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Hwang, Hyesung

Markson, Lori

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Black and White children's race-based information endorsement and teacher preference: Effects of school and neighborhood racial demographics

Hyesung G. Hwang^{1,2}, Lori Markson¹

¹Department of Psychological & Brain Sciences, Washington University in St. Louis. St. Louis, MO 63130

²Department of Psychology, University of California Santa Cruz. CA 95064

Abstract

The current study examined whether racially minoritized children and racial majority children demonstrate different race-based learning preferences and whether the racial demographics of their schools and neighborhoods predict these preferences. Race-based information endorsement and teacher preferences of Black and White 3- to 7-year-old children ($n=238$) recruited from a metropolitan area in the midwestern United States were examined. Across racially homogeneous and diverse schools, both Black and White children showed a White preference in information endorsement and teacher preference tasks. Black and White children did not differ in their information endorsement, but they did differ in their teacher preferences: Black children chose Black teachers more than White children. Further, children overall chose the accurate adult as their teacher regardless of the adults' race, but the racial demographics of children's schools and neighborhoods related to these responses: Three-year-old children were more likely to select the accurate Black adult over the inaccurate White adult if there were more Black teachers in their schools and larger Black populations in their neighborhoods. Exploratory analyses indicated that 5- to 7-year-old White children who had non-White classroom teachers chose Black adults more than those who had White classroom teachers, but classroom teacher's race did not relate to Black children's teacher preference. The findings suggest that both micro level factors (e.g., children's classroom teachers) and macro level factors (e.g., proportion of Black teachers in children's schools and Black population in their neighborhoods) could influence who children choose to learn from and prefer as teachers.

Children are discerning learners: They use social group membership, such as a person's race, language, or accent, to guide whose information they endorse (Chen et al., 2018; Harris & Corriveau, 2011; Kinzler et al., 2011). However, these findings are often based

Address for correspondence: Hyesung Grace Hwang, Department of Psychology, University of California Santa Cruz, Social Sciences 2, Room 277, 1156 High Street, Santa Cruz, CA 95064, hghwang@ucsc.edu, Phone: (831) 459-2002, Fax: (831) 459-3519.
Author contribution statements

H.G.H. and L.M. jointly conceptualized the study and methodology and discussed data analysis. H.G.H. performed investigation, formal analysis, and project administration. H.G.H. wrote the initial draft and L.M. provided review and discussion of the manuscript.

Conflict of Interest

Authors have no conflicts of interest to declare.

on racial majority children; less is known about whether children from minoritized racial groups use social group information in the same manner to guide their learning (see Gaither et al., 2014). Further, only a small body of literature has examined how social environmental factors – such as children’s teachers, school demographics, and neighborhoods – influence these learning tendencies (Chen et al., 2018) and even less work examining how these factors may differentially affect racially minoritized and racial majority children.

Examining the influence of racial demographics in children’s communities and in their schools is crucial because even though racial segregation in public schools has been declared unconstitutional in the U.S. since 1954, segregation persists. Currently in the U.S., White students typically attend schools in which majority of the student and teacher population are White, whereas Black students attend schools in which majority of the students are from racially minoritized groups but many of their teachers are White (de Brey et al., 2021). Such divisions along racial lines have the potential to significantly impact how children learn from and trust teachers of different races. Thus, the current study examined information endorsement and teacher preferences of Black children (a minoritized population in the U.S.) in conjunction with White children (a majority population in the U.S.) and whether the racial demographics of children’s schools and neighborhoods relate to children’s learning from and preference for teachers based on race.

Theoretical Frameworks

Social identity theory (Tajfel, 1978), social categorization theory (Turner et al., 1987), and social identity development theory (Nesdale, 2017) posit that identification with a group naturally leads to a preference for one’s own group or ingroup preference. This mechanism is argued to explain why children show a robust racial ingroup preference, which is widely found in racial majority children. For example, White children tend to prefer other White individuals over racially minoritized individuals (Aboud, 1988; Aboud et al., 2003). However, these theoretical frameworks do not comprehensively incorporate the perspectives of racially minoritized children and acknowledge the need for more research with this population to inform these models.

There are mixed findings about whether racially minoritized children show racial ingroup preference (see Hailey & Olson, 2013 for a review). Many studies report that racially minoritized children do not show a clear preference for their ingroup members compared to outgroup members (e.g., Dunham et al., 2013), potentially because children’s race-based preferences may be mediated by the perceived social status of the racial groups in their society (Olson et al., 2012; Shutts et al., 2011) and there is a pervasive “White is good” tendency found in children’s racial preferences (Clark & Clark, 1947; Spencer & Markstrom-Adams, 1990).

Learning preferences appear to mirror these patterns observed in social preferences. For instance, even after racial identity priming, monoracial Asian U.S. children did not show a clear difference in endorsing information from a member of their racial ingroup or outgroup, whereas monoracial Black and White U.S. children were more likely to endorse information from White individuals than other racial groups (Gaither et al., 2014). These findings

suggest that children do not automatically prefer to learn from racial ingroup members and that racially minoritized children's learning decisions are varied. Further, children may use the perceived social status of racial groups in their society to choose from whom to learn. For example, Hong Kong Chinese children, who are the racial majority in their society, were more likely to endorse information from Chinese individuals compared to Southeast Asian individuals, a racial outgroup that these children are primarily familiar with as domestic workers for their families. However, Chinese children were equally likely to endorse information from Chinese or White individuals, another racial outgroup, but one who may be viewed as higher in prestige due to children's interactions with them as teachers in their international schools, coupled with Hong Kong's colonial history of British occupation that privileges Whiteness (Chen et al., 2018). There remain many open questions about how exposure to different racial outgroups relate to U.S. children's learning preferences – especially racially minoritized children who must regularly navigate complex societal terrains based on race and how such exposure might have differential impact according to children's racial backgrounds.

The Influence of Micro and Macro Social Contexts

To better understand why racially minoritized children and racial majority children have different social and learning preferences, it is necessary to examine the interaction of children's own racial background with the socialization that occurs across micro and macro contexts (Bronfenbrenner, 1979; Vélez-Agosto et al., 2017). According to the developmental intergroup theory (Bigler & Liben, 2007), environmental factors (such as proportional group size) as well as explicit and implicit messages about race contribute to how children develop stereotypes and prejudice. In addition to understanding the micro-level racial socialization that occurs across parent-child and other interpersonal relationships (Saleem & Byrd, 2021; Wang et al., 2020), there have been calls to center the macrosystem in development (Hughes et al., 2006; Rogers et al., 2021) and examine how the sociopolitical context itself contributes to racial socialization. Thus, it is unsurprising that the racial diversity in children's neighborhoods and schools correlates with how children think about race. For example, children living in more racially diverse communities are less likely to hold essentialist beliefs about race than children living in less racially diverse communities (Mandalaywala et al., 2019; Pauker et al., 2016). Children attending racially diverse schools show more positive attributions to racial outgroups and have more cross-race friendships than children from racially homogeneous schools (Deeb et al., 2011; McGlothlin & Killen, 2010). Still, racial diversity in children's schools and communities might not have the same influences on racial majority and racially minoritized children.

One of the few studies that focus on how racially minoritized children's social preferences might differ according to racial diversity in their environment is Shutts et al. (2011) that tested Xhosa children in South Africa, a country with a history of apartheid where White people have historically held power over Black individuals and continue to hold most of the wealth in the country (see Olson et al., 2012). Xhosa children attending multiracial schools showed a White preference, whereas Xhosa children attending a predominantly Black school showed no clear preference according to race (Shutts et al., 2011). These results contrast with studies conducted in the U.S., where White children attending racially

diverse schools show less bias than White children attending racially homogeneous schools (e.g., McGlothlin & Killen, 2010). Taken together, these findings suggest that the racial diversity in the child's schools and community may have differential impact depending on whether the child is from a racially minoritized background or majority background.

Micro and Macro Contexts in Schools

The current study specifically examined whether who children choose to learn from and prefer as teachers might differ according to both children's racial background (minoritized versus majority) and racial diversity in children's social environments – especially their schools. Understanding the learning and teacher preferences of racially minoritized children is imperative because much conflict is noted between teachers and racially minoritized students due to negative perceptions perpetuated by racial stereotypes and biases (Howard, 2019). The persistent Black-White achievement gap from preschool to high school in the U.S. is in part mediated by both students' and teachers' negative perceptions of one other according to race and socioeconomic status (Cohen & Steele, 2002; Dee, 2004; Yeager et al., 2014).

In addition to the impact of school and neighborhood racial demographics on children's learning preferences, the classroom teacher of young children may be in a key position to shape their learning preferences as schools are an important context in which ethnic-racial socialization occurs (Saleem & Byrd, 2021). Further, children's early relationship with preschool teachers sets the stage for future academic achievement (Hamre & Pianta, 2001). Black students who had at least one Black teacher from kindergarten through elementary school showed improved academic achievements compared to those who did not, whereas White children did not show differences in achievement according to teacher's race (Gershenson et al., 2018). Further, children are more likely to trust information from a familiar teacher over an unfamiliar teacher and this selective trust is exceptionally robust for 3-year-old children who persist in trusting an inaccurate but familiar teacher (Corriveau & Harris, 2009). This strong trust in a familiar teacher suggests that young children's reasoning about race could be influenced by their classroom teacher. Further, given that having positive relationships with outgroup members at the individual level has been found to reduce the development of racial biases in children (Aboud et al., 2003; Jugert & Feddes, 2015; Tropp & Prenovost, 2008), and that interpersonal relationships are vehicles through which important racial socialization occurs (Hughes et al., 2006), classroom teachers may have a strong influence on children's emerging race-based preferences and trust.

Current Study

Thus, the current study had two goals: (1) to investigate whether Black and White 3- to 7-year-old children's information endorsement and teacher preferences based on race are similar or different, and (2) to test whether the racial demographics of children's schools and neighborhoods relate to their race-based choices by recruiting schools that varied in racial diversity of their teacher and student population (see Table 1). The study focused on preschool to early school age children because this age group is when many children first start to encounter teachers, attend class in school-like settings, and show race-

based preferences (Saleem & Byrd, 2021; Waxman, 2021). Thus, studying this period in development is imperative to understand how to remedy the initial development of negative racial attitudes.

Research Question 1: Do Black and White children differ in their race-based information endorsement and teacher preference, and will children show a racial ingroup preference?

We hypothesized that Black and White children's information endorsement and teacher preference might show differential responses. One possibility is that children will always prefer teachers of the same race as themselves: Black children may endorse more information from Black adults and prefer Black teachers, whereas White children may endorse and prefer White teachers. Alternatively, Black children may not show a clear ingroup or outgroup preference (Dunham et al., 2013) or may prefer White adults over Black adults possibly due to the pervasive privileging of Whiteness in the U.S. and worldwide (Clark & Clark, 1947; Hailey & Olson, 2013; Spencer & Markstrom-Adams, 1990). We predicted that children's preference for Black adults might decrease across preschool to early elementary school age as racial and ethnic prejudice tends to peak in middle childhood (ages 5 to 7 years) compared to younger childhood (ages 3 to 4 years) (Raabe & Beelmann, 2011).

Research Question 2: Will children privilege race or accuracy more when choosing a teacher and will this tendency change with age?

In addition, we pitted racial characteristics against epistemic characteristics to determine whether children would weigh accuracy over race when choosing a teacher. Given how 3-year-old children sometimes overtly trust familiar teachers (even when these teachers are inaccurate) (Corriveau & Harris, 2009), we hypothesized that younger preschool age children may choose teachers from familiar racial backgrounds regardless of accuracy (e.g., White children preferring White adults and Black children preferring Black adults) whereas older children would prioritize accuracy over race.

Research Question 3: Do children who attend schools or live in neighborhoods with more Black population choose Black teachers more?

Lastly, this study aimed to better understand children's race-based preferences by examining how the racial demographics in their schools and neighborhoods potentially predict these preferences and how these relations differ according to children's racial backgrounds. We examined whether children who attend schools with more Black teachers or live in neighborhoods with a larger Black population may choose Black adults more – and if this effect might differ between Black and White children. In addition, we explored whether effects of social environment would be stronger on elementary school age children than preschoolers given that racial diversity in children's social environment relates to racial outgroup stereotyping more in middle than young childhood (Pauker et al., 2016; Raabe & Beelmann, 2011).

Research Question 4 (Exploratory): Does race of the children's classroom teacher relate to children's teacher choice?

Because we could not experimentally randomize teacher assignments (as they were pre-existing), we explored whether the race of the children's classroom teacher related to children's choices as an exploratory analysis. We predicted that children who have non-White classroom teachers would show greater preference for and learning from Black adults than children who have White classroom teachers and tested whether this effect might differ between Black and White children. We also examined whether 5- to 7-year-old children would show greater differences according to the race of their classroom teachers than 3- to 4-year-old children as middle childhood appears to be more sensitive to racial demographics in their environment than young childhood (Pauker et al., 2016).

By examining macro contextual factors (e.g., school and neighborhood racial demographics) in conjunction with micro contextual factors (e.g., classroom teacher's race), the current study aims to provide insight into the factors that relate to the development of children's race-based information endorsement and teacher preference and how these factors may have differential impact according to children's racial backgrounds.

Method

This study was approved by the Institutional Review Board of Washington University in St. Louis (reference #201610104) under the study "Learning & Trust Study." This study was not preregistered.

Participants & School Demographics

The final sample analyzed included 88 Black or African-American children and 150 White children (114 females and 124 males; $M_{age(years;months)} = 5;0$, range = 3;0–7;11). Additionally, 21 bi-/multi-racial, 15 Hispanic/Latinx, 5 Asian, 1 American Indian or Alaskan Native, and 1 race not reported children participated but due to the small sample size in each of these racial/ethnic categories, they are not included in the present analysis but rather reported separately in supplementary analyses. Eight additional children consented but were not included in the final sample due to absence on testing days ($n=7$) and refusing to participate ($n=1$). The sample size was determined based on previous research using similar paradigms to investigate children's learning preferences based on race (Chen et al., 2018; Gaither et al., 2014). Power analyses utilizing d of .45 to 1.10 from Gaither et al. (2014) for monoracial Black and White children's race-based learning preferences indicated that the current study's monoracial Black and White sample sizes have 99% power to observe similar effects. Children were recruited from 11 childcare centers and schools in a Midwestern U.S. metropolitan area. The directors of each school provided demographic information about their student, teacher, and staff population. See Table 1.

Materials

Children viewed pictures of 6 men and 6 women pairs of Black and White adults matched in sex, age, and attractiveness from the Chicago Face Database (Ma et al., 2015). Novel objects, labels, and functions were from Gaither et al. (2014) (See Table 2). Audio clips for

the labels and functions were recorded by two Black women, two White women, two Black men, and two White men. Parents completed a demographic survey that asked for child and parent race, parental education, household income, and child's residential zip code.

Neighborhood Demographics

To calculate neighborhood racial demographics for analysis, we used the residential zip code reported by the parents to extract the proportion of Black and White population in children's zip codes from the demographic and housing estimates survey of the 2018 American Community Survey (5-year estimate) published by the U.S. Census Bureau. The 2018 survey was chosen because children were tested between February 2017 to May 2018.

Design & Procedure

Children completed two 10-minute sessions in a quiet room in their school: One session with a Black female experimenter and one session with a White female experimenter, approximately one week apart and order counterbalanced. Three White experimenters and two Black experimenters conducted these sessions. All children participated in both sessions except for 37 children who completed only one session due to the schools requesting expedited testing: These children were randomly assigned a White or Black experimenter and completed only one session (analyses indicated no differences according to experimenter race or session order).

Children completed the *information endorsement*, *teacher preference*, and *teacher preference based on accuracy* tasks in a fixed order (see Figure 1). Each task consisted of four trials. In each trial, children saw a pair of gender matched adults, one White and one Black, with their position counterbalanced across trials.

Information Endorsement.—This task tested whether children endorse novel information more from a White or Black adult. Children saw a novel object and the White and Black adults each labeled the object differently (*label* condition) or described the functions differently (*function* condition), with condition counterbalanced across sessions. After hearing the labels or functions, the experimenter asked children what they think this object is called or what it is for. Children could respond verbally or by pointing in all the tasks.

Teacher Preference.—In this task, children were asked which of the two adults (Black or White) they wanted as their teacher.

Teacher Preference Based on Accuracy.—This task tested whether children value accuracy over race when choosing a teacher. Children were first asked to label or describe the functions of everyday objects to ensure they knew the correct labels and functions of these objects. Then, in half of the trials, children observed the Black adult accurately label or describe the functions and the White adult do so inaccurately, whereas in the other half of the trials the reverse was true (the order of trials was counterbalanced). After listening to the adults, children were asked which adult they wanted as their teacher. In the second and

fourth trials of the task, children were also asked to identify which adult was accurate as memory checks.

Results

All anonymized data, code, full model results, and supplementary analyses are available on Open Science Framework: <https://osf.io/gmzdg/>.

Preliminary Analyses

Preliminary analyses indicated no effects of session number, labels vs. function condition, children's sex, and parental education on children's responses. Notably, there was no effect of experimenters' race across all tasks. See supplementary analyses for results according to family income and adult stimuli's gender. See Table 3 for means and standard deviations of children's choices according to task and children's racial background. See Tables 4 and 5 for correlations among the tasks.

Research Question 1: Do Black and White children differ in their race-based information endorsement and teacher preference, and will children show a racial ingroup preference?

To first test whether Black and White children differ in their information endorsement and teacher preference, two generalized linear mixed models (one for each task) were constructed to account for the binary nature of the data and the nested effects. The first model was constructed with child race (Black vs. White), child age (in months), and interaction of the two predictors as fixed effects with participants nested within schools as a random effect to assess the binary responses (1 = chose Black adult; 0 = chose White adult) in the Information Endorsement task. The second model was identical except for the dependent variable was the binary response (1 = chose Black adult; 0 = chose White adult) in the Teacher Preference task. Odds ratios (ORs) are reported as indicators of effect size. To control for Type 1 error, we interpreted the significance of these models using the guideline of Bonferroni-corrected $p < .025$. In addition to the generalized linear models, to assess whether children show an above chance selection of one race over another, children's selection of Black adults were compared to chance using Wilcoxon signed rank tests.

Information Endorsement—There were no significant differences according to child race or child age on information endorsement ($ps > .335$). Overall, children were significantly below chance in endorsing the Black adults' information ($M(SD)_{\text{black adult}} = 46.48\%$ (17.27%); Wilcoxon $V = 4880$, $p = .004$, $d = .20$). See Figure 2A.

Teacher Preference Task—A significant main effect of child race ($\beta = .65$, $SE = .15$, $p = .00002$, $OR = 1.913$) indicated that Black children were 1.9 times more likely to choose Black adults as their teachers than White children. There were no other significant differences according to child age or other interaction ($ps > .323$). Both Black and White children were significantly below chance in choosing Black adults as their teachers (Black children: $M(SD)_{\text{black adult}} = 42.39\%$ (21%); Wilcoxon $V = 631.5$, $p < .001$, $d = .36$; White children: $M(SD)_{\text{black adult}} = 33.86\%$ (21.49%); Wilcoxon $V = 782.5$, $p < .001$, $d = .75$). See Figure 2B.

White children chose the Black adult more in the information endorsement task than in the teacher preference task, Wilcoxon $V = 5915$, $p < .001$. However, Black children's responses did not differ between the two tasks, Wilcoxon $V = 1250.5$, $p = .154$.

In conclusion, both Black and White children were less likely to endorse the Black adults' information and to choose the Black adult as their teacher. That is, White children showed a racial ingroup preference in both tasks, whereas Black children showed an outgroup preference (i.e., White preference) in both tasks. However, Black children were still more likely to choose the Black adult as a teacher than White children. There were no age-related differences found.

Research Question 2: Will children privilege race or accuracy more when choosing a teacher and will this tendency change with age?

Teacher Preference based on Accuracy Task—First, we examined whether children's choices were different between the two trial types in the Teacher Preference based on Accuracy task: (1) when the Black adult was accurate and White adult was inaccurate versus (2) when the Black adult was inaccurate and White adult was accurate. We constructed a generalized linear mixed model with trial type (Black adult was accurate vs. inaccurate), child race (Black vs. White), child age (in months), and interactions among these predictors entered as fixed effects with participants nested within schools as a random effect on children's binary choice (1 = chose Black adult; 0 = chose White adult) in the Accuracy task. In addition, memory check scores were entered as a fixed effect predictor to control for children's memory for the accurate adult.

This model indicated that children were more likely to select the Black adult when the Black adult was accurate ($M(SD)_{\text{black adult}} = 76.5\%$ (32.5%)) than inaccurate ($M(SD)_{\text{black adult}} = 13.5\%$ (25%), $\beta = -3.395$, $SE = .138$, $p < .001$, $OR = .034$). Further, older children were more likely to select the Black adult than younger children, $\beta = .023$, $SE = .007$, $p = .001$, $OR = 1.024$. There was also a significant interaction between trial type and child age ($\beta = -.112$, $SE = .017$, $p < .001$, $OR = .894$). See Figure 3.

Following up on this significant interaction between trial type and child age with simple slope analyses suggested that when the Black adult was accurate, older children were more likely to choose the Black adults ($\beta = .08$) than younger children and when the Black adult was inaccurate, older children were less likely to choose the Black adult ($\beta = -.04$) than younger children.

To examine children's choices compared to chance, when Black adults were accurate, 3-year-old children were at chance in selecting the accurate Black adult ($M(SD)_{\text{accurate adult}} = 51.1\%$ (37%); Wilcoxon $V = 248.5$, $p = 1$, $d = .03$), whereas older children were above chance at selecting the accurate Black adult ($ps < .001$). When Black adults were inaccurate, 3-year-old children were below chance at selecting the inaccurate Black adult ($M(SD)_{\text{inaccurate adult}} = 25\%$ (26.7%); Wilcoxon $V = 22$, $p < .001$, $d = .94$) as were older children ($ps < .001$).

In summary, both Black and White children were more likely to choose the Black adult as a teacher when the Black adult was accurate than inaccurate. Older children were more likely to privilege accuracy over race than younger children when choosing a teacher. In fact, 3-year-old children did not choose the Black adult as a teacher above chance even when the Black adult was accurate whereas 3-year-old children were above chance in choosing the White adult as a teacher when the White adult was accurate.

Memory Checks—A generalized linear mixed model with child race (Black vs. White), child age (in months), trial type (Black was accurate vs. inaccurate) and interaction of these predictors as fixed effects with participants nested within schools as a random effect was conducted on children's memory performance. Older children were better at identifying the accurate adult than younger children ($\beta = .04$, $SE = .02$, $p = .0453$, $OR = 1.041$). There were no other significant predictors ($ps > .212$). Children overall were above chance at correctly identifying the accurate adult ($M(SD)_{\text{accurate adult}} = 89.66\%$ (20.81%); Wilcoxon $V = 23616$, $p < .001$, $d = 1.91$). Children who were more likely to correctly identify the accurate adult in memory checks were also more likely to choose the accurate adult in the accuracy task (spearman's $\rho = .41$, $p < .001$).

Research Question 3: Do children who attend schools or live in neighborhoods with more Black population choose Black teachers more?

To test whether the proportion of Black teacher population¹ in children's schools related to children's likelihood of choosing a Black adult, generalized linear mixed models with proportion of Black teachers in their school, child race (Black vs. White), child age (in months), and interaction of these predictors as fixed effects with participants nested within schools as a random effect were conducted on children's choice of the Black adult in the four tasks: (1) the information endorsement task, (2) teacher preference task, (3) Black accurate accuracy task trials, and (4) Black inaccurate accuracy task trials. To control for Type 1 error, we interpreted the significance of these models using the Bonferroni-corrected guideline of $p < .0125$.

Black teacher population did not predict children's responses in any tasks except potentially in the Black accurate accuracy task trials: An interaction between child age and proportion of Black teachers in children's schools ($\beta = -.04$, $SE = .017$, $p = .015$, $OR = .960$) that was followed up by simple slope analyses indicated that those with more Black teachers in their schools (i.e., more than 1 SD above the mean) selected the accurate Black adult more across age ($\beta = .16$) than those with less Black teachers in their schools (i.e., less than 1 SD below the mean) ($\beta = .08$) (see Figure 4A). However, as noted above, the p value for this interaction was not below .0125 so we interpret this effect with caution.

Similarly, four models were constructed with identical fixed and random effects as above to test whether the proportion of Black population² in children's neighborhood predicted

¹Proportion of Black teachers in children's schools was highly negatively correlated with the proportion of White teachers in children's schools in this sample, *spearman's rho* = $-.97$, $p < .001$.

²The proportion of Black population in children's zip codes was highly negatively correlated with the proportion of White population in children's zip code in this sample, *spearman's rho* = $-.96$, $p < .001$. The proportion of Black teacher population in schools was positively correlated with the proportion of Black population in zip codes, *spearman's rho* = $.23$, $p < .001$.

children's choice of Black adult with Bonferroni-corrected $p < .0125$. Again, we found that Black population in the neighborhood did not predict children's responses in any tasks except in the Black accurate accuracy task trials: A significant interaction between child age and proportion of Black population in children's zip code ($\beta = -.113$, $SE = .04$, $p = .006$, $OR = .894$) and follow up simple slope analyses indicated that for those with larger Black population in their neighborhood (i.e., more than 1 SD above the mean) selected the accurate Black adult more across age ($\beta = .17$) than those with smaller Black population in their neighborhood (i.e., less than 1 SD below the mean) ($\beta = .08$) (see Figure 4B).

In conclusion, younger children who lived in neighborhoods with larger Black populations were more likely to choose the accurate Black adult as a teacher than those who lived in neighborhoods with a smaller number of Black populations. We see a similar but weaker pattern with the proportion of Black teachers in children's schools, such that younger children were potentially more likely to choose the accurate Black adult if they have more Black teachers in their schools.

Research Question 4 (Exploratory): Does race of the children's classroom teacher relate to children's teacher choice?

To test whether the race of the children's classroom teacher related to children's likelihood of choosing a Black adult, generalized linear mixed models with classroom teacher race (categorized as same race vs. different race as the child³), child race (Black vs. White), child age (in months), and interaction of these predictors as fixed effects with participants nested within schools as a random effect were conducted on children's choice of the Black adult in the four tasks as specified above. To control for Type 1 error, we interpreted the significance of these models using Bonferroni-corrected $p < .0125$.

Classroom teacher's race did not relate to children's responses in the information endorsement task or the accuracy tasks but significantly predicted responses in the teacher preference task: There was a significant three-way interaction among child race, child age, and classroom teacher race in the teacher preference task ($\beta = .07$, $SE = .03$, $p = .0106$, $OR = 1.071$). Follow up analyses revealed that for 5- to 7-year-old White children, those with different race classroom teachers ($n = 20$) were *more likely* to choose the Black adults than those with same race classroom teachers ($n = 48$), $\beta = -.74$, $SE = .33$, $p = .024$, $OR = .479$. However, for 3- to 4-year-old White children, their choice of Black adults did not differ according to whether they had the same race ($n = 59$) or different race classroom teachers ($n = 23$), $\beta = .45$, $SE = .29$, $p = .123$, $OR = 1.57$. Black children showed no difference according to whether they had same race classroom teachers ($n = 46$) or different race classroom teachers ($n = 42$) across both age groups ($ps > .801$) (see Figure 5).

In summary, 5- to 7-year-old White children were more likely to choose a Black teacher if they had a classroom teacher of a different race than those with a classroom teacher of a same race (i.e., White teacher). Three- to four-year-old White children and Black children's race-based teacher choice did not relate to the race of their classroom teachers.

³See supplementary analyses for a table of classroom teacher's race distribution in each school.

Discussion

The current study contributes to the literature as one of the few studies to examine how both racially minoritized children, specifically Black children, and racial majority children, specifically White children, in the U.S. use a person's race to guide their information endorsement and teacher preference. A further novel contribution is that the current study examined how the racial demographics in both Black and White children's schools and neighborhoods relate to these choices in the current day – decades after race-based segregation has been officially outlawed but with its vestiges remaining in the U.S. The present research found that across racially homogeneous to diverse schools, Black and White children's race-based information endorsement and teacher preferences show a White preference, but this tendency is attenuated in children who live in neighborhoods with a larger Black population, attend schools with more Black teachers, and have non-White teachers as their classroom teacher in certain contexts. We describe and discuss these findings – which have important implications for how to combat compounding racial bias and stereotypes that make trust and learning difficult across racial lines in school settings starting in preschool and early elementary school age – in more detail in the following section.

The current study shows that White children were above chance in choosing their ingroup (i.e., White adults), whereas Black children were below chance in choosing their ingroup (i.e., Black adults) in both information endorsement and teacher preference. These findings were striking because about half of our sample of Black children attended schools where a majority of the teachers identified as Black or African American, suggesting that for Black children in the U.S., race-based preferences are not simply tracking what racial group is the numerical majority in their environment (as also seen in Shutts et al., 2011). Rather, Black children show a White preference that has been found for decades (Clark & Clark, 1947; Spencer & Markstrom-Adams, 1990; Waxman, 2021). These findings further reiterate the need for the extant theoretical models on ingroup preference development in children (Bigler & Liben, 2007; Nesdale, 2017) to center racially minoritized children (Marks & Garcia Coll, 2018). The present findings contribute to earlier work in supporting the notion that racial ingroup preference may not be the predominant reason or driver that minoritized children use to navigate their social world and such findings should be featured more prominently in theoretical frameworks.

The current findings also present a more nuanced view of the racial ingroup preference phenomenon. Although both Black and White children showed an above chance White preference, they did not differ in information endorsement based on race but rather showed a difference in teacher preference based on race. This difference was driven by White children, who were more likely to choose the Black teacher in the information endorsement task than teacher preference, whereas Black children did not differ in their choice of the Black adult for both information endorsement and teacher preference. This pattern of results suggests that the strong racial ingroup preference White children display may not necessarily permeate across all their social choices. That is, 3- to 7-year-old White children exhibit a strong preference for White teachers but they do not necessarily think White adults have greater knowledge of new information than Black adults. This finding has important

implications for the development of racial stereotypes and suggests that, for White children, preschool age is a vital period in which to intervene and disrupt the formation of more entrenched biases against Black individuals (Waxman, 2021).

Although racial demographics of children's schools and neighborhoods did not predict race-based information endorsement and teacher preference, these factors were significantly related to the task in which children could choose teachers not only based on race but also accuracy. In a test of whether children would prioritize race or accuracy of the person, children did overall choose the accurate adult regardless of the adult's race, with older children prioritizing accuracy more than younger children as seen in previous research (Corriveau & Harris, 2009). However, for the 3-year-old Black and White children in this sample, the racial demographics of their neighborhoods predicted how likely they were to choose the accurate Black adult: Children with larger Black population in their zip codes chose accurate Black adults more than children with smaller Black populations in their zip codes. Similar but weaker patterns were found with Black teacher population in children's schools such that children with more Black teachers in their schools were more likely to choose the accurate Black adults. The effects of the number of Black teachers and Black population were less apparent in older children, potentially due to older children being better at identifying and prioritizing accuracy than younger children; in fact, the performance of most children was at ceiling by age 5 – always choosing the accurate adult regardless of race.

It is important to note that the proportion of Black teachers and Black population predicting 3-year-old children's choices was only found when the Black adults were accurate and White adults were inaccurate; this effect was not found when children were choosing between an inaccurate Black adult and an accurate White adult. Further, 3-year-old children were at chance choosing the accurate Black adult against an inaccurate White adult but were above chance at choosing the accurate White adult against an inaccurate Black adult, suggesting that a White preference may have prevented some children from prioritizing the Black adults' accuracy over race. Thus, having more Black teachers and people in children's social environment potentially helps 3-year-old children rightly prioritize accuracy over race when the Black adult is right and White adult is wrong. This pattern of findings suggests that the racial demographics of children's preschools has the potential to influence how 3-year-old children learn to use race as a cue to choose teachers. The experience of having more Black teachers and a larger Black population in their neighborhoods may be an important protective factor that can help prevent children from developing misguided teacher preference based solely on race.

In addition to the overall racial demographics of children's environment, the race of the individual classroom teacher predicted White children's teacher preferences but not those of Black children: For 5- to 7-year-old White children, if their classroom teachers were non-White, they were more likely to choose Black adults as teachers than those children with only White classroom teachers. These findings suggest that individual teachers may have a stronger influence on changing White children's race-based preferences than Black children's preferences, potentially reflecting how racial socialization and messages may be more focused on interpersonal relationships for White children (Sullivan et al., 2021),

whereas more structural and contextual issues are emphasized in Black children's racial socialization (Hughes et al., 2017).

Given the predictive power of racial demographics in children's schools and neighborhoods on children's race-based teacher preference, a critical next step is to clarify what these racial demographics convey: Are demographics proxies for children's passive exposure to different races? Or for having more relationships with different races? Or is it that they provide more opportunities to observe power dynamics, social structures, and race-based messages? Further work is needed to better understand the intersection of micro level (e.g., individual teachers) and macro level (e.g., school and neighborhood demographics) influences on young children's racial preferences and learning. Future research should examine the relation among racial demographics, interracial relationships, and race-based messages that children receive to better understand how these forces interact to shape children's developing understanding of race and how to best address these forces in the path toward reducing the development of racial bias.

Limitations & Future Directions

The current study is valuable in that it provides nuanced insights into race-based learning and teacher preference in both Black and White children and examines the differential impact of micro and macro level contexts on Black and White children's race-based teacher preferences. However, there are a number of limitations that should be considered when interpreting the present findings and designing future research. First, the racial demographic effects we observe are correlational. Because the schools and neighborhoods children attend and live in were not experimentally manipulated, we cannot causally establish that the racial demographics in children's social environment directly cause children's race-based teacher preferences; however, as discussed above, dissecting what racial demographics represent (e.g., exposure to racial diversity, close interracial relationships, racial socialization messages) and experimentally manipulating these factors will lead to a clearer picture of what directly changes children's racial preferences. Further, our findings about the relation between classroom teacher's race and children's teacher preference should be interpreted with caution as classroom teachers were not randomly assigned based on race in the current study. In addition, the current sample contained more children with classroom teachers who shared their racial background than teachers who did not. Nonetheless, the current study provides preliminary evidence that White children who have non-White classroom teachers are more likely to select Black teachers. A randomized trial study would help to establish the causal relation between classroom teacher race and children's race-based teacher preference.

Second, the current study tested a relatively wide age range of children from 3 to 7 years and does not have a large sample size per age group. Although the effect sizes we expected to observe were large (d of .45 to 1.10), replicating the study would strengthen the age-related findings. Further, our sample is drawn from a single midwestern U.S. metropolitan area and thus our findings may be limited to this geographical region. More research would ascertain whether similar effects are found in other regions of the U.S. as well as other countries.

Third, our measure of racial preference was a forced-choice comparison in which children had to choose between a White or Black adult. Although this measure is often employed

for preschool age children because it is easier for children to answer and process (Harris & Corriveau, 2011; Shutts et al., 2011) and shown to correlate with individual assessments of White and Black individuals separately (Doyle & Aboud, 1995), it may still exaggerate an ingroup preference and limit interpretations about whether children are showing an outgroup dislike (Aboud et al., 2003). Future research should investigate whether micro and macro context effects found in the current study also manifest in similar ways on children's racial outgroup attitudes separately from attitudes towards racial ingroup.

Fourth, it is important to note that children's social preferences were related to information endorsement: Children who were more likely to prefer Black adults as teachers were also more likely to endorse information from Black adults. The current findings cannot discern whether social preferences inform information endorsement or vice versa. More research is needed to determine the causal nature of these two constructs to better understand how social preferences inform racial stereotypes and trust along racial lines in children.

Lastly, the current study focused on Black and White children due to sample size limitations but more representative research with other racially minoritized groups of U.S. children who have differential historical and socio-political contexts and experiences is needed. For instance, it is an open question whether racial demographics in indigenous, Asian, and Hispanic or Latinx children's schools and neighborhoods predict their race-based teacher and learning preferences and how children's connection to cultural heritage, immigrant history, language exposure at home, and more influence their race-based learning preferences. More research with diverse populations will inform theory on how race-based preferences develop in children whose racial-ethnic backgrounds are minoritized or privileged in society. Further, the current study was unable to examine a representative sample of how teachers from other racial backgrounds besides Black and White impact children's emerging racial preferences, but such investigations are necessary to better understand how race impacts teacher-student relationships.

Conclusion

The current study shows that who children choose to learn from and who they prefer as teachers differs not only on the basis of their own racial backgrounds but also by both micro level (e.g., children's classroom teachers) and macro level (e.g., proportion of Black teachers in schools and Black population in neighborhoods) factors. Given that White teachers represent the majority in the U.S. educational system (Spiegelman, 2020) and many children still attend and live in racially segregated schools and neighborhoods (de Brey et al., 2021) investigating how these factors influence all children – racial majority and racially minoritized – is crucial to understanding how racial biases emerge in school settings and how best to combat them.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

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Data Availability

The data that support the findings of this study are openly available in Open Science Framework at <https://osf.io/gmzdg/>

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Public significance statement

This study reports findings that Black and White children in the U.S. are more likely to endorse information from and to choose as teachers White adults compared to Black adults. However, the results indicate that the racial demographics of children's schools and neighborhoods has the potential to impact children's teacher choice. Children attending schools with a greater number of Black teachers and living in zip codes with a larger Black population are more likely to select Black adults in certain contexts.

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A. Information Endorsement Task



Label Condition: "What do you think this is called?"
 "This is a tig." vs. "This is a mef."

Function Condition: "What do you think this is for?"
 "This is for making bubbles." vs. "This is for holding popsicles."

B. Teacher Preference Task



"Who do you want as your teacher?"

C. Teacher Preference Based on Accuracy Task



Black Accurate Trials:

Inaccurate

Accurate

"This is a shoe, dog, and chair."

"This is a ball, cup, book."

Pictures of ball, cup, and book

Black Inaccurate Trials:

Accurate

Inaccurate

"This is for eating cereal,
 eating spaghetti, and
 painting a picture."

"This is for starting the car,
 cleaning the room, and
 turning the TV on."

Pictures of spoon, fork, and paint brush

Figure 1.
 Example of each trial type in each task with accompanying questions that were used.

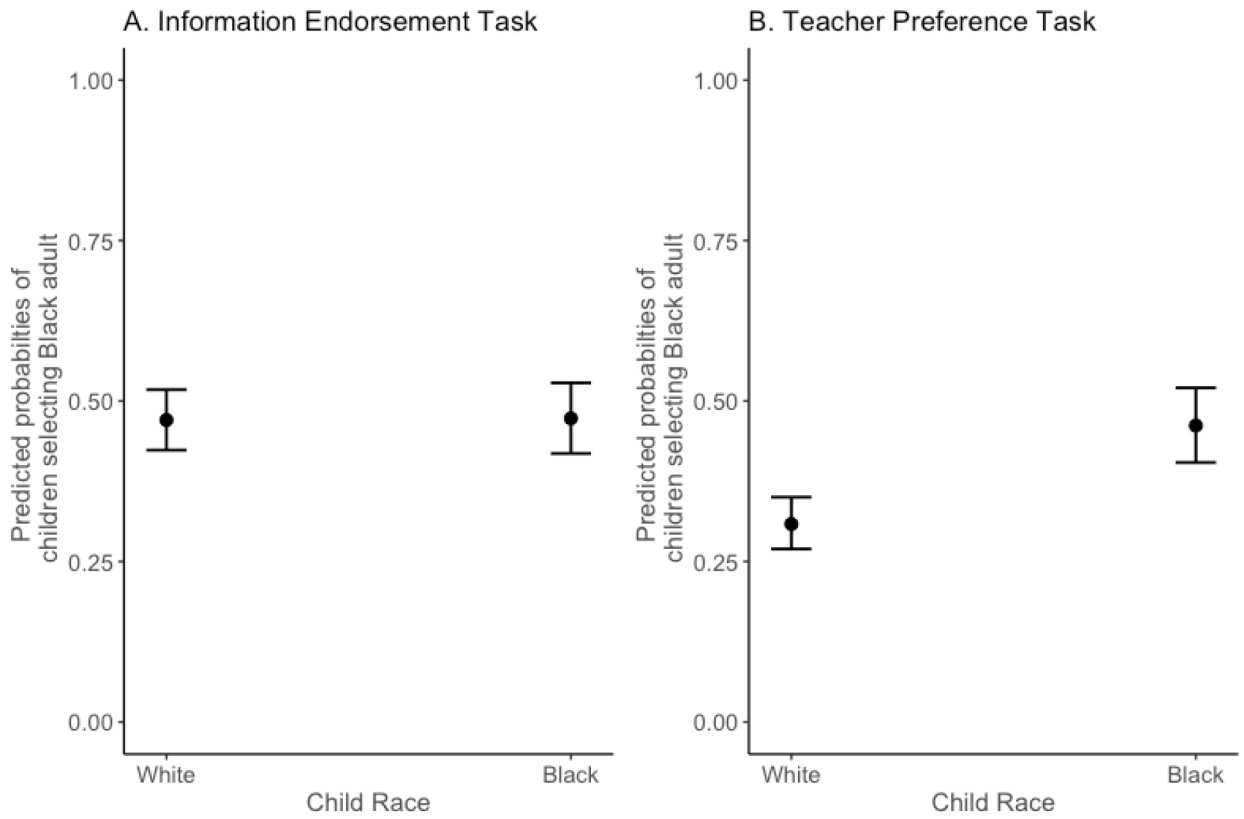


Figure 2.

The probability of children selecting the Black adult according to child race in the information endorsement task (A) and teacher preference task (B) with 95% confidence intervals. Black and White children did not show a difference in selecting the Black adult in the information endorsement task, but Black children were more likely than White children to select the Black adult in the teacher preference task.

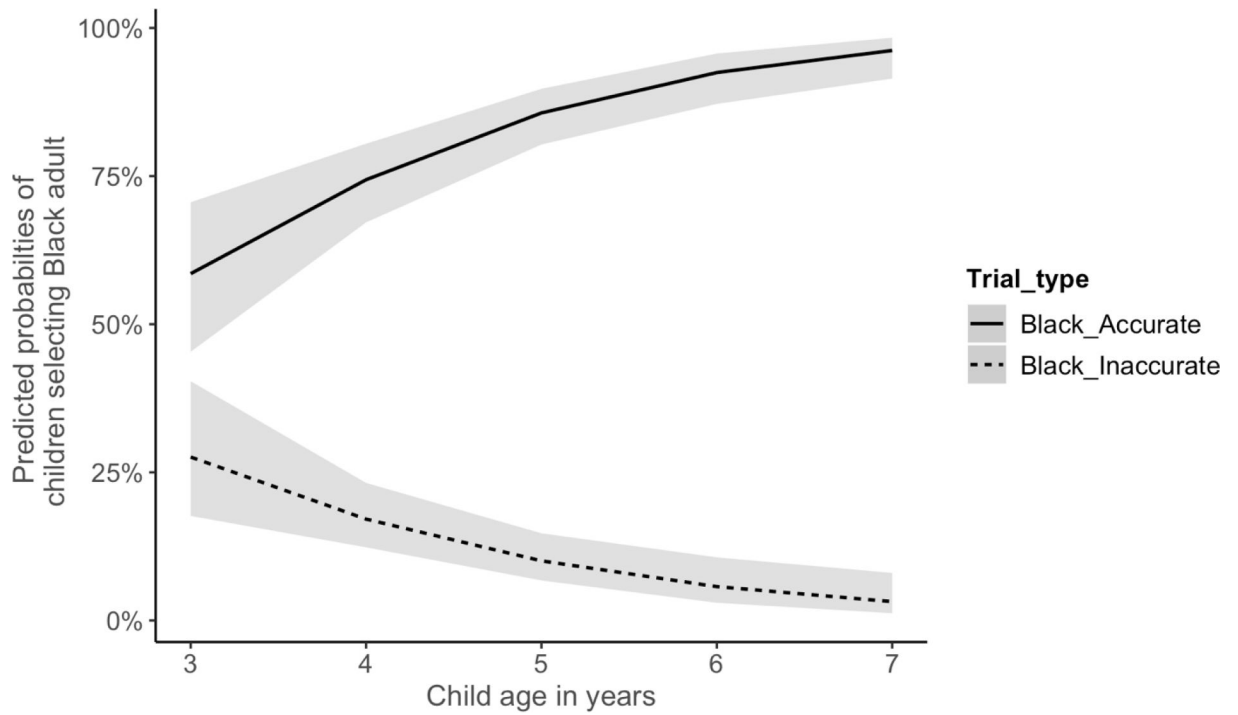


Figure 3.

The probability of children selecting the Black adult in the accuracy task according to trial type and child age in years with 95% confidence intervals. Older children were more likely to select the Black adult when the Black adult was accurate and less likely to select the Black adult when the Black adult was inaccurate than younger children.

Teacher Preference based on Accuracy Task:
Examining only trials in which Black adult was accurate

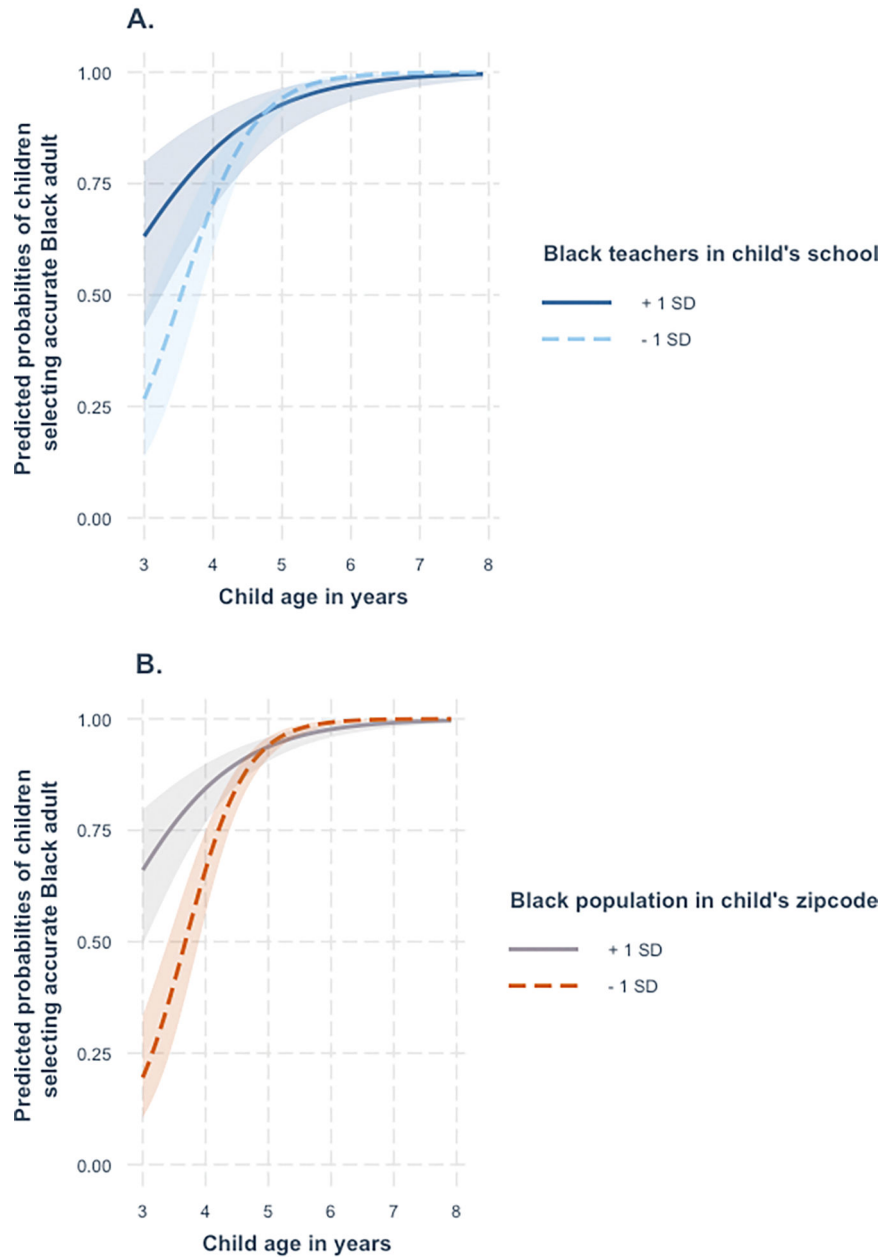


Figure 4. The probability of children selecting the accurate Black adult in the accuracy task according to child age and the proportion of Black teacher population in child’s school (A) and the proportion of Black population in child’s zip code (B) with 95% confidence intervals based on the best-fit model. For the youngest age group in this study, children with higher proportion of Black teachers in their school and zip codes were more likely to select the accurate Black teacher than children with lower proportion of Black teachers in their

school. As children became older, they were more likely to choose the accurate Black adult regardless of the proportion of Black teachers or Black population in their zip code.

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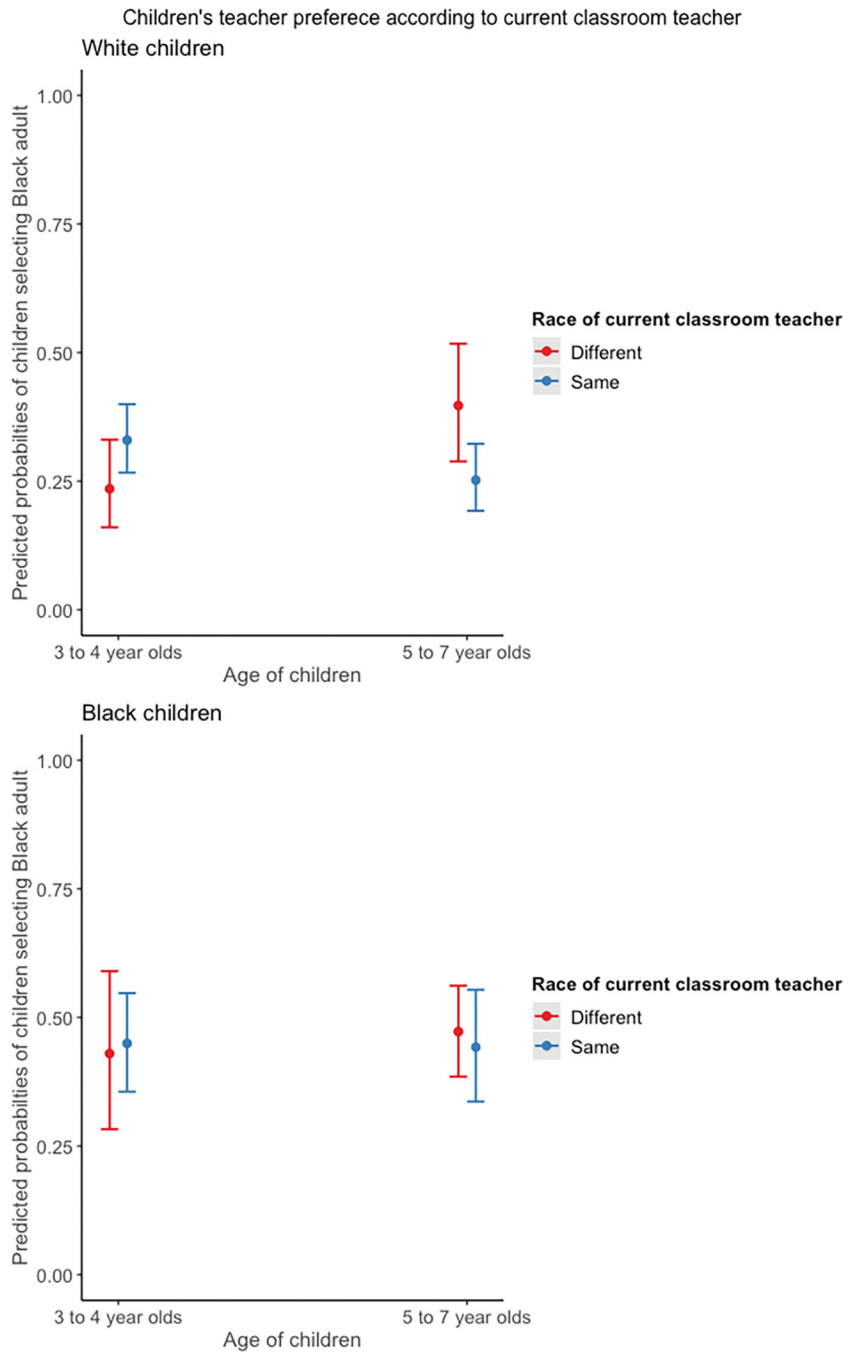


Figure 5. The probability of children selecting the Black adult in the teacher preference task according to child race, child age, and race of their current classroom teacher with 95% confidence intervals based on the best-fit model. For 3- to 4-year-old White children, there was no difference in teacher preference according to race of their current classroom teacher. However, 5- to 7-year-old White children were more likely to choose the Black adult if their current classroom teacher was of a different race (i.e., nonwhite) rather than the same race

(i.e., white). The race of their current classroom teacher did not impact Black children's teacher preference.

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Table 1.

The racial demographics of the student and teacher population as well as average family annual income of the student body at each school.

School (n = # of children participated from school)		Black	White	Other race	Average Family Annual Income
A (n = 24)	Student	100%	0%	0%	\$25,000 through \$34,999
	Teacher	100%	0%	0%	
B (n = 35)	Student	98%	1%	1% Hispanic/Latinx	\$25,000 through \$34,999
	Teacher	25%	65%	5% Asian; 5% Hispanic/Latinx	
C (n = 12)	Student	85%	10%	2% Asian; 3% bi/multi-racial	\$25,000 through \$34,999
	Teacher	95%	3%	2% bi/multi-racial	
D (n = 24)	Student	50%	2%	42% Hispanic/Latinx; 6% bi/multi-racial	\$12,000 through \$15,999
	Teacher	90%	10%	0%	
E (n = 26)	Student	39%	42%	2% Asian; 1% Hispanic/Latinx; 15% bi/multi-racial	\$50,000 through \$74,999
	Teacher	39%	53%	3% bi/multi-racial; 5% Other	
F (n = 43)	Student	35%	60%	1% Asian; 2% Hispanic/Latinx; 2% bi/multi-racial	Did not report
	Teacher	10%	89%	1% Hispanic/Latinx	
G (n = 14)	Student	8%	90%	2% Other	\$50,000 through \$74,999
	Teacher	40%	60%	0%	
H (n = 29)	Student	1%	98%	1% Other	\$75,000 through \$99,999
	Teacher	0%	98%	1% Asian; 1% Other	
I (n = 37)	Student	1%	91%	2% Asian; 6% bi/multi-racial	Did not report
	Teacher	1%	92%	1% Asian; 6% bi/multi-racial	
J (n = 33)	Student	1%	94%	1% Hispanic/Latinx; 4% bi/multi-racial	Did not report
	Teacher	4%	96%	0%	
K (n = 4)	Student	1%	90%	5% Asian; 3% Hispanic/Latinx; 1% bi/multi-racial	\$75,000 through \$99,999
	Teacher	0%	100%	0%	

Table 2.

Stimuli used in the Information Endorsement and Teacher Preference based on Accuracy Task.

Task	Novel objects	Adult 1 label or function	Adult 2 labels or functions
Information Endorsement Task	Red cone with holes	“This is a mef.”	“This is a tig.”
	Red money clip	“This is a yiff.”	“This is a zazz.”
	Black angled shelf	“This is a bem.”	“This is a kiv.”
	Blue dog toy	“This is a blicket.”	“This is a koba.”
	Clear three-pronged object	“This is for making friendship bracelets.”	“This is for throwing and playing catch.”
	Silver clip-on object	“This is for opening bottles.”	“This is for slicing cucumbers.”
	Green racquet with holes	“This is for hitting a ball.”	“This is for cutting playdough.”
	Red funnel	“This is for making bubbles.”	“This is for holding popsicles.”
Teacher Preference based on Accuracy Task	Ball	“This is a ball.”	“This is a shoe.”
	Cup	“This is a cup.”	“This is a dog.”
	Book	“This is a book.”	“This is a chair.”
	Spoon	“This is for eating cereal.”	“This is for starting the car.”
	Fork	“This is for eating spaghetti.”	“This is for cleaning the room.”
	Paintbrush	“This is for painting a picture.”	“This is for turning the TV on.”

Note. Images of the novel objects used in the study are available upon requests.

Table 3.

Means and standard deviation of children's choices according to task and children's race averaged across the two sessions.

Tasks	Black Children		White children	
	Mean	SD	Mean	SD
Information Endorsement (choosing Black adult; out of 4 trials)	1.84	.70	1.87	.68
Teacher Preference (choosing Black adult; out of 4 trials)	1.70	.84	1.35	.86
Teacher Preference Based on Accuracy (choosing accurate adult; out of 4 trials)	3.43	.63	3.25	.90
Teacher Preference Based on Accuracy : For Accurate Black Adult (choosing accurate Black adult; out of 2 trials)	1.61	.51	1.48	.72
Teacher Preference Based on Accuracy : For Inaccurate Black Adult (choosing inaccurate Black adult; out of 2 trials)	.28	.46	.26	.52
Memory Check (choosing accurate adult; out of 2 trials)	1.74	.44	1.82	.40

Table 4.

Pearson correlations among Information Endorsement, Teacher Preference, and Teacher Preference based on Accuracy. Responses for these three tasks are the choice of the Black adult averaged for each child.

	Information Endorsement	Teacher Preference	Teacher Preference based on Accuracy
Information Endorsement	-	$r = .26$ ($p = .000045$)	$r = .15$ ($p = .018$)
Teacher Preference	-	-	$r = .16$ ($p = .011$)

Table 5.

Pearson correlation between the Memory Check response (the correct identification of the accurate adult averaged for each child) and children's averaged choice of the accurate Black adult and accurate White adult in the Teacher Preference based on Accuracy task.

Teacher Preference Based on Accuracy	Memory Check
Choice of accurate Black adult over inaccurate White adult	$r=.063$ ($p = .33$)
Choice of accurate White adult over inaccurate Black adult	$r=-.21$ ($p = .00088$)

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