptive Behavior, and Exclusionary Discipline in Preschool. The first study in this dissertation examined the relationship between teacher and child race, how teachers rate children's disruptive behavior, and how teachers use exclusionary discipline strategies. The study focused on a sample of White and Black preschool children identified as displaying high levels of disruptive behavior, who are at a particularly high risk for negative teacher-child interaction cycles and poor outcomes (Ladd & Burgess, 2001; Doumen et al., 2008). Given the significant racial discipline gap in preschool (Gilliam, 2005; US Department of Education, 2014/2016), this study advanced our current knowledge about preschool exclusionary discipline by both examining how teachers rated children based on race and by extending the findings of a discipline gap to "soft" exclusionary practices, or practices that remove a child from instruction/an activity but are not official suspensions and expulsions. We found that White teachers rated Black children as displaying more intense disruptive behavior on average. Black teachers rated White children as demonstrating less improvement over the preschool year as compared to White teachers rating White children. Both White teachers with Black children and Black teachers with White children

reported using more exclusionary discipline techniques than White teachers with White children. These results contribute to the literature by extending research on the racial discipline gap, which has centered around suspensions and expulsions, to "soft" exclusionary practices. Findings also raise the question of whether differences in how teachers rate children are due to actual differing rate and intensity of behavior problems with those teachers or reflect biased perceptions from the teacher, or some combination of both; clarification of these findings will require further investigation.

Paper 2: What to Know and What to Do About "Soft" Exclusion in Early Childhood. The second paper in this dissertation is a conceptual examination of the mechanisms by which teacher and child race match impact the use of exclusionary discipline practices. The manuscript is written for early educators and provides a brief synthesis of the current literature on exclusionary discipline practices and the racial discipline gap in early childhood education settings. The paper uses vignettes and other real-life examples to illustrate the complexity of managing challenging behavior in the classroom setting and the negative impacts that exclusionary practices can have on young children. It also attempts to introduce and sensitively explore the impact of implicit bias on how teachers interact with children in order to increase awareness of those biases and introduce evidence-based steps teachers can take to minimize the impact of bias on their practice. Finally, the paper provides tips for behavioral interventions that can replace exclusionary practices and reduce discipline disparities. Writing towards a practitioner audience is important because it allows for the dissemination of information and knowledge that teachers need in order to become change agents in their classrooms and schools. This paper contributes to the literature by being responsive to calls for alternatives to exclusionary discipline for teachers, given the increasing number of states and school districts

that have changed policies to reduce exclusionary discipline, but without additional support or guidance on substitutable strategies and tools. The practical and actionable steps provided in the paper give teachers an avenue for beginning to address biased discipline in their classrooms.

Paper 3: Links Between Teacher and Child Race and Academic Skill Growth in Preschoolers. The third paper in this dissertation examines whether teacher and child race and race match are associated with differences in reading and math skill gains over the preschool year. In older students, teacher and child race match has been linked to stronger academic achievement (Dee, 2004; Egalite, Kisida, & Winters, 2015; Gershenson et al., 2018). This has not been examined in preschool children, but is particularly important to investigate given the importance of building school readiness skills during that year (Duncan et al., 2007; Magnuson, Meyers, Ruhm, & Waldfogel, 2004). Additionally, using observations of how individual students engage in the classroom with their teachers and learning tasks, this study explored whether teachers and children engage in observably different ways dependent on their races. In contrast with the first two papers, the third study focused on a more normative sample of preschoolers, rather than those identified as displaying disruptive behavior. Results did not show a link between race and race match and school readiness skills or observed teacher/child interactions, in contrast to findings in K-12 students. This raises the possibility that race and race match effects operate different in preschool-age children and warrants further investigation and replication.

Contributions to the Literature

This dissertation addresses a number of the gaps in the literature around the relationship between teacher and child race and outcomes by extending past research to preschool-age children and exploring possible mechanisms, as well as to provide practical suggestions and avenues for intervention for early childhood educators and policy makers. Given the high

likelihood that racial and ethnic minority children will be taught by White teachers (NCES, 2017), it is essential to understand whether there is a relationship between race and children's outcomes. This dissertation helps provide answers to that question by examining both discipline (Paper 1) and academic skill development (Paper 3) as outcomes. Beyond exploring the existence of such a relationship, this dissertation also includes preliminary examination of possible mechanisms for race matching effects, both conceptually (Paper 2) and by directly testing a possible mechanism (Paper 3). Additionally, the emphasis on finding ways to intervene on any deleterious effects of race mis-match and to replace potentially harmful practices like exclusionary discipline gives this proposal significant practical implications for the field. The contribution of this dissertation is to deepen knowledge about the discrepancies in preschool experiences of children with same- and different-race teachers, which is an important first step to identifying how preschool can be made as effective and equitable as possible.

The remainder of this dissertation contains the entirety of Papers 1, 2, and 3.

Paper 1: The Relation Between Teacher and Child Race, Trajectories of Disruptive Behavior, and Exclusionary Discipline in Preschool

(Wymer, Williford, & Corbin, 2020; *submitted to Journal of School Psychology*)

Abstract

In preschool, Black children are overrepresented in percentages of children suspended or expelled. Teachers' perceptions of and responses to children displaying disruptive behavior may be different depending on the race of the teacher and child. Although teacher-child race match is associated with a number of outcomes in K-12 students, research examining these links in during preschool is limited. This study examined whether teachers' reported trajectories of children's disruptive behavior and use of discipline practices varied depending on teacher and child race in a sample of 349 preschoolers and their 144 teachers. Results indicated that teacher and child race were associated with teachers' ratings of children's disruptive behavior and reported use of exclusionary discipline strategies.

Keywords: preschool; race; disruptive behavior; exclusionary discipline

The Relation Between Teacher and Child Race, Trajectories of Disruptive Behavior, and Exclusionary Discipline in Preschool

The demographics of the United States are shifting rapidly. Racial and ethnic minority births now make up the majority of births in the United States (US Census Bureau, 2012). White, English-speaking students comprise less than half of public school enrollment (NCES, 2017). In contrast, over 80% of public school teachers are White. The expanding gap between the racial and ethnic composition of students and that of teachers has important implications for the education system; racial and ethnic minority students are very likely to be taught by teachers whose race and/or ethnicity does not match theirs. Race match, or mismatch, is related to academic achievement (Dee, 2004), teacher expectations (Tenenbaum & Ruck, 2007), referrals to special education and gifted/talented programs (Elhoweris, Mutua, Alsheikh, & Holloway, 2005), and discipline (Skiba et al., 2011). Consistently, students, particularly Black students, tend to have better school outcomes when there is a race/ethnic match with their teacher.

Of particular concern are the negative effects on children perceived as displaying disruptive behaviors; minority students are disproportionately disciplined in school and are at a much higher risk of experiencing harsh exclusionary discipline (i.e., suspension or expulsion), which may be exacerbated when the student is in a classroom with a teacher of a different race (Gilliam, 2005; Skiba, Arredondo, & Rausch, 2014). These disparities in discipline use places certain children at risk for lower academic achievement, dropping out of school, and becoming involved in the criminal justice system (Carter, Skiba, Arredondo, & Pollock, 2017).

The disproportionate rates of exclusionary discipline are found as early as preschool, where children are three times more likely to be expelled than children in K-12 (Gilliam, 2005). Black children attending state-funded preschools were twice as likely to be expelled as White

children, and 42% of preschoolers suspended are Black, despite Black students making up only 18% of preschool enrollment (Gilliam, 2005; US Department of Education, 2014). There has been limited research in preschool around teacher-child race match as compared to K-12. In the present study, we examined how combinations of teacher and child race related to Black and White preschoolers' teacher-reported disruptive behavior across the preschool year and teachers' reported use of exclusionary discipline for children identified by their teachers as displaying elevated disruptive behaviors.

Discipline Disparities

Black students, and in particular Black male students, are significantly more likely to be disciplined at school (Gilliam, 2005; Skiba et al., 2014). Students who experience more punitive and exclusionary discipline are at an increased risk of failing future classes, becoming academically disengaged, dropping out of school, and coming into contact with the criminal justice system (Balfanz, Byrnes, & Fox, 2012; Marchbanks et al., 2013; Toldson, McGee, & Lemmons, 2013). This trend begins as early as preschool, starting children's education off with stressful, negative experiences (US Department of Health and Human Services, 2014). Such early disparities in disciplinary practice lead to questions about their origins; teachers may be perceiving preschoolers' disruptive behavior differently depending on a child's race, or they may be responding differently to their disruptive behavior. Although overt racism may impact some teacher's perceptions and behaviors, much of the literature has focused on teachers' implicit biases, or biases that an individual is unaware of but nevertheless influence how people think, behave, and make decisions about a group (Staats, 2014). Research has shown that the majority of Americans hold an anti-Black implicit bias, despite the fact that such bias may be completely opposed to an individual's conscious beliefs and values, and that people may unconsciously

make biased judgments and decisions, especially when that bias goes unacknowledged (Carter et al., 2017; Staats, 2014). Consequently, it is important to examine how teacher and child race combine to relate to the ways in which teachers perceive and respond to a child's behavior.

Relation between Teacher and Child Race Combinations and Disruptive Behavior

Limited research has been conducted on the relation between teacher and child race combinations and preschoolers' disruptive behavior. When children display disruptive behaviors, a global term that includes low frustration tolerance, anger, impulsivity, hyperactivity, noncompliance, and aggression (Bufferd, Dougherty, Carlson, Rose, & Klein, 2012; Powell, Fixsen, & Dunlap, 2003), teachers report being less effective in their teaching (Feil, Small, Forness, & Lopez, 2005) and children are at a high risk for a host of negative outcomes, such as reduced academic achievement and highly conflictual relationship with their teachers (e.g., Ladd & Burgess, 2001; Doumen et al., 2008). Downer, Goble, Myers, and Pianta (2016) found that Black preschool teachers reported fewer increases in Black students' behavior problems over the school year compared to White teachers. Gilliam, Maupin, Reyes, Accavitti, and Shic (2016) asked teachers to view videos of preschoolers engaging in typical activities and watch for signs of challenging behavior; teachers, regardless of their own race, spent significantly more time watching Black children, especially Black boys, despite there being no challenging behavior depicted in the videos. However, in another study, Black male preschool students were no more likely to be rated as having behavior problems than male students of any other race (Graves & Howes, 2011).

While there has been limited research conducted on preschool-aged children and disruptive behavior specifically, there has been some research focused on early elementary school. For example, Bates and Glick (2013) found that Black kindergarten students were rated

as having more externalizing behavior problems when being taught by White teachers than when taught by Black teachers. Similarly, Downey and Pribesh (2004) found that White kindergarten teachers rated Black students as having more externalizing behavior compared to White students. Rimm-Kaufman, Pianta, and Cox (2000) found that in schools with higher minority composition, White teachers were more likely than minority teachers to report certain problems for children entering kindergarten (e.g., "difficulty following directions" and "immaturity"). Taken together, these studies provide some preliminary evidence that teacher and child race matter when considering how young children's behavior is rated and responded to; however, there is still very limited research on this topic, particularly in the preschool population.

Present Study

We examined whether teacher and child race combinations were associated with how teachers rated children's trajectories of disruptive behavior across the preschool year and teachers' report of disciplinary actions at the end of the preschool year for Black and White students using the following research questions and hypotheses.

For children whose teachers report that they display elevated disruptive behaviors:

1. Do teachers rate children's disruptive behavior differentially across the year depending upon both teacher and child race? We expected that White teachers would rate Black students as having higher disruptive behavior on average, both in terms of the intensity of the behavior problems and the degree to which the teacher considers their behavior to be a problem, and that they would report less improvement (i.e., a flatter, but still decreasing, slope) over the course of the preschool year as compared to White teachers rating White children. We did not expect Black teachers to rate White or Black children differently compared to White teachers rating White students.

2. Do teachers report using more exclusionary disciplinary strategies based upon teacher and child race? We expected that both Black and White teachers would report using harsher disciplinary practices with Black students when compared to White teachers' reports of disciplinary use with White children, with the highest rates being for Black children who are being taught by White teachers. We did not expect there to be a difference in strategies for White students with same- and different-race teachers.

Method

Participants

Data were collected on children and teachers participating in a large classroom randomized control trial (RCT) of an attachment-based intervention, Banking Time, designed to improve the quality of a teacher's interactions with a specific child (Williford et al., 2016). The goal of Banking Time is to have teacher-child sessions in which children take the lead of the session where behavioral expectations are removed and the child is accepted unconditionally (Williford et al., 2016). The skills include observing the child's expressed emotion and behaviors, narrating what the child is doing, allowing the child to lead the activity, labeling the child's emotions, and being available as an emotional resource to the child (Williford, Wolcott, Whittaker, & Locasale-Crouch, 2015). Participation in the intervention was not of primary interest in the current study; however, intervention status was controlled for in all models as well as examining whether intervention status served as a moderator in any of the primary results.

Participants in the larger study included 183 teachers and 470 preschool children, who participated across 173 classrooms at three sites over the course of the three-year study. Child participants were selected based on teacher ratings of the child's externalizing behavior. The teacher rated all children in their classrooms on two scales: the Attention-Deficit/Hyperactivity

Disorder Rating Scale-IV (ADHDRS-IV; DuPaul, Power, Anastopoulos, & Reid, 1998) and the Oppositional Defiant Disorder Rating Scale (ODDRS; Hommersen, Murray, Ohan, & Johnston, 2006). The two boys and one girl in each classroom with the highest combined scores on those measures and whose parents had given consent for them to participate were selected for the study; selection based on sex was done in order to ensure that girls were represented in the sample, as boys are significantly more likely to be rated as displaying disruptive behavior than girls (Nolan, Gadow, & Sprafkin, 2001). The children selected for the study were an average of 48.7 months old, and 65% were boys. In terms of race, parents reported that 42% of the child sample was Black, 38% was White, 8% was Hispanic, and 12% was another or mixed race. Teachers were mostly female (96.1%) and had an average of 9.2 years of pre-K teaching experience. The majority identified as White (53%) or Black (41%). Most of the preschool teachers worked at private preschools (55%), followed by state-funded preschools (26%) and Head Start programs (19%). Because the percentages of students and teachers identifying as races other than White and Black were small enough that we did not have statistical power to examine separately, only data from White and Black students in classrooms with either White or Black teachers were analyzed, for a total of 187 Black students and 162 White students with 81 White teachers and 63 Black teachers. The demographic characteristics of the sub-sample were very similar to the overall sample; see Table 5 for descriptive statistics for the sub-sample.

Procedures

In the larger study, participant teachers were randomly assigned to one of three conditions: Banking Time, Child Time, or Business-as-Usual (BAU) The three selected children within each classroom were randomly assigned to one of three, 7-week intervention/assessment windows. In the Banking Time condition, teachers implemented Banking Time sessions two to

three times per week at school with during the participating child's randomly selected window. Teachers worked with one child at a time (one child in window 1, the next in window 2, and the next in window 3). Teachers in the Child Time condition followed the same schedule but were not given specific instructions on how to spend the time. In the BAU condition, no treatment was provided and teachers were instructed to interact with children in their classroom as they typically would.

Data were collected on children and teachers at four points during the year: baseline/pre-window 1, pre-window 2/post-window1, pre-window 3/post-window-2, and post-window-3/end-of-year (EOY). Not all data were collected at each time point; for example, teacher and child demographic information were only collected at baseline, while information on the disciplinary actions teachers used with students was collected only at the end of the year. Teacher reported disruptive behaviors was collected for all children at baseline, their pre- and post-window and EOY. Thus, for children assigned to window 1, data were collected at pre-window 1, post-window 1, and EOY; for children in window 2, the data were collected at baseline, pre-window 2, post-window 2, and EOY; and for children assigned to window 3 the data were collected at baseline, pre-window 3 and EOY (Table 1 displays the data collection time points for each child).

Measures

Teacher and child demographics. At baseline, parents completed a demographic questionnaire that asked about children's race/ethnicity, gender, family income level, household size, and the child's age. Teachers completed a survey on their own demographic information, including race/ethnicity, years of teacher experience, and education levels.

Teacher-reported child behavior problems. The Sutter-Eyberg Student Behavior Inventory–Revised (SESBI-R; Eyberg & Pincus, 1999) was used to measure the frequency and severity of externalizing behaviors and to what degree the teacher finds those behaviors problematic in the classroom. The 38 items yield an intensity scale and a problem scale; for the current study, we used both scales. The intensity indicates the severity of the behavior problem on a 1-7 Likert-scale, while the problem scale indicates whether a specific behavior is a problem or not (yes/no), with a higher score indicated more severe externalizing behavior problems. There was high internal consistency in this sample for both the intensity (α=0.97) and problem scale (α=0.95).

Teacher-reported exclusionary disciplinary actions. At the end of the year, teachers indicated the frequency with which they used certain exclusionary disciplinary techniques across the school year for all participating children. The items were pulled from a larger set of items and had acceptable internal consistency (α=0.77). Teachers rated the frequency with which they used the following strategies: putting a child in time out, removing a child from an activity, removing a child from the classroom temporarily, and sending a child home. Response options were on a seven-point scale ranging from "Never" to "Multiple times a day."

Data Analysis

For the first research question, the outcome variables were mean level of disruptive behavior and change in disruptive behavior over time, the predictor variable was teacher-child race combination. In order to examine how teacher and child race combinations are related to trajectories of children's disruptive behavior, multi-level modeling (MLM) data analysis techniques were used to account for the three-level nesting of data: time (level 1) nested within children (level 2), nested within classrooms (level 3). Because there are four time points during

the preschool year at which children's disruptive behavior was reported by teachers, a growth curve model was used. The intercept was set at the beginning of the year, and a decreasing linear slope best fit the data across time (Miner, & Clarke-Stewart, 2008).

Depending on the window a child was assigned to (see Table 1) as well as attrition over time, children did not have disruptive behavior data at all four time points. Additionally, end of year discipline data was missing due to attrition or incomplete survey responding by teachers. A small percentage of missing data was present due to incomplete responding of teachers and caregivers to the baseline surveys. Missing data were estimated using full information maximum likelihood (FIML; Enders & Bandelos, 2001). In the model, White children with White teachers are the reference group. Terms for being a Black child with a White teacher ("1" for Black child with a White teacher, "0" for any other combination), being a White child with a Black teacher, and being a Black child with a Black teacher were included. Variables for the teacher/child race combinations were entered at Level 2 (child-level). Covariates included child gender, child age, family income to needs ratio, teacher years of experience, teacher age, classroom racial composition, and intervention status; in addition, we also examined whether intervention status moderated any of the associations between teacher and child race combinations and the outcome variable (these effects were never significant).

To examine how White and Black teachers apply disciplinary strategies to Black and White children, the above analyses were replicated with the exception that the outcome in these analyses was only at end-of-year. Because these outcomes are only conducted at one point in time (EOY), we used a two-level model (children nested within classrooms).

Results

Teacher-child race combinations and teacher's ratings of disruptive behavior across the preschool year. Results are summarized in Table 2 and the trajectories of disruptive behavior over the year are displayed in Figure 1. Throughout the preschool year, teachers reported that children's intensity of disruptive behavior improved (β = -3.42, $p < .001$); that is, teachers rated children as displaying less intensive disruptive behavior as the preschool year progressed. Consistent with hypotheses, White teachers rated Black children as having more intense disruptive behavior on average compared to White teachers' ratings of White children (β = 16.88, p = .03). This means that while White teachers rated Black children as showing the same rate of improvement in their disruptive behavior over the course of the year as White teachers rating White children, White teachers rated Black children as having more intense behavior on average across the year. There were no significant differences between Black teachers' ratings of White or Black children with Black teachers as compared White teachers' ratings of White children for average rated disruptive behavior over the year. Unexpectedly, Black teachers rated White children as showing less improvement during the year compared to White teachers' ratings of White children (β = 7.43, p = .04).

The degree to which teachers considered a child's behavior to be a problem also declined across the preschool year (β = -1.23, $p < .001$). As hypothesized, White teachers rated Black children as displaying more problematic behaviors as compared to White teachers rating White children (β = 2.75, p = .04) on average over the year. Black teachers did not rate Black children differentially from White teachers rating White children with regard to the rate of change of teacher's ratings problem behaviors across the year.

Teacher's report of exclusionary discipline practices at end of year. Results (displayed in Table 3) showed that White teachers reported using higher rates of exclusionary discipline

practices with Black children when compared to White teachers with White children ($\beta = 2.15$, $p = .02$). Black teachers also reported using higher rates of exclusionary discipline practices with White children compared to White teachers with White Children ($\beta = 2.45$, $p = .04$). Black teachers did not report using exclusionary discipline practices with Black children at frequencies significantly different when compared to White teachers with White children.

Discussion

We examined how teacher-child race combinations related to teachers' ratings of children's disruptive behavior across the preschool year and their reported use of exclusionary discipline practices at the end of the school year in a sample of Black and White preschoolers and Black and White teachers. We found that the combinations of teachers' and children's races were indeed associated with how teachers rated children's behavior.

As was hypothesized, White teachers rated Black children as having more intense behavior problems and considered these behaviors more problematic compared to White teachers' ratings of White children on average (teachers' ratings averaged across the year). Race was also relevant for White children being taught by Black teachers, who were reported by Black teachers to show less improvement in their disruptive behavior across the year as compared to White teachers' ratings of White. These findings are consistent with previous literature demonstrating that teacher and child race are related to how teacher's rate children's behavior (e.g., Downer et al. 2016; Gilliam et al., 2016), indicating the importance of taking race into account when addressing disruptive behavior in the preschool classroom.

The relation between teacher and child race combinations and teachers' reported use of exclusionary discipline practices, such as removing children from their classroom, was also examined. Both White and Black teachers reported using exclusionary discipline practices with

children who were not their same race (e.g., White teachers with Black children and Black teachers with White children) compared to White teachers' reported use of exclusionary discipline practices with White children. This is an interesting finding, because it indicates that both the teacher's race and the child's race in combination is important to consider. Attempts to reduce the use of exclusionary discipline and address disparities in the application of those practices should therefore consider not only the race of the child, but also the race of the teacher.

The results are also unique in that, unlike previous work, the findings that some children are being disproportionately disciplined are extended to more minor, subtle forms of exclusionary discipline, not only suspensions and expulsions. As more states and school districts move toward eliminating suspensions and expulsions for young children (Colombi & Osher, 2015), understanding the mechanisms behind this finding become even more important to understand. These more minor, in-classroom exclusionary practices may be used even more frequently when teachers are no longer able to use out-of-classroom strategies as in the past, resulting in children continuing to lose instructional time and opportunities for engagement in the classroom.

The implications of this set of findings in terms of ways to intervene will be different based on the reason that teacher and child race combinations matter. Going forward, it will be important to determine whether these results are replicated in other samples and to better understand the reasons behind these findings, with the increasing racial and ethnic diversity of children (and teachers, to a lesser extent) that will result in expanding numbers of students in classrooms with a teacher of a different race than their own. With the disproportionate rates of school discipline (Gilliam, 2005; Skiba et al. 2014) negatively impacting preschool children's

educational experience, it is vital that we seek a deeper understanding of how and why these disparities occur.

While these findings demonstrate that teacher and child race combinations matter, we were unable to address the mechanisms for why these results occurred in this study. It is possible that teachers' ratings are being influenced by implicit biases, and so the differences in ratings of their behavior problems do not reflect an objective difference in the rate and severity of disruptive behavior, but rather differences in perceptions of and expectations for children's behavior (Gilliam et al., 2016). White teachers may be biased towards Black children and therefore rate their behavior as worse as compared to White children. This explanation aligns with the literature on bias in how White teachers perceive and respond to Black children (e.g., Tenenbaum & Ruck, 2007; Elhoweris et al., 2005; Skiba et al., 2011). Black teachers rating White children as showing less improvement could be due to a similar bias or could also indicate that Black teachers had higher expectations for improvement in White children across the year. Thus, White children may have been rated as showing less improvement not because their behavior improved less, but because their Black teachers had higher expectations for what would indicate improvement.

Alternatively, it could be that children display objectively worse behavior problems dependent upon the race of the teacher; when a teacher is of a different race than a child, they may be responding to children's behavior problems in a way that does not support improvement in children's ability to regulate their behavior as effectively as with children of their own race. This could either be due to implicit bias or because the strategies they are using to address their students' behavior problems are unequally effective based on a child's background; similarly, teachers' greater use of exclusionary discipline practices may be the result of implicit biases, or it

could be that they lack the appropriate tools to respond in a more effective way to children of a different racial background than their own (Dee, 2004). Importantly, while this work identifies patterns in how teachers are rating children, understanding the actual mechanisms that explain the effects is essential, as there is currently not enough information about why exactly teachers are rating or responding to children differently based on their own and the child's race. Future research may benefit from using alternative sources of information (e.g., classroom observation) to evaluate whether these teacher-reported differences reflect actual differences in how children are behaving in the classroom or how teachers are responding to those behaviors.

Limitations

There were a number of limitations to this study. One significant limitation is that the study is correlational in nature; children were not randomly assigned to White or Black teachers, so it is not possible to determine whether the teacher and child race combinations caused the differences in ratings. Similarly, as described above, there is no way to determine based on these data how or why race was linked to teachers' ratings of children's behavior or reported use of exclusionary discipline practices. Another limitation is that due to the size and distribution of race in our sample, only Black and White children were included. Children were selected for the study based on their teachers' initial ratings of their disruptive behavior, which would potentially be impacted by implicit bias. Although the proportions of White and Black children selected were similar to the overall proportions of White and Black children across the entire sample, it is possible that there was bias in those initial ratings. The measure of exclusionary discipline is new and was only administered at the end of the year. Finally, the outcome variables are teacher-reported; it is possible that teachers may be reporting differences in how they employ discipline

strategies, but that there are no actual differences in how they are applying them in the classroom.

Conclusions

Results from this study represent an important step in better understanding how preschoolers displaying disruptive behavior are rated and disciplined differently based on their own and their teacher's race. This is an important area of investigation given the deeply concerning disparities in exclusionary discipline practices that are removing children from instructional time. While the findings reveal a pattern of differences based on teacher and child race, it will be important moving forward to begin to identify the mechanisms behind these differences in order to work towards closing the racial discipline gap. Future research should examine whether these findings are replicated in other preschool samples, as well as in older grades, as well as using additional measures to further clarify the mechanisms behind these findings.

Figure 1. *Trajectories of disruptive behavior over the year by teacher/child race combinations.*

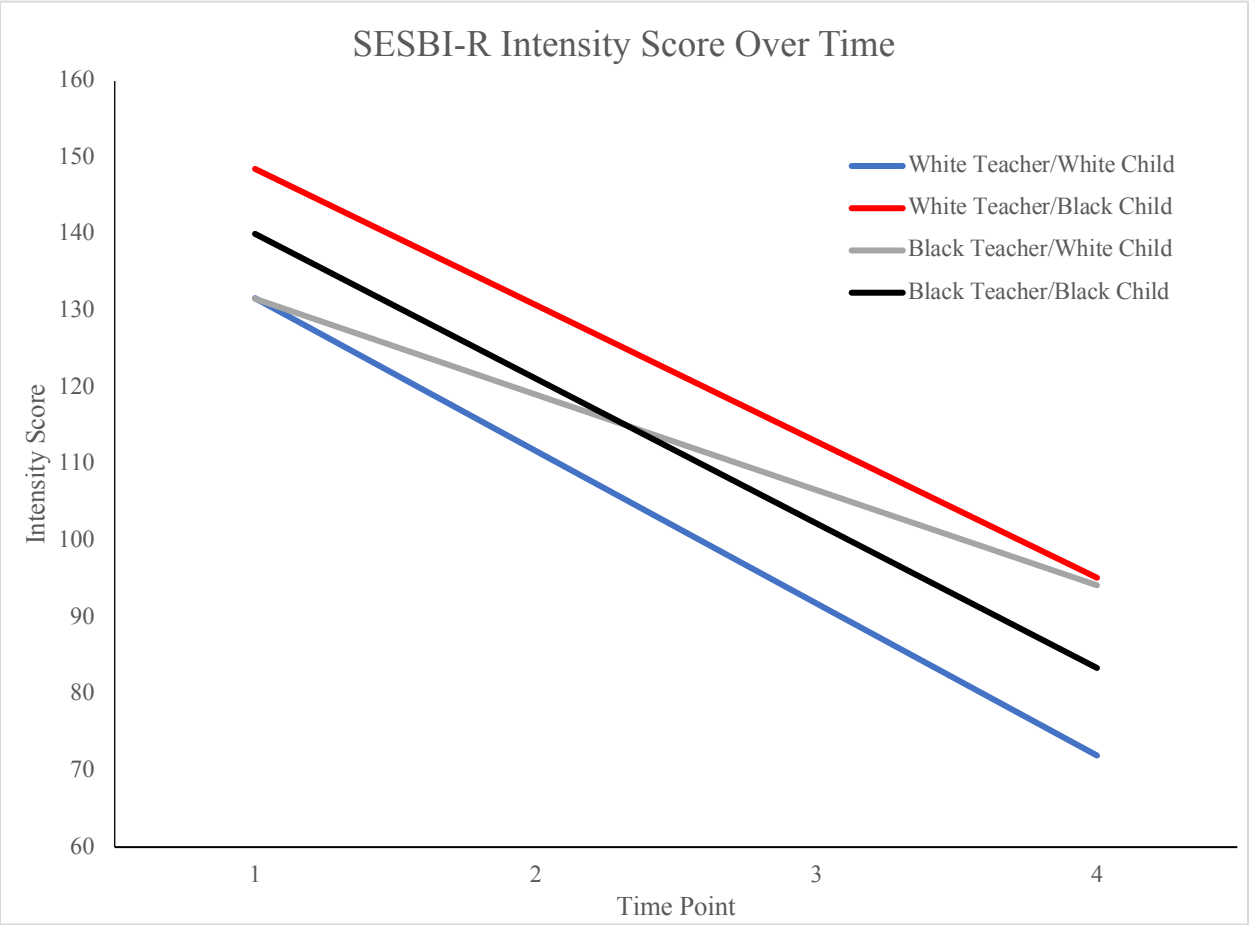

Table 1. *Time points for data collection for each of the three children in each classroom.*

Window for which child was randomly selected	Time point 1 Beginning of school year	Time point 2 Winter	Time point 3 Early spring	Time point 4 End of school year
Window 1	Child and family demographic Teacher Demographic Teacher report of disruptive behavior	Teacher report of disruptive behavior	Data purposely missing	Teacher report of disruptive behavior Teacher report of exclusionary discipline practices
Window 2	Child and family demographic Teacher Demographic Teacher report of disruptive behavior	Teacher report of disruptive behavior	Teacher report of disruptive behavior	Teacher report of disruptive behavior Teacher report of exclusionary discipline practices
Window 3	Child and family demographic Teacher Demographic Teacher report of disruptive behavior	Data purposefully missing	Teacher report of disruptive behavior	Teacher report of disruptive behavior Teacher report of exclusionary discipline practices

Table 2. *Teacher ratings of disruptive behavior over the preschool year.*

	Intensity of Problem Behavior		Degree to Which Behavior is a Problem	
	Slope (SE)	Average (SE)	Slope (SE)	Average (SE)
Level 1				
Time	-3.42 (0.83)***		-1.23 (.21)***	
Level 2				
Black Teacher/Black Child	1.01 (3.59)	8.40 (8.10)	-.13 (.68)	.64 (1.92)
Black Teacher/White Child	7.43 (3.07)*	-.07 (10.32)	.53 (.75)	-.02 (1.97)
White Teacher/Black Child	2.11 (3.04)	16.88 (7.16)*	.72 (.71)	2.75 (1.36)*
Child Age	.11 (.14)	-.21 (.45)	-.02 (.03)	.07 (.08)
Gender (Male)	.24 (1.54)	12.00 (4.78)***	.02 (.30)	1.09 (.88)
Income-to-needs Ratio	-.33 (.71)	-2.02 (2.36)	.11 (.14)	-.55 (.40)
Level 3				
Banking Time	-1.99 (1.96)	-1.18 (6.84)	-.32 (.51)	.94 (1.71)
Child Time	-1.27 (6.88)	-8.63 (6.69)	.22 (.51)	.58 (1.67)
Teacher Age	-.01 (.10)	.06 (.27)	-.02 (.02)	.00 (.07)
Teacher Years of Education	.67 (.50)	2.56 (1.76)	.18 (.13)	.66 (.45)
Teacher Years of Experience	.06 (.13)	-.63 (.42)	.04 (.03)	-.12 (.10)
Classroom % Black	-1.35 (4.76)	-30.39 (16.68)	1.82 (1.07)	-10.77 (4.74)*
Classroom % White	2.60 (4.22)	-18.52 (16.32)	.81 (1.17)	-8.68 (3.99)*

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

Table 3. *Teacher-reported use of exclusionary discipline practices at the end of the year.*

	End of Year Exclusionary Discipline Estimate (SE)
Level 1	
Black Teacher/Black Child	.74 (1.18)
Black Teacher/White Child	2.77 (1.20)*
White Teacher/Black Child	2.32 (.96)*
Child Characteristics	
Child Age	.04 (.04)
Gender (Male)	1.65 (.57)***
Income-to-needs Ratio	-.01 (.31)
Level 2	
Banking Time	.41 (.82)
Child Time	-.21 (.75)
Teacher Age	-.06 (.04)
Teacher Years of Education	.45 (.20)*
Teacher Years of Experience	-.01 (.05)
Classroom % Black	-4.06 (3.21)
Classroom % White	-1.56 (3.12)

*$p < .05$

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Paper 2: What to Know and What to Do About 'Soft' Exclusion in Early Childhood

(Wymer, Williford, & Lhospital, 2020; *expected publication July 2020 in Young Children*)

Abstract

Exclusionary discipline practices are both harmful and disproportionately applied to children of color. New research points to the widespread problem of "soft" exclusionary practices. This article provides practical alternatives that can be applied equitably, maximize children's learning opportunities, preserve teacher-child relationships, and help children learn to better regulate their behavior.

When hearing the words *suspension* and *expulsion*, most people do not think about children 5 and under. However, young children in state-funded preschool settings are expelled at three times the rate of K–12 students, and children in private and community programs are expelled at even higher rates (US Department of Education, 2016; Gilliam 2005, 2006). Both suspension and expulsion are forms of exclusionary discipline practices, or practices that remove a child from the learning opportunities available in the classroom (Noltemeyer & Mcloughlin 2010). Being suspended or expelled as a child increases an individual's chances of later dropping out of school, earning less money as an adult, and even becoming involved in the criminal justice system (Pascoe & Smart Richman 2009; Monahan et al. 2014).

What makes the use of exclusionary discipline even more problematic is that racial and ethnic minority children are much more likely to experience exclusionary discipline than White children. In preschool, Black children are twice as likely to be expelled as White children, and 42 percent of suspended preschoolers are Black, even though only 18 percent of all preschoolers are Black (USDHHS 2014). Research shows that these disproportionalities are not because Black children display worse behavior than their White peers (Bradshaw et al. 2010; Skiba, et al. 2011; that is, the different rates of discipline are not caused by different rates of behavior problems. Thus, these disproportionalities may well be due to explicit and implicit racial biases teachers have against Black children.

Because of the short- and long-term negative consequences of suspending and expelling young children, particularly children of color, many national organizations—including NAEYC—and federal agencies such as the Department of Education and the Department of Health and Human Services have called for an end to suspensions and expulsions in early childhood. Some states and school districts have put policies in place to prevent or severely limit

the use of exclusionary discipline, such as the elimination of suspensions for children pre-K through second grade by Chicago Public Schools in 2014. While policies to minimize the use of suspensions and expulsions in early childhood are an important step, eliminating those disciplinary strategies as an option does not necessarily help teachers manage negative behaviors in the classroom more effectively. In fact, even if suspensions and expulsions are eliminated, students may still be excluded in more subtle ways.

Ms. Lawson hears yelling across the pre-K classroom during center time. She looks up and sees two children, Caleb and Michael, struggling over a toy. She immediately knows who must have started this: Caleb. Caleb is often out of sync with the rest of the class during transitions, fights with his peers, and refuses to follow instructions.

Ms. Lawson feels as though she is constantly calling out Caleb's name, needing to redirect or reprimand him repeatedly. This keeps her from providing instruction to or having meaningful interactions with the rest of the class, and it does not seem to be helping Caleb behave better. She has regularly voiced her concerns to the director but has received no help or support.

She calls over, "Caleb, give Michael back the toy." Caleb scowls and pushes Michael. Ms. Lawson hurries over, yelling, "No, Caleb!" She grabs his hand and walks with him to the classroom of younger students next door. She knows Caleb will entertain himself with the toys there and she can focus on the other children back in her classroom.

"Soft" exclusionary strategies are not official suspensions or expulsions but still result in children being excluded from learning opportunities. We define *soft exclusionary practices* as

any practice that reduces or eliminates the opportunity for a child to learn from the activity or experience they should be engaged in during the school day. This could include sending a child to a different classroom (as Ms. Lawson did with Caleb), putting a child in time-out, or assigning a child to "silent lunch." Even more subtle strategies, like moving a child away from the rest of the class during story time, where the child can still hear the teacher but not see the book, lessen the child's ability to participate and learn from experiences in the classroom. While the child is still at school, they are not fully participating in the classroom environment. In Caleb's case, he receives little instruction and few opportunities to engage with peers while he is in the other classroom with younger children.

These practices happen frequently in early childhood classrooms. Managing negative behaviors in the classroom is one of the most stressful parts of a teacher's job, so it's understandable that teachers use strategies like removing the child to try to quickly stop a behavior and end a challenging situation.

Sometimes strategies that temporarily remove a child from a learning environment can be recommended and, in theory, may be effective—if they are used properly. For example, having a child go to a calm-down space in a classroom does remove the child from instruction but is seen as an effective strategy if the child is truly able to use that space to regulate their emotions or behavior and quickly rejoin classroom activities. However, a child sent to a calm-down space who doesn't understand how to calm down essentially experiences a lengthy time-out. Another child may opt to repeatedly return to the calm-down space to avoid certain situations, such as challenging learning tasks. In both cases, the children miss out on opportunities to learn and grow in self-regulation and task-related skills. Soft exclusionary discipline practices reduce a child's access to learning opportunities related to an activity and rarely provide opportunities for

the child to build stronger self-regulation skills.

Repeatedly removing a child from learning activities can also perpetuate cycles of negative teacher−child interactions, damaging the relationship. This is concerning because positive teacher−child relationships play a critical role in children's learning experiences. For a child to develop the full range of skills needed to be successful in school—academic, behavioral, emotional, and social skills—a warm, supportive, and sensitive teacher−child relationship is essential (Pianta 1999).

Strong relationships are even more important for young children who find classroom settings challenging (Hamre & Pianta 2005; Baker, Grant, & Morlock 2008; Sabol & Pianta 2012; Hamre 2014). From the children's perspectives, being excluded can make them feel as though the teacher does not like them. A child who struggles to regulate their behavior is often repeatedly in this situation, setting a negative tone in the teacher−child relationship. Lacking self-regulation skills and being stuck in a negative cycle with the teacher, the child continues to behave in the same way (or even worse), resulting in escalating exclusion and frustration for everyone.

> *Caleb has had another rough day at school, hitting his peers and taking their toys. Ms. Lawson is not sure how to get his behavior back under control and doesn't think he is getting anything out of being in the classroom when he is like this. She calls his mom to see if she can pick him up. As he waits for his mom in the office, Caleb feels upset thinking about how he is going to miss outside time with his friends. His mom is clearly frustrated when she picks him up, which makes him feel even worse.*
>
> *Caleb's mom doesn't know how she is going to manage her work schedule*

with having to pick up Caleb so often; she isn't sure how much longer this can work. She spends the drive home lecturing Caleb about how he needs to be good at school and respect Ms. Lawson.

This is the message, as Caleb interprets it: He gets sent home because he's bad and because Ms. Lawson doesn't want him around.

Over time, the situation can become unsustainable for families like Caleb's, who have to find alternative child care arrangements and leave work to pick up their children. Eventually, the children may be moved to new settings where they have a good chance of experiencing the exact same problems because they have not learned how to better self-regulate, and now also have negative expectations for school and for the new teachers. Instead of early childhood education setting these children up for success, the children have a more negative view of school, teachers, and themselves than if they had never attended school at all—all before entering kindergarten.

Racial bias in discipline practices

The disproportionate rates of exclusionary discipline for children from racial and ethnic minority groups extend to soft exclusionary practices. In one study looking at a range of disciplinary strategies in preschool classrooms, Black students with White teachers were significantly more likely to experience soft exclusion than were White students (Wymer & Williford 2018). One potential cause of this difference in discipline rates is implicit bias.

Implicit biases are unconscious attitudes, beliefs, and stereotypes that everyone has. We all have unconscious biases related to race, gender, disability status, and other social groups. In contrast to *explicit biases*, in which a person is aware of the bias, implicit biases are not intentional and, in fact, may be completely contrary to what the person consciously believes.

We develop implicit biases from an early age as we are exposed to direct and indirect

messages in our cultures. Even though we are unaware of these biases, and even if they are not beliefs we would consciously agree with, implicit biases affect our actions and decisions. In the United States, pro-White and anti-Black messages are pervasive in history and culture. Like the majority of Americans (Schmidt & Nosek, 2010), teachers tend to have more positive biases toward White students and more negative biases toward non-White students (Van den Bergh et al. 2010; Glock & Karbach 2015; Hartlep 2015). There are exceptions; for instance, research on the effects of race matching on school exclusion indicate that teachers of color treat children of color more equitably (Lindsay & Hart 2017).

Teachers, on average, may unconsciously view and interpret Black children's behaviors in a way that leads to more discipline. In one study, preschool teachers were asked to review classroom footage and look for challenging behavior; those teachers spent more time watching Black children than White children and spent the most time watching Black boys in particular (Gilliam et al. 2016). It appears that due to implicit biases, teachers may unconsciously expect to see more negative behaviors from young Black children, so they observe those children more and may be more likely to interpret their behavior as a problem (Okonofua & Eberhardt 2015).

Because exclusionary discipline practices are both harmful and disproportionately applied to certain groups of children, we need to look for better techniques—techniques that can be applied equitably, maximize children's learning opportunities, preserve positive teacher−child relationships, and help children learn to better regulate their behavior without the serious downsides associated with exclusionary techniques.

Practical alternatives

While states, organizations, and school districts may take steps to reduce the use of harsh exclusionary discipline practices such as suspension and expulsion, teachers are the most

essential element in creating successful educational experiences for children in the classroom and minimizing the negative impacts of implicit bias and exclusionary discipline in schools.

Early childhood educators welcome children into their classrooms at a critical age for social, emotional, and cognitive development and set the tone for children's future school experiences. More than anyone, teachers know how important their work is in preparing children to be successful in school and in life beyond their classrooms, and they often sacrifice incredible amounts of time and effort to make sure their students reach their full potential. The harm done by using exclusionary strategies is exactly the opposite of what most teachers intend, so what steps can teachers take to help their students be successful while still safely managing negative behaviors in the classroom?

Four steps for addressing implicit biases

While everyone has implicit biases, those biases do not have to be permanent. Research has shown that unconscious biases can be changed and steps can be taken to reduce their impact on our behavior (Dasgupta 2013).

1. **Understand implicit bias:** It's hard to open ourselves to thinking and talking about bias at first. When certain biases, such as those against different racial or ethnic groups, are discussed, it can make people feel defensive and as though they are being accused of holding explicit racial biases—of "being racist." Implicit biases, however, are a result of normal human cognitive processes.

   Noticing differences between people is completely normal; human cognition involves quick categorizing. From a young age, we are exposed to direct and indirect messages about those differences; being saturated with negative messages about people from racial and ethnic minority groups often leads to holding

unconscious biases, even if they conflict with conscious beliefs. Understanding how biases come to exist and that they do not necessarily reflect our conscious beliefs is an important first step toward being able to look at and challenge those biases.

2. **Increase self-awareness:** After we understand that everyone has implicit biases that can arise even if we do not consciously agree with them, the next step is learning to recognize them in ourselves. This can be accomplished by learning about what biases most people hold, by reflecting on what messages we received growing up about different groups of people, and even by taking a test that measures biases (e.g., the Implicit Association Test: https://implicit.harvard.edu/implicit/takeatest.html). The more we become aware of a bias, the less chance it has to unconsciously influence our decision making.
3. **Discuss and reflect:** Having conversations about bias, particularly with people from different groups, can help us better know and explore our own biases and also help others recognize and understand their biases. Initially, people often find it very uncomfortable to talk about biases and how they impact behavior. Part of the work in exploring biases is learning to become comfortable with being uncomfortable in order to make progress. It is important when exploring these issues to set up a space in which people do not feel judged or attacked when being open and vulnerable.
4. **Use research-based strategies that minimize bias:** Implicit biases are most likely to impact behavior in ambiguous situations. For example, a lack of a clear policy about when a child should be removed from a classroom leaves that issue

open to interpretation, allowing biases to influence if and when a child is removed. One way to minimize bias is to collect meaningful data and make decisions based on those data rather than on impressions. Data can be used to monitor progress, to determine when a child needs additional support, and to track whether there are disparities in how interventions and consequences are being administered. Some useful resources for learning about effective strategies for discipline and ways to reduce bias include

- National Clearinghouse on Supportive School Discipline
  https://supportiveschooldiscipline.org
- The National Center for Pyramid Model Innovations
  www.pyramidmodel.org
- Teaching Tolerance
  www.tolerance.org

Three key positive behavioral interventions

Effective classroom management is key in addressing challenging behavior. Although an in-depth discussion of behavior management is beyond the scope of this article, the important components include setting children up to be successful, acknowledging and rewarding success, and teaching new skills. Here are some strategies that can help reduce discipline disparities:

- **Focus on relationships:** Children who struggle to meet classroom demands and who are sometimes viewed as disruptive or challenging are less likely to share a sensitive and supportive relationship with their teacher. This lack of connection leads to a cycle of negativity between the teacher and child that worsens over time. Unfortunately, young children are also less likely to have a positive relationship with teachers of a

race different from their own (Saft & Pianta 2001; C. Murray, K.M. Murray, & Waas 2008).

To prevent negative interaction cycles and to provide a warm, supportive relationship to children who need the most help, teachers can focus on building a more positive relationship with the students who are struggling most in the classroom. One research-backed strategy is Banking Time (Pianta & Hamre 2001), an intervention designed to support teachers in developing close, positive relationships with target students. A few times a week, the teacher and individual children spend one-on-one time together during brief (10−15 minute), student-led sessions called Banking Time. During each session, the teacher interacts with the child in a specific way (e.g., asking limited questions, labeling the child's emotions) that helps both the teacher and the child change how they perceive each other. Banking Time has been shown to decrease preschoolers' disruptive behaviors over the school year (Williford et al. 2017).

- **Understand the *why* of behavior:** When a child is not meeting classroom expectations, it is essential to look for the reason behind the child's behaviors. After the teacher knows the reason (e.g., the skill deficit, the function of the behavior), they can then know how best to respond, such as by teaching a replacement behavior or providing extra scaffolding. Maybe the child tends to struggle when given a motor task he finds challenging, such as cutting with scissors. Providing the child with additional support, such as coaching the child on how to grip the scissors, using thicker paper that is easier to cut, or encouraging the child to ask for help when something is too hard, is a much more effective plan than punishing them when they

become frustrated and act out. Taking the time to consider possible actions reduces the chance that implicit biases can influence an in-the-moment decision.

- **Implement restorative practices:** When negative behaviors cannot be ignored, instead of using punishment, teachers can put in place *restorative practices*, or practices that focus on repairing the harm caused by a behavior. Restorative approaches are being used more and more in schools, and while most of the research has focused on older students, there is evidence that this approach to discipline may help narrow the racial discipline gap (Gregory et al. 2014). An example in an early childhood setting would be bringing back to the block area a child who knocked over another child's block construction and having that child help the harmed child clean up. The solution is logical and focuses on fixing any harm that was done rather than punishing the child. If no harm was done, this may be an example of something to let go!

Closing thoughts

Caleb has been grabbing toys out of his peers' hands. Ms. Lawson checks in with Caleb's mom about whether she has observed that same behavior and how she responds. Caleb's mom tells Ms. Lawson that Caleb has much older brothers, so he doesn't usually have to share his toys.

Ms. Lawson knows that she often gets frustrated with Caleb and has started thinking of him as aggressive, and she is working on changing her relationship with him. She decides to test the idea that maybe Caleb just needs some help in learning how to ask for toys more appropriately. The next day, Ms. Lawson takes Caleb aside to play a new game. She has collected some of his

favorite toys and has Caleb practice asking her to play. Ms. Lawson gives Caleb enthusiastic praise when he asks. She then recruits another child to play with them, and they take turns practicing asking each other to play together.

Later in the day, Ms. Lawson notices that Caleb appears frustrated while watching a peer play with a toy he likes. She calls Caleb over and whispers in his ear a reminder about how to ask to play with a friend. Caleb goes back to his peer and asks if he can play; the child says yes, and Caleb sits down. Ms. Lawson smiles at Caleb and later tells him how proud she is of the way he asked politely and played so well with his friend.

Addressing our implicit biases and managing children's difficult behavior in the classroom are both challenging tasks. However, the strategies discussed here are both effective and essential for preventing the harm exclusionary discipline techniques do to all students—and to students of color in particular. While the strategies may require new ways of thinking about and doing things, the time and effort spent in implementing them will be invaluable to children who previously may have been set on very negative paths by being excluded from school.

Teachers' positive relationships with children they find most challenging are critical to those children's success. Finding ways to maintain a strong relationship while keeping a child engaged in learning opportunities makes the difference between the child entering elementary school already believing that they don't belong in the classroom and a child who is ready to learn and grow.

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Paper 3: Links Between Teacher and Child Race and Academic Skill Growth in Preschoolers

Abstract

Teacher/child race match has been shown to relate to children's academic outcomes in K-12 students, with studies indicating that racial/ethnic minority children have better educational achievement when they have teachers of their same race. However, little research has focused on the links between teacher and child race and child outcomes in preschool-age children, which is concerning given the increasing racial and ethnic diversity in the United States and the importance of preschool in remediating educational disparities between races. The current study examined whether teacher and child race are linked to gains in children's directly assessed math and reading skills during preschool. Additionally, the study examined whether teacher/child interactions mediate the relationship between race match and academic skills. In contrast to previous literature in K-12 children, results indicated that teacher and child race and race match were not associated with gains in reading and math readiness skills or how teachers and students interact in the classroom. Findings extending the research on race and academics to younger children and by being one of the limited number of studies that examines a potential mechanism for any links.

Links Between Teacher and Child Race and Academic Skill Growth in Preschoolers

Upon entry into kindergarten, many children are already far behind their peers in a number of fundamental skill areas such as emerging language and literacy and math skills (Duncan et al., 2007; Snow & Van Hemel, 2008). Early achievement gaps predict long-lasting negative outcomes (Burchinal et al., 2011; Ferrer et al., 2015). In the United States, there is a substantial achievement gap between White and Black children, with Black children scoring significantly lower on achievement tests (NCES, 2018). Recently, there has been an increasing focus on attempting to reduce these disparities before children start kindergarten during the preschool year (Heckman, 2006; Loeb & Bassok, 2008). However, there is evidence from research on K-12 students that the race match or mismatch of a teacher and child can alter a child's educational experience; the interaction between a teacher and child's race/ethnicity is related to academic achievement (Dee, 2004), referrals to special education and gifted/talented programs (Elhoweris, Mutua, Alsheikh, & Holloway, 2005), and discipline (Skiba et al., 2011). The majority of the research conducted around the links between race match and student outcomes has been concentrated in middle- and high-school students. This is despite evidence that race matters for younger students; the experience of having even one same-race teacher in K-3 increases high school graduation and college attendance rates (Gershenson, Hart, Hyman, Lindsay, & Nicholas, 2018). Additionally, the mechanisms through which race match or mismatch influences student outcomes are rarely identified, providing little insight into how to intervene to ensure that all students have access to high-quality early education that prepares them for kindergarten entry. In this paper, I examined the relationship between teacher and child race match and academic outcomes in the preschool setting, as well as explored whether positive

engagement with the teacher mediates the relationship between race match and academic skill growth over the school year.

Preschool and Academic Skills

Children who enter kindergarten with less-developed academic skills are at risk for long-term negative outcomes, such as lowered academic achievement, high school drop-out, and involvement in the criminal justice system (Cameron & Heckman, 2001; Reynolds et al., 2011). In order to combat the persistence of achievement gaps and the associated negative impacts, effective early childhood education programs have been identified as leverage points to intervene during a time of rapid growth and development in a child's life (Early et al., 2007; Reynolds et al., 2011). During preschool, foundational school readiness skills are newly developing and are particularly malleable to interventions (Heckman & Masterov, 2007; McClelland, Geldhof, Cameron, & Wanless, 2015). Attending preschool is associated with stronger math and literacy skills at kindergarten entry (Magnuson, Ruhm, & Waldfogel, 2007), which is important because early math and literacy skills predict later math and reading achievement (Duncan et al., 2007). As preschool attendance is higher than it has ever been in the United States (Barnett et al., 2014), the preschool context is an ideal setting to help promote skills for children at risk for low achievement.

Some groups of children are at particularly high risk for lower academic achievement. Achievement gaps exist for children from families living at or near the poverty line as compared to children from higher-income families, as well as racial and ethnic minority children as compared to White children (Reardon, 2011). There is a vast array of factors that contribute to a child's educational outcomes; one factor that has drawn increasing attention in recent years is the race/ethnicity of the teacher and students. Preschool teachers are majority White (72%; US

Census Bureau 2017), which is in stark contrast to the increasing racial and ethnic diversity of young children (49% White; Kids Count, 2018). This mismatch is important to consider given research findings that the race match or mismatch of teachers and students is associated with differences in how teachers perceive and respond to their preschool students (Downer et al., 2016; Gilliam et al., 2016; Yates & Marcelo, 2013). However, little research has examined how preschooler's academic skills are related to the race match or mismatch with their teacher, despite findings that these outcomes are impacted in older students (Dee, 2004; Egalite, Kisida, & Winters, 2015).

Teacher and Child Race Match and Academic Achievement

Studies demonstrate that teacher and child race relate to how teachers perceive their students, including student achievement, behavior problems, and the teacher-child relationship (e.g., Bates & Glick, 2013; Downer et al., 2016; Saft & Pianta, 2001), which is of concern because systematically differing evaluations of students based on racial/ethnic backgrounds may contribute to disparities in educational outcomes (Bates & Glick, 2013). While much of the race match literature has centered around differences in perceptions and attitudes, studies show that teacher and child race impact academic achievement; the vast majority of these studies were conducted with K-12 students. For example, Dee (2004) examined whether Black and White elementary school students randomly assigned to classrooms of different sizes as part of a state-wide experiment were affected by being assigned to same- or different-race teachers. Results showed that both Black and White students' math and reading achievement were improved for students assigned to a race-matched teacher. In another study, the same effects were found for reading and math achievement for children in third through tenth grade, with even stronger effects on achievement for Black and White students who were lower-performing assigned to

same-race teachers (Egalite, Kisida, & Winters, 2015). These differences in achievement can have long-term consequences for children; Gershenson and colleagues (2018) found that Black students assigned to Black teachers during K-3 were significantly more likely to graduate from high school and enroll in college than Black students who did not have a Black teacher during that age range, demonstrating that the effects of having a same-race teacher in elementary school have far-reaching impacts. With this research indicating that race match matters for even kindergarten students, there is clearly a need to examine race match in early childhood education experiences.

Currently, there is a gap in the literature around the links between academic outcomes and race in preschool-age children. Few studies have examined the links between teacher and child race and directly assessed academic outcomes; in one study, non-English proficient Latinx preschoolers with Latinx teachers made greater gains in language and literacy skills than those with White teachers, and Black teachers rated the academic skills of Black children as stronger than White teachers rated Black children (Downer, Goble, Myers, & Pianta, 2016). However, the majority of studies on teacher and child race in preschool have focused on how differences in how teachers perceive and rate children, such as their educational and social adjustment (Yates & Marcelo, 2014) and teacher/child relationship quality (Saft & Pianta, 2001), rather than directly assessed outcomes. While these studies indicate that teacher and child race are linked to differences in how teachers perceive and engage with preschool children, there remains uncertainty about whether the findings related to academic outcomes in K-12 students extend to the preschool year. Given the relationship between children's preschool experiences and future academic achievement (Slaby et al., 2005), it is important to further investigate whether race is linked to growth in academic skills in preschool children as it is with older students.

Possible Mechanisms of Race Matching Effects

While there is significantly more research on the relationship between race and academic skills in older students as compared to preschoolers, even in K-12 students, there remains uncertainty about *why* teacher and child race are related to the growth of academic skills. There are two general mechanisms by which race match between K-12 students and their teachers are hypothesized to impact outcomes: "passive" and "active" teacher effects (Dee, 2005). *Passive* effects are those that are a result of a teacher's race/ethnicity but not due to any difference in how a teacher is behaving towards or thinking about a student. One example of this is the "role model effect," in which a child's contact with an educated, successful professional of the same race as themselves increases their view of what they can achieve academically (Gershenson et al., 2018). In contrast, *active* teacher effects are those that are based on differences in how a teacher perceives and interacts with a child (Dee, 2005; Ferguson, 1998). These differences in perception are then assumed to impact how teachers and students interact in a way that impacts achievement, but few studies directly examine the actual mechanism of change.

The majority of research on race matching effects in younger students has been concentrated on differences in teachers' perceptions of younger students, which are hypothesized to have active effects on student outcomes. As an example, preschool and kindergarten teachers tend to perceive their relationships with students as more positive when they share the same race as the student (Murray, Murray, & Waas, 2008; Saft & Pianta, 2001). Rimm-Kaufman, Pianta, and Cox (2000) found that in schools with higher minority composition, White teachers were more likely than minority teachers to report certain problems for children entering kindergarten (e.g., "difficulty following directions" and "immaturity"). Bates and Glick (2013) found that Black kindergarten students were rated as having more externalizing behavior problems when

being taught by White teachers than when taught by Black teachers. Similarly, Downey and Pribesh (2004) found that White kindergarten teachers rate Black students as having more externalizing behavior and lower approaches to learning, an important school readiness skill, than White students. In a study on preschoolers, Black teachers perceived Black students as having higher initial language/literacy skills than White teachers did (Downer, Goble, Myers, & Pianta, 2016). Taken together, these studies have demonstrated that teacher and child race do matter for how teachers perceive young children, but provide little insight into how those perceptions translate into differences in how teachers and children interact in the classroom.

Altered teacher perceptions are hypothesized to impact how teachers behave towards their same- and different-students (Dee, 2005; Ferguson, 1998), but studies on teacher behavior and teacher/child interactions remain limited in the race match literature overall, with even less work in preschool. Additionally, the majority of work has been lab- or vignette-based (e.g., Elhoweris, Mutua, Alsheikh, & Holloway, 2005; Gilliam et al., 2016) rather than reflecting actual classroom interactions. Those studies that do include direct observation of classrooms are focused on very discrete teacher behaviors (e.g., teacher praise; Tenenbaum & Ruck, 2007), rather than the dynamic, reciprocal interactions that occur between teachers and children. This represents a further gap in the research literature, as the ways in which teachers and children engage with each other drives children's skill development (Hamre & Pianta, 2001; Pianta & Stuhlman, 2004; Williford, Whittaker, Vitiello, & Downer, 2013). Children's skills develop within a context (Bronfenbrenner & Morris, 1998; Vygotsky, 1978), with interactions between a teachers and children functioning as a primary driver of skill development (Hamre & Pianta, 2007). Higher quality teacher-child interactions are associated with greater gains in academic skills (e.g., Birch & Ladd, 1997; Cadima, Leal, & Burchinal, 2010; Mashburn et al., 2008).

When children are more positively engaged in the preschool classroom, they make greater gains in school readiness skills (Williford et al., 2013). With research indicating differences in how teachers behave towards students of different races, in combination with literature centering around differences in how teachers perceive children based on race, there is reason to believe that previous findings that race match impacts academic achievement could be due to discrepancies between the interactions between race-matched and -mismatched teachers and children. Therefore, it is important to directly investigate both whether there is divergence in how teachers and children engage with each other in the classroom and whether this divergence relates to differences in academic skill growth.

The need for this research is increasing, as racial and ethnic minority students often are taught by White teachers, with 80% of public school teachers identifying as White (NCES, 2017). While there has been a gradual increase in racial and ethnic minority teachers, this has been greatly outpaced by the increasing diversity of students (US Department of Education, 2016; Villegas, Strom, & Lucas, 2012). Because of the likelihood that racial and ethnic minority students will be taught by White teachers, reducing the racial achievement gap requires that we better understand the impacts of race match/mismatch and the mechanisms at play so that appropriate interventions and supports can be put in place to address these inequalities. For example, if teachers interact and engage differently with students of a different race/ethnicity, efforts can be focused on altering those interactions.

Current Study

The current study examined whether teacher and child race are related to preschooler's directly assessed academic skill gains made during the preschool year. Additionally, we investigated whether teachers' and children's observed engagement with each other in the

classroom differs by race and race match, and whether those discrepancies mediate the relationship between race match and academic skills. The following are specific research questions.

1. Are children's gains in directly assessed academic skills linked to their race? Is having a race-matched teacher associated with greater gains? Literature in K-12 students indicate that race and race matched are linked to academic gains such that Black students with Black teachers make greater gains than Black students with White teachers, so this question explores whether those associations extend into preschool-age children.

2. Do children's observed interactions with their teachers in the classroom differ by race and in race-matched vs. mismatched classrooms? Past literature has indicated that children have more positive interactions with same-race teachers, and engage in differential rates of behaviors like reprimands and praise based on race, and so this question explores whether the overall quality of interactions looks different by race between preschool-age children and their teachers.

3. If there is a relationship between race, race match, and academic outcomes, is that relationship mediated by interactions with the teacher? If the associations that exist in the K-12 literature extend into preschool, this question explores whether there is an active effect in the form of differential teacher interactions that mediates those associations.

Method

Participants

The current study involves secondary data analysis on data collected as part of a longitudinal observational study of children's preschool and kindergarten experiences across two cohorts of children and their preschool and kindergarten teachers within 101 classrooms. This study includes data from both cohort's preschool year. There were 380 children selected for the study in Cohort 1, and 387 children in Cohort 2. The majority of children were either non-

Hispanic Black (52.4%) or White (22.1%). The remainder of the sample was 12% Hispanic (any race), 3.6% Asian, and 10.9% were two or more races or another race. Teachers were also primarily White (65.7%) or Black (29.4%), with 2.9% identifying as Hispanic and 2% as two or more races. Because of these distributions, nearly all children identifying as a race other than White or Black were in non-race-matched classrooms. Because of this, only White and Black children and teachers were included in the current study due to the small number of children and teachers identifying as another race.

The sample selected for this study included 507 children, with 70% of children identified as Black, non-Hispanic and 30% as White, non-Hispanic. Children were on average 52.8 months old and 50.8% were male. The average income-to-needs ratio was 1.40, with 44% of children at or below the poverty line. The children were in 96 classrooms, with 33% of teachers identifying as Black. Of White children, 76% were in a classroom with a White teacher, while 24% were in a classroom with a Black teacher; 36% of Black children were in a classroom with a Black teacher and 64% were in a classroom with a White teacher. Teachers were mostly female (98%) with an average age of 44.5 years old. They had an average of 16.3 years of teaching experience; 96% of teachers had at least a Bachelor's degree, and 48% had a master's degree. Table 2 displays descriptive data on the selected teachers and children.

Procedures

Recruitment. ***School Districts.*** Administrators in school divisions in the southeastern United States were invited to participate in a study on children's preschool and kindergarten experiences. Two state-funded preschool programs and one Head Start program across two geographic regions participated in Cohort 1, and one of the public preschool programs and the Head Start program continued participation in Cohort 2.

Teachers. Initially, preschool teachers in the school districts were asked to consent to participate in the study. Fifty teachers were selected to participate in Cohort 1. These teachers were recruited from two public school districts and one Head Start program; in one district, all preschool teachers in the district consented and were selected, while in the larger district and Head Start programs, participating teachers were randomly selected from the pool of consented teachers. For Cohort 2, only teachers from the larger school district and Head Start program were recruited; all teachers who met eligibility criteria (e.g., were general education preschool teachers) were selected to participate. If a participating teacher left during the school year (e.g., medical leave, moving), the new or substitute teacher was invited to participate in the study.

Children. After a teacher agreed to participate, consent forms were distributed to all of the children in each classroom. There was average of 18 (.83) children per classroom. The average consent rate was 55% in Cohort 1 and 48% in Cohort 2. The goal was to randomly select 8 children from each classroom; however, not all classrooms received more than 8 consents, so in some classrooms, all children who consented were selected for the study. There were also some classrooms with fewer than 8 children due to a low consent rate. In Cohort 1, 19 of 50 classrooms had eight or fewer consented children, meaning all children who gave consent were selected. Cohort 2, 16 of 51 classrooms had 8 or fewer children consented.

Data collection. Data collectors completed classroom observations and conducted direct assessment of children's skills during a six- to eight-week window in the fall, winter, and spring.

Observations. Prior to beginning data collection, observers attended intensive trainings on both the Classroom Assessment Scoring System (CLASS; Pianta et al., 2008) and the Individualized Classroom Assessment Scoring System (inCLASS; Downer et al., 2010). Both trainings involved practice coding of training videos and passing a reliability test before being

approved to code in the field. During each data collection window, data collectors completed six 10-minute observations of selected children's individual engagement (inCLASS) and six 15-minute observations of the teacher's interactions with the entire class (CLASS). Approximately 20% of observations were double coded and pairs of data collectors met to discuss any discrepancies in codes and reach consensus. Before and during each data collection window, regular reliability checks were conducted to ensure observer fidelity to the observation protocol and scoring.

Direct assessments. Data collectors who were completing direct assessments with the children attended a training on how to administer the various assessments to children, including opportunities to practice administration and scoring. They were trained on assessments of children's academic, executive function, and language skills. This study uses data from the academic skill assessments, which were conducted during the fall and spring data collection window.

Surveys. In the fall, parents completed a demographic questionnaire that asked about children's race/ethnicity, gender, family income level, household size, and the child's age. Teachers completed a survey on their own demographic information, including race/ethnicity, years of teacher experience, and education levels. In addition, they provided information about their classroom composition and qualities, such as the gender and race/ethnicity composition of the students in their classroom and time spent on different types of academic instruction. At each data collection window, teachers also completed questionnaires about participating children in their classroom.

Measures

Woodcock-Johnson Tests of Achievement III (WJ-III; Woodcock et al., 2001). Selected sub-tests from the widely used WJ-III were used to assess children's early math and reading skills. Reading skills were measured using the subtests Letter-Word Identification (LWID), which requires children to correctly identify letters and words, and Word Attack (WA), which measures phonics and decoding skills. Math skills were assessed using Applied Problems and Quantitative Concepts, which test knowledge of math concepts, symbols, numbers, and patterns. Scores on these sub-tests predict other measures of academic achievement (Woodcock et al., 2001) and have high internal consistency reliability (McGrew & Woodcock, 2001). In the current study, the raw summed scores for reading and math, with higher scores indicating greater skills, are used as outcomes in separate models.

Individualized Classroom Assessment Scoring System (inCLASS; Downer et al. 2010). Children's interactions with their teachers, peers, and tasks in the classroom were measured using the Individualized Classroom Assessment Scoring System (inCLASS; Downer et al., 2010), an observational assessment of children's classroom engagement in interactions with teachers, peers, and tasks, comprised of 10 dimensions. The dimensions factor into four domains of behavioral engagement. The current study uses the Positive Teacher Engagement domain, which consists of the Positive Engagement and Teacher Communication dimensions. Trained, independent observers rate each dimension on a 7-point scale, with higher ratings indicating higher-quality interactions and engagement (with the exception of conflict dimensions). Higher scores on the Positive Teacher Engagement domain indicate more positive, higher-quality interactions with the teacher. The inCLASS has good inter-rater reliability (Williford et al., 2013; Vitiello et al., 2012) and validity (Williford, Whittaker, Vitiello, & Downer, 2013); Downer et al., 2010). Relevant to this study, the inCLASS has similar measurement properties across racial

and ethnic groups (Bohlmann et al., 2019). For the mediation models, a child's Positive Teacher Engagement scores (Positive Engagement and Teacher Communication dimensions) were averaged across all three time points in order to capture the average quality of interactions across the year.

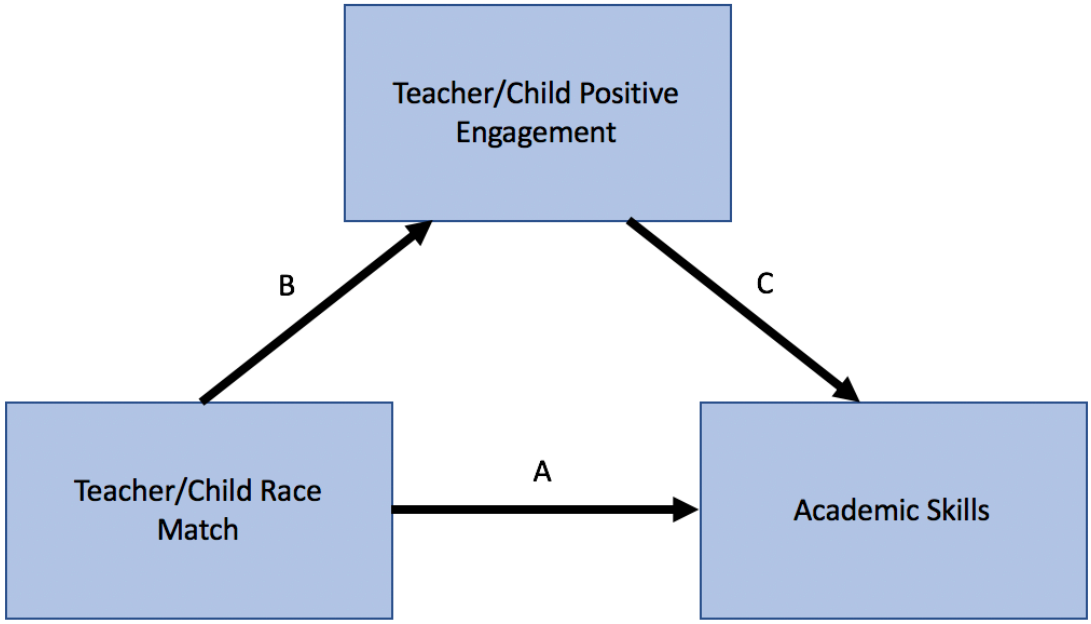
Covariates. In order to isolate the association between race match and differences in academic outcomes, the following variables were included as control variables: child gender, child age, child income-to-needs ratio, teacher years of experience, teacher age, and classroom quality (CLASS). The CLASS measures the quality of teachers' classroom behaviors across 11 dimensions of interactions (e.g., Teacher Sensitivity, Behavior Management, Language Modeling); from these ratings, scores were generated for three domains: Classroom Organization, Instructional Support, and Emotional Support. During the fall and spring windows, observations were collected across multiple days and settings. This is designed to capture the "average" classroom experience provided by teachers in the classroom, rather than the individual interactions of the inCLASS. The CLASS has good inter-rater agreement (Pianta et al, 2005) and predictive validity (Hamre & Pianta, 2005; Howes et al., 2008; Mashburn et al., 2008). Average scores for the domains of Classroom Organization, Instructional Support, and Emotional Support were included separately as covariates in the models. Cohort and school fixed effects were included in each model.

Data Analysis

Preliminary data preparation. In order to answer these research questions, multilevel modeling (MLM) data analysis techniques were used to account for the nesting children (level 1) within classrooms (level 2). Prior to running any models, intraclass correlations (ICC) values were examined for each level in order to determine whether each level needed to be included in

the model; for reading scores, 15% of the variance was explained by the classroom level, while 10% was explained by the classroom level for math. The variables of interest (child academic spring academic skills, child race match with teacher, child's positive engagement with teacher) all sit at level 1, with covariates at both the child- and classroom-level. Variables were grand-mean centered. There was minimal missing data on the observational measures, direct assessments, and fall teacher and family surveys. During the school year, some children moved out of the area or otherwise became unavailable for further data collection; by the end of the year, 7% of Cohort 1 and 6% of Cohort 2 were no longer active, resulting in some missing data for children who left the study. For the 11 students who changed teachers mid-year, only data from the data collection windows with the initial teacher were included; data were treated as missing from the point in which they changed classrooms. This resulted in 4 students having missing data from both winter and spring data collection, and 7 missing only spring data. While the vast majority of observations were successfully collected, missing data was imputed using Stata 16 software (StataCorp, 2019). To account for the nested data structure, a multivariate normal model was used to impute jointly over clusters (i.e., classrooms), with 10 imputations. Variables were created related to race and race match in order to test hypotheses related to the relationships between outcomes, race alone, race match alone, and the interaction between race and race match. For each student, a variable was created to indicate whether they were Black (1 or 0) and whether they had the same race as their teacher (1 or 0).

Figure 1. Proposed mediation model.



For the first research question, the outcome variable is spring academic skills, controlling for fall. Separately for math and reading scores, three models were run. First, child race alone and race match alone were used as predictors:

Level 1*:* Spring Math or Reading Score$_{ij}$ = β_{0j} + β_1(Black Child or Race Match)$_{1ij}$ + β_2(Black teacher/White Child)$_{1ij}$ + β_3(Black teacher/Black Child)$_{1ij}$ + β_4(Child/family covariates)$_{1ij}$ + e_{ij}, [e_{ij} ~ N(0, σ^2_{e0})]

Level 2: β_{0j} = y_{00} + y_{01}(Classroom/teacher covariates)$_j$ + u_{0j}, [u_{0j} ~ N(0, σ^2_{u0})]

After examining each predictor separately, a model interacting both variables was run.

Level 1*:* Spring Math or Reading Score$_{ij}$ = β_{0j} + β_1(Black Child)$_{1ij}$ + β_2(Race Match)$_{1ij}$ + + β_1(Black Child)$_{1ij}$ *β_2(Race Match)$_{1ij}$ + β_4(Child/family covariates)$_{1ij}$ + e_{ij}, [e_{ij} ~ N(0, σ^2_{e0})]

Level 2: $\beta_{0j} = y_{00} + y_{01}(\text{Classroom/teacher covariates})_j + u_{0j}$, $[u_{0j} \sim N(0, \sigma^2_{u0})]$

The second question involved race and race match predicting children's observed engagement with the teacher. Using observed positive teacher engagement as the outcome, the same three models described previously were run (race alone, race match, and the interaction between race and race match).

Results from these models were used to evaluate paths A and B in the mediation model described in the final research question. Using a causal steps approach (Baron & Kenny, 1986), I then predicted academic skill gains using observed teacher engagement, controlling for the effect of race and race match (path C).

Results

Descriptive statistics and correlations between the variables of interest are displayed in Tables 1 and 2. Tables 4, 5, and 6 provide results for multilevel regression models for math scores, reading scores, and positive teacher engagement, respectively. For each outcome, three separate models were run to evaluate the relationship between the outcome and child race alone, race match alone, and the interaction between race and race match.

Teacher/child race and math. Controlling for teacher race, child race was not significantly related to children's gains in math scores ($\beta = -0.45$, $p = .42$), nor was race match ($\beta = .21$, $p = .68$). When interacting child race and race match, there were no significant main effects for child race ($\beta = -1.70$, $p = .10$) or race match ($\beta = -1.27$, $p = .23$) indicating that neither a child's race nor race match were associated with gains in math across the preschool year. The interaction between child race and race match was not significant ($\beta = 2.62$, $p = .08$).

Across all three models, higher spring math scores were associated with higher fall math scores and older children.

Teacher/child race and reading. As with math scores, no predictors of interest were significantly associated with gains in reading across the preschool year. Child race alone (β = -0.88, p = .15) and race match alone (β = .73, p = .11) were not associated with differences in spring reading scores. In the interaction model, there were a number of predictors that were approaching significance (p < .10). There was no main effect of child race (β = 0.51, p = .46) or race match, although race match was approaching significance (β = 1.52, p = .053). The interaction between race and race match was also insignificant but trending (β = -1.63, p = .052). Overall, these results show no association between a child's race or whether they are in a race-matched classroom with gains in reading over the year; while some results were approaching significance and may indicate some different in scores, the size of these differences were small (< 1 raw score point). Covariates that significantly predicted higher spring reading scores across models included fall reading scores and female students.

Teacher/child race and positive teacher engagement. Children's race as well as their race match were not associated with their average positive engagement with their teacher (β = 0.05, p = .77; β = .005, p = .91, respectively) were associated with observed positive teacher engagement. This held true in the interaction model; there was no main effect for either child race (β = -0.008, p = .93) or race match (β = .005, p = .96), and the interaction between race and race match was also non-significant (β = -.02, p = .91), indicating that race and race match were not linked to how teachers and children were observed to interact in the classroom. More positive interactions with a teacher were associated with higher scores on the CLASS Emotional Support and Instructional Support dimensions and female students across all models.

Mediation analysis. Neither paths A nor B in the proposed mediation model yielded a significant result. The final step, testing path C, also did not yield any significant results; average positive engagement with the teacher did not predict growth in math ($\beta = -0.27$, $p = .61$) or reading scores ($\beta = .009$, $p = .93$). Therefore, there was no mediation found.

Discussion

Given the importance of preschool for reducing achievement gaps and starting children on a positive educational trajectory, there is a need to better understand how contextual factors alter children's preschool experience; this work is a preliminary step in exploring how teacher and children's races relate to growth in school readiness across the preschool year. While research in K-12 students often reveals links between race and child outcomes, results from this study stand in contrast by finding no statistically significant links between race and children's academic skill gains; this raises a number of questions that should be investigated further to clarify whether race match operates differently in younger students, whether there was potential omitted variable bias impacting the results, or if there are factors more specific to this study that account for the nonsignificant findings. Belonging to a minoritized group has wide-ranging impacts on how a child experiences the classroom environment, from proximal (e.g., race match, classroom composition) to distal factors (e.g., institutional racism, societal views of race). Given that race match has been related to improved academic outcomes in older students, as well as non-academic outcomes (e.g., exclusionary discipline) for preschool students, it is important to explore whether those associations are present in preschool. The absence of an association in this study highlights the difficulty in describing succinctly how race, and the complex contextual factors that go along with it, relate to children's development.

One potential explanation for the lack of significant findings is that the association between race and race match and academics may not be present in preschool children, as compared to K-12 students, as a function of age. Hypothesized mechanisms for race match effects include both passive and active effects; passive effects such as the role model effect (Gershenson et al., 2018) or stereotype threat (Steele, Spencer, & Aronson, 2002), which can significantly influence older students, may not apply similarly in preschool due to differences in preschool children's cognitive abilities. While preschool age children can categorize people by race, an understanding of stereotypes emerges around age 6 (Pauker, Ambady, & Apfelbaum, 2010). In elementary students, children with an awareness and understanding of racial stereotypes are impacted by stereotype threat, while students without this awareness are not (Wasserberg, 2014); with even younger students, who are less likely to know and apply stereotypes, passive effects like stereotype threat may not impact their academic performance as they do in older children.

Another possibility for the lack of significant findings is that the academic outcomes in this study, gains in reading and math readiness skills, are not the primary driver of the more distal outcomes tested in other studies, like high school graduation rates. Gershenson and colleagues (2018) found evidence that the role model effect, another passive effect, is a mechanism for improved high school graduation and college enrollment rates for Black children assigned a Black teacher during grades K-3. Having a Black teacher may impact students' beliefs about what is possible in their own educational attainment, rather than directly influencing the growth of children's academic skills over the year. As this study did not directly assess any passive effects or the long-term impacts of having a same-race teacher, this remains an area for further study.

While passive effects were not examined, the study did investigate active effects. The ways in which children engage with their teachers, including sharing positive affect, communicating, and approaching their teachers, did not differ between White or Black children. Additionally, children's interactions with their teachers looked similar regardless of whether or not the child shared the same race as their teacher. The observations in study were conducted in the classroom setting and captured the reciprocal interactions between students and teachers. Using naturalistic observations to measure teacher/child interactions is a unique contribution of this study, as previous findings have come primarily from lab- or vignette-based tasks (e.g., Gilliam et al., 2016) or have focused on specific teacher behaviors like praise or reprimands (e.g., Tenenbaum & Ruck, 2007). It is intriguing that there were no observed differences in how teachers and children interacted. One possible explanation is that preschool teachers react to preschool students differently than do teachers of older students. However, given that there have been findings across multiple studies that preschool teachers do perceive and respond to White and Black students differentially (e.g., Gilliam et al., 2016), this does not seem a likely explanation. This is a finding that requires further investigation. Additionally, while it is positive that there were no meaningful differences in teacher/child interactions based on race, it is notable that the average quality of positive engagement with the teacher was low (M=2.12 on a scale coded 1-7). Observed interactions, while equitable, were not the ideal high-quality interactions that drive skill growth for young children. This is particularly concerning given the context for this study of preschool programs designed to serve children identified as being at-risk for entering kindergarten behind their peers; the low average quality of interactions between children and their teachers indicates that there are missed opportunities for engaging children in a way that promotes skills and their relationships with teachers.

The particular context of early childhood education, and the preschool classrooms in this study specifically, may also be a factor in the nonsignificant findings. The majority of US 4-year-olds are not enrolled in public preschool, with significant variability across states (US Department of Education, 2015). In the state where this study took place, children were eligible for public preschool only if they meet certain eligibility criteria, including family income below 250% of the federal poverty line, rather than providing universal preschool; there is an explicit focus in these preschool programs on serving children identified as at-risk for lower academic achievement and reducing those disparities prior to kindergarten entry. Public preschool enrollment, on average, has more racial and ethnic diversity than public K-12 enrollment (NCES, 2018). Consistent with this trend, the sample in this study is racially and ethnically diverse, with fewer than one third of students identified as White and predominantly low income, with an average income-to-needs ratio of 1.4. Similarly, the early childhood education workforce is more racially and ethnically diverse than K-12 teachers (Whitebook, McLean, Austin, & Edwards, 2018); in the districts included in this study, more than a third of teachers identified as a race other than White.

All of these factors differ from the context of the research on K-12 students, key differences that could help account for the divergent findings. More research is needed to examine whether the lack of association between race and school readiness skill gains in preschool holds true in other preschool contexts, such as districts with minimal racial and ethnic diversity or universal preschool programs. These contexts could result in significant variability in the experiences of racial and ethnic minority children; proximal and distal ecological factors based on race would be radically different for a Black child in an almost exclusively White school who never is taught by a Black teacher as compared to a Black child in a school with

variability in racial composition and a diverse teacher workforce. The type of preschool program may also exert an influence; public preschool programs focused on remediating school readiness gaps may be different than a universal preschool program or private school. Future research could examine a wider range of preschool programs, such as private preschools, to evaluate whether these findings are consistent across contexts. Additionally, it would be useful to replicate the research on assignment to same- or different-race teachers in K-12 students in the preschool population; as with the studies in K-12 children, this could be done within the framework of existing studies on the effects of preschool.

While results do not indicate a relationship between teacher/child race and school readiness skills, a limitation of this study is that it is unclear *why* findings diverge from the race match literature in K-12 students. There is no examination of passive effects, leaving uncertainty around whether this mechanism operates differently in the preschool population as compared to school age children. Additionally, there is the potential for omitted variable bias in these models For example, while possible active effects were examined in the form of how children and teachers interact in the classroom, there is a potential confounding variable in the biases and race/ethnicity of the observers. When rating how children engaged with their teachers, observers did not detect differences based on child race and whether there is a race match; however, just as interactions between children and teachers can be impacted by race and implicit biases, so too could race and bias influence how an observer perceives and codes interactions. It is possible that observers could have coded the quality of interactions differentially by teacher and/or child race, thus impacting the final codes. While many steps were taken to ensure valid and reliable data collection, including clear definitions, regular fidelity checks, and double coding of at least 20% of cycles, it is not possible to rule out the potential for bias. Another potentially source of

bias is that children may be coming into contact with teachers of a different race than their primary teacher (e.g., teacher's aides), which is not captured in these models. These omitted variables ar eparticuarly important to consider given that there is a lack of precision in the estimates, as indicated by the relatively large standard errors.

The development and education of racial and ethnic minority children are impacted by a number of contextual factors, such as racism and bias, that have often been ignored or excluded in past research; more recent work has begun to acknowledge and explore how race and ethnicity relate to differences in educational outcomes between White students and children of color. Studies of K-12 students have found links between a child's race and their academic skills and outcomes, but this has been a gap in the literature in preschool-age children. The current study helps address this gap around how teacher and child race relate to school readiness skill gains in preschool, a time in which academic skill growth can have profound impacts on children's long-term academic trajectories. In this sample, race and race match were not linked to either gains in reading and math readiness skills or the ways in which individual children interacted with their teachers, underscoring how much there remains to be explored about how race and race-related contextual factors impact children at school. Further research is needed to clarify whether this finding is generally true in preschool-age students, potentially due to the mechanisms that drive the impact in older students operating differently in younger children, or whether this relates more to the specific outcomes, sample, and context in this study. Investigating potential omitted variables, as well as using more modern structural equation modeling techniques for the mediation models, may help clarify whether there are significant relationships that are being hidden in these analyses. Given the challenges associated with examining the links between race and other outcomes given the inability to randomly assign children to teachers of a specific race,

future research could also utilize more "natural" research designs by comparing how White and Black teachers rate and interact with the same child in the same classroom, as compared with how two White teachers rate and interact with a single child, or two Black teachers. Examining the differences in those comparisons could provide more information about how teacher race impacts how teachers and children interact in preschool classrooms.

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Spring Math Scores	0.00	0.15	0.11	0.00	0.01	0.25	0.24	-0.01	0.25	-0.25	0.10	0.03	0.52	0.78	0.55	1.00
2. Spring Reading Scores	0.05	0.17	0.14	-0.06	-0.02	0.11	0.12	-0.01	0.09	-0.09	0.06	0.08	0.82	0.48	1.00	
3. Fall Math Scores	-0.02	0.08	0.06	0.02	0.01	0.27	0.25	0.03	0.27	-0.27	0.12	0.06	0.51	1.00		
4. Fall Reading Scores	0.01	0.13	0.15	-0.08	-0.06	0.14	0.11	0.04	0.05	-0.05	0.06	0.09	1.00			
5. inCLASS Positive Teacher	0.18	0.16	0.29	-0.02	-0.04	0.05	-0.07	-0.11	-0.12	0.12	0.08	1.00				
6. Race Match	-0.14	-0.07	0.00	0.13	0.15	0.11	0.10	0.00	0.38	-0.38	1.00					
7. Black	-0.14	-0.06	-0.05	0.01	-0.02	0.03	-0.36	-0.08	-1.00	1.00						
8. White	0.14	0.06	0.05	-0.01	0.02	-0.03	0.36	0.08	1.00							
9. Male	0.06	0.09	0.05	0.00	0.02	-0.05	0.14	1.00								
10. Income-to-needs Ratio	0.14	0.10	0.09	0.00	0.00	-0.09	1.00									
11. Child Age	-0.03	-0.06	-0.05	0.17	0.20	1.00										
12. Teacher Age	0.11	-0.04	-0.13	0.76	1.00											
13. Teachers Years Experience	0.17	-0.01	-0.16	1.00												
14. CLASS Emotional Support	0.54	0.75	1.00													
15. CLASS Classroom	0.57	1.00														
16. CLASS Instructional	1.00															

Table 1. Correlation matrix for variables included in models.

Table 2. Descriptive table for variables of interest.

Variable	Mean/Percentage	Std. Dev.
Spring Math Scores (raw score points)	25.99	7.91
Spring Reading Scores (raw score points)	15.78	7.86
Fall Math Scores (raw score points)	18.17	7.16
Fall Reading Scores (raw score points)	8.82	6.92
inCLASS Positive Teacher Engagement	2.12	0.53
Race Match	48%	
Black	70%	
White	30%	
Male	51%	
Income-to-needs Ratio	1.40	1.09
Child Age (months)	52.75	3.58
Teacher Age (years)	44.46	11.24
Teachers Years Experience	16.25	8.75
CLASS Emotional Support	5.22	0.79
CLASS Classroom Organization	5.23	0.90
CLASS Instructional Support	2.39	0.60

Table 3. Results from the three multi-level models predicting spring math scores, *N*=507

	Race Alone Estimate (SE)	Race Match Alone Estimate (SE)	Race x Race Match Estimate (SE)
Level 1			
Intercept	-.18 (5.11)	-1.16 (5.11)	0.55 (5.13)
Black Child	-.45 (.57)		-1.70 (1.02)
Race Match		-.02 (.04)	-1.27 (1.05)
Black Child x Race Match		.02 (.05)	2.62 (1.48)
Male	-.71 (.45)	0.14 (.69)	-.68 (.46)
Fall Math Scores	.79 (.03)***	-.48 (.72)***	.80 (.03)***
Income to needs ratio	.25 (.24)	.64 (.52)	.25 (.24)
Child Age	.14 (.07)*	-66 (.74)*	.14 (.07)*
Level 2			
Teacher Age	-.02 (.04)	-.02(.04)	.002 (.04)
Teacher Years of Experience	.02 (.05)	-.02 (.05)	-.007 (.05)
Black Teacher	0.14 (.69)	1.28 (.74)	
CLASS emotional support	-.48 (.72)	-.59 (.71)	-.57 (.71)
CLASS classroom organization	.64 (.52)	.67 (.64)	.65 (.64)
CLASS instructional support	-66 (.74)	-.45 (.74)	-.46 (.74)
Residual Variance	19.68	19.64	10.11

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

Table 4. Results from the three multi-level models predicting spring reading scores, *N*=507

	Race Alone Estimate (SE)	Race Match Alone Estimate (SE)	Race x Race Match Estimate (SE)
Level 1			
Intercept	7.31 (4.42)	4.76 (3.60)	5.72 (4.48)
Black Child	-.88 (.49)		.51 (.89)
Race Match		.73 (.45)	1.52 (.91)
Black Child x Race Match			-1.63 (1.30)
Male	-.76 (.40)	-.84 (.40)*	-.74 (.40)*
Fall Reading Scores	.94 (.03)***	.94 (.03)***	.94 (.03)***
Income to needs ratio	.08 (.21)	.23 (.20)	.06 (.21)
Child Age	-.01 (.06)	-.005 (.06)	-.02 (.03)
Level 2			
Teacher Age	.02 (.03)	.02 (.03)	.02 (.03)
Teacher Years of Experience	-.02 (.04)	.004 (.04)	-.02 (.04)
Black Teacher	-.69 (.64)	-1.63 (.54)	
CLASS emotional support	-.87 (.61)	-0.73 (.51)	-.89 (.61)
CLASS classroom organization	.91 (.57)	1.32 (.44)**	.99 (.57)
CLASS instructional support	-..49 (.67)	-.39 (.53)	-.48 (.65)
Residual Variance	15.86	16.23	15.77

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

Table 5. Results from the three multi-level models predicting observed positive teacher engagement, *N*=507

	Race Alone Estimate (SE)	Race Match Alone Estimate (SE)	Race x Race Match Estimate (SE)
Level 1			
Intercept	1.01(.44)	1.07 (.43)	1.07 (.44)
Black Child	.05 (.05)		-.008 (.09)
Race Match		.005 (.05)	.005 (.09)
Black Child x Race Match			-.02 (.14)
Male	-.01 (.05)*	-.09 (.04)*	-.09 (.04)*
Income to needs ratio	.02 (.02)	.02 (.02)	.02 (.02)
Child Age	.002 (.005)	.02 (.006)	.002 (.006)
Level 2			
Teacher Age	-.002 (.003)	-.002 (.003)	-.002 (.003)
Teacher Years of Experience	.005 (.005)	.004 (.005)	.005 (.005)
Black Teacher	.008 (.07)	-.009 (.07)	
CLASS emotional support	.20 (.06)**	.20 (.06)**	.20 (.06)**
CLASS classroom organization	-.05 (.06)	-.05 (.06)	-.05 (.06)
CLASS instructional support	.17 (.07)*	.17 (.07)*	.17 (.07)*
Residual Variance	.15	.15	.15

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

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