

Underrepresentation and the Perception of Others' Racial Attitudes

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Abstract

Across two experiments, we investigate racial attitude perceptions in low-diversity environments to explore whether friendships with members of numerically underrepresented groups serve as a stronger indication of individuals' racial attitudes than friendships with members of the numeric majority. Children aged 7–10 years heard about a Black (Experiment 1) or White (Experiment 2) protagonist befriending two classmates who belonged to either the numeric minority or majority group. When protagonists befriended classmates from the numeric minority rather than the numeric majority, participants inferred racial preferences among Black protagonists who befriended in-group (but not out-group) children and White protagonists who befriended in-group and out-group children. Racial preferences were not assumed when children made inferences about others' choice of future social partners. This work has implications for understanding how the racial composition of environments may affect perceptions of the same-race and cross-race friendships.

Keywords

statistical learning, race, intergroup relations, social cognition, children

Although the United States is increasingly diverse overall, segregation remains persistent in many contexts, including neighborhoods (Adelman & Gocker, 2007), workplaces (Hellerstein & Neumark, 2008; U.S. Department of Labor, 2011), and schools (KewalRamani, Gilbertson, Fox, & Provasnik, 2007; U.S. Department of Education, 2006). Whites are more likely than racial minorities to spend their time in racially homogeneous environments (Cox, Navarro-Rivera, & Jones, 2016; KewalRamani et al., 2007). Yet, society more often questions why racial minorities, as opposed to Whites, “self-segregate” (e.g., Beaman, 2016). Indeed, this perplexing paradox was the topic of an influential text on racial discourse, *Why are all the Black kids sitting together in the cafeteria?: And other conversations about race* (Tatum, 1997). In the current experiments, we explore whether low-diversity contexts can promote the exaggerated perception that Black individuals like same-race peers to a greater extent than White individuals like same-race peers.

Imagine being in a predominantly White environment where Black children befriend White children. Do these friendships suggest the Black children like their White peers better than Black peers? While it is possible that they possess this racial preference, the fact that the environment contains many White children may preclude drawing this inference. That is, friendships with members of the numeric majority group may be a byproduct of the environment (i.e., these friendship pairings align with random sampling assumptions) and therefore serve as a poor indication of individuals' racial attitudes. But now

imagine in the same predominantly White classroom viewing Black children befriend each other. Do their friendships suggest they like Black peers better than White peers? Unlike the prior situation, friendships between Black children should be rare if people chose friends randomly. As such, friendships with members of an underrepresented group (i.e., the numeric minority group) may seem to “violate” random sampling assumptions and therefore serve as a better indicator of an individual's racial attitudes, compared to the choice to befriend members of the numeric majority group. In other words, asymmetric inferences about others' racial attitudes may unfold within low-diversity environments precisely because the racial composition of some friendships seems to be more likely based on the population characteristics than other friendships.

Indeed, when drawing inferences about the causes of others' behavior, both children and adults weigh evidence about whether others' behavior can be explained by salient environmental features (Castelli, De Amicis, & Sherman, 2007; Gilbert & Malone, 1995; Heider, 1958; Kelley, 1967; Kushnir, Xu, & Wellman, 2010). For example, if an agent's toy choice is statistically nonrandom (i.e., toy ducks chosen from a toy

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chest that is mostly filled with toy balls), toddlers infer that the agent prefers the chosen toy, compared to the nonchosen toy. However, they infer no such preference when the choice could have occurred by chance (i.e., toy ducks chosen from a toy chest that is mostly toy ducks; Kushnir et al., 2010). The present investigation draws upon this literature to explore whether biased perceptions of others' racial attitudes (e.g., the exaggerated perception that Black individuals prefer the same-race peers relative to White individuals) can arise within environments that predominantly consist of people from a single racial background (henceforth referred to as, low-diversity environments).

The Current Experiments

Two experiments examine whether friendships with members of the underrepresented group serve as a stronger indication of individuals' racial attitudes than friendships with members of the numeric majority group. Experiment 1 investigates our main question by investigating perceptions of Black individuals' friendship preferences, whereas Experiment 2 tests generalizability by investigating perceptions of White individuals' friendship preferences. Given adults' long-standing experience with predominantly same-race environments, and the fact that adults' expectations and attitudes about race are well practiced (e.g., Baron, 2015), our investigation focused on 7- to 10-year-old children. Although children of this age encode information about others' racial background, the inferences they make about their peers based on race may be more malleable compared to their adult counterparts (Baron, 2015). Furthermore, by 7 years of age, children can reliably use information about a person's past behavior toward an object to predict that person's attitudes and future behavior toward similar objects (Kalish, 2002). Therefore, children of this age should be able to use information about the race of others' previous friends to make inferences about others' racial attitudes and future behavior.

Participants were exposed to a Black (Experiment 1) or White (Experiment 2) protagonist who befriended peers (i.e., White or Black children) within a low-diversity classroom (either predominantly White or predominantly Black). Within the context of the classroom, the race of the protagonist's playmates was either statistically unlikely, and thus represented a "violation" of random sampling assumptions (i.e., Black playmates chosen from a predominantly White classroom; and White playmates selected from a predominantly Black classroom), or the race of the playmates was statistically likely, and thus represented no "violation" of random sampling assumptions (i.e., White playmates selected from a predominantly White classroom; and Black playmates chosen from a predominantly Black classroom). Participants then made inferences about the child's racial attitudes and related behavior.

If children are attuned to the context in which friends are chosen when making inferences about other's racial attitudes and behavior, then we expect children will infer that the protagonist has a racial preference only in the cases when the race of

friends seems unlikely given the context (i.e., there is a violation of random sampling assumptions), whereas they would infer no preference, or a weaker preference, when the race of friends is likely given the context (i.e., when there is no violation of random sampling).

Experiment 1

Method

Participants

For both experiments, our target sample size given the counterbalancing of the experimental design was 192 participants. Data collection stopped at the end of the day in which the 192nd participant was run. This stopping goal allowed us to detect a small effect ($\eta^2 \leq .038$) in our 2×2 between-subjects design for the primary question of interest (i.e., children's inferences about others' racial attitudes) with 80% power (Faul, Erdfelder, Lang, & Buchner, 2007). Experiment 1 had 197 participants (see Table 1 for demographics).

Procedure

Participants sat in front of the testing computer next to the experimenter, who recorded participant's responses. In storybook format, children were introduced to a gender-matched Black protagonist child and the protagonist's gender-matched classmates. Participants were then introduced to the protagonist's specific playmates from the class. We manipulated both the racial composition of the protagonist's class (Majority White—10 White and 2 Black children; or Majority Black—10 Black and 2 White children) and whether the protagonist had Black playmates or had White playmates (i.e., same-race friendships or cross-race friendships, respectively). These manipulations resulted in a 2 (racial composition of friendship: same-race [Black] or cross-race [White]) $\times 2$ (statistical sampling information: no sampling violation or sampling violation) between-subjects design (see Figure 1 for a schematic). White playmate choices within a majority White classroom and Black playmate choices within a majority Black classroom represented the two cases of "no sampling violation" because the race of playmates was likely given the classroom population. In contrast, Black playmate choices within a majority White classroom and White playmate choices within a majority Black classroom represented the two cases of "a sampling violation" because the race of playmates was unlikely given the classroom demographics. Participants then answered counter-balanced questions assessing their inferences about the protagonist's attitudes and related behavior (see the following and Online Supplement).

Dependent Variables

Manipulation check. To assess whether participants viewed the playmate choices as equally stable across all conditions, participants answered two forced-choice questions concerning who

Table 1. Participant Demographics for Each Experiment.

Experiment	Average Age (SD)	Age Range	% of Female	% of Children Identified as . . .										Location Run		Additional Participants Who Were Excluded From Analyses Because They
				White (%)	Mixed Race (%)	Hispanic (%)	Pacific-Islander (%)	African American (%)	Native American (%)	"Other" (%)	% in Parks (%)	% at a Camp (%)	% in Lab (%)	Did Not Finish	Failed to Pass Memory Control Question	
1	8 years, 11 months (1 year, 1 month)	7 years, 0 months to 10 years, 11 months	48	61	22	6	5	1	.5	1	99	0	1	2	3	
2	8 years, 11 months (1 year, 2 months)	7 years, 0 months to 11 years, 0 months	58	67	13	5	8	2	1	.5	83	15	1	0	4	

Note. Three parents in Experiment 1 and seven parents in Experiment 2 failed to report the exact birthdate of their child. Percentages may not sum to 100% due to rounding error, or in the case of children's identified race, some parents declined to respond.

the protagonist would (a) bring to a birthday party, and (b) take to the movies. The choices for each question were between the same child previously depicted as the protagonist's playmate from class and a gender-matched child who was a different race than the previous playmate.

Responses for each question were scored such that 1 represented inferring the protagonist would choose to interact with the same playmate again and 0 represented inferring the protagonist would choose to interact with the child who was a different race than the previous playmate.

Perceived liking. To assess participants' inferences about the protagonist's racial attitudes, participants rated how much they thought the protagonist liked four novel, target children (two White and two Black), on a 5-point scale ranging from 1 = *doesn't like a lot* to 5 = *likes a lot*.

This variable was scored to reflect average perceived liking of novel children who were the same race as the previous playmates and average perceived liking of novel children of a different race than the previous playmates. Therefore, if the previous playmates were Black (i.e., the same-race friendship conditions), the perceived liking of novel Black children was coded as perceived liking of children of the same race as the previous playmates, whereas perceived liking of the novel White children was coded as perceived liking of children of a different race than the previous playmates. If the previous playmates were White (i.e., the cross-race friendship conditions), the perceived liking of novel White children was coded as perceived liking of children of the same race as the previous playmates, whereas perceived liking of the novel Black children was coded as perceived liking of children of a different race than the previous playmates.

Social partner choice. To investigate whether the inferences children make about a person's racial attitudes guide assumptions about choice of future interaction partners, participants answered two forced-choice questions about whom they thought the protagonist would choose as a friend in the future. Each question required them to select between two novel children (one White and one Black).

Responses for each question were scored such that 1 represented inferring the protagonist would choose to interact with the child of the same race as their previous playmates and 0 represented inferring the protagonist would choose to interact with the child who was a different race than the previous playmates (analogous to the scoring of the manipulation check). Therefore, if the previous playmates were Black (i.e., the same-race friendship conditions), selecting the Black child would be scored as 1 and selecting the White child would be scored as 0. Similarly, if the previous playmates were White (i.e., the cross-race friendship conditions), selecting the White child would be scored as 1 and selecting the Black child would be scored as 0.

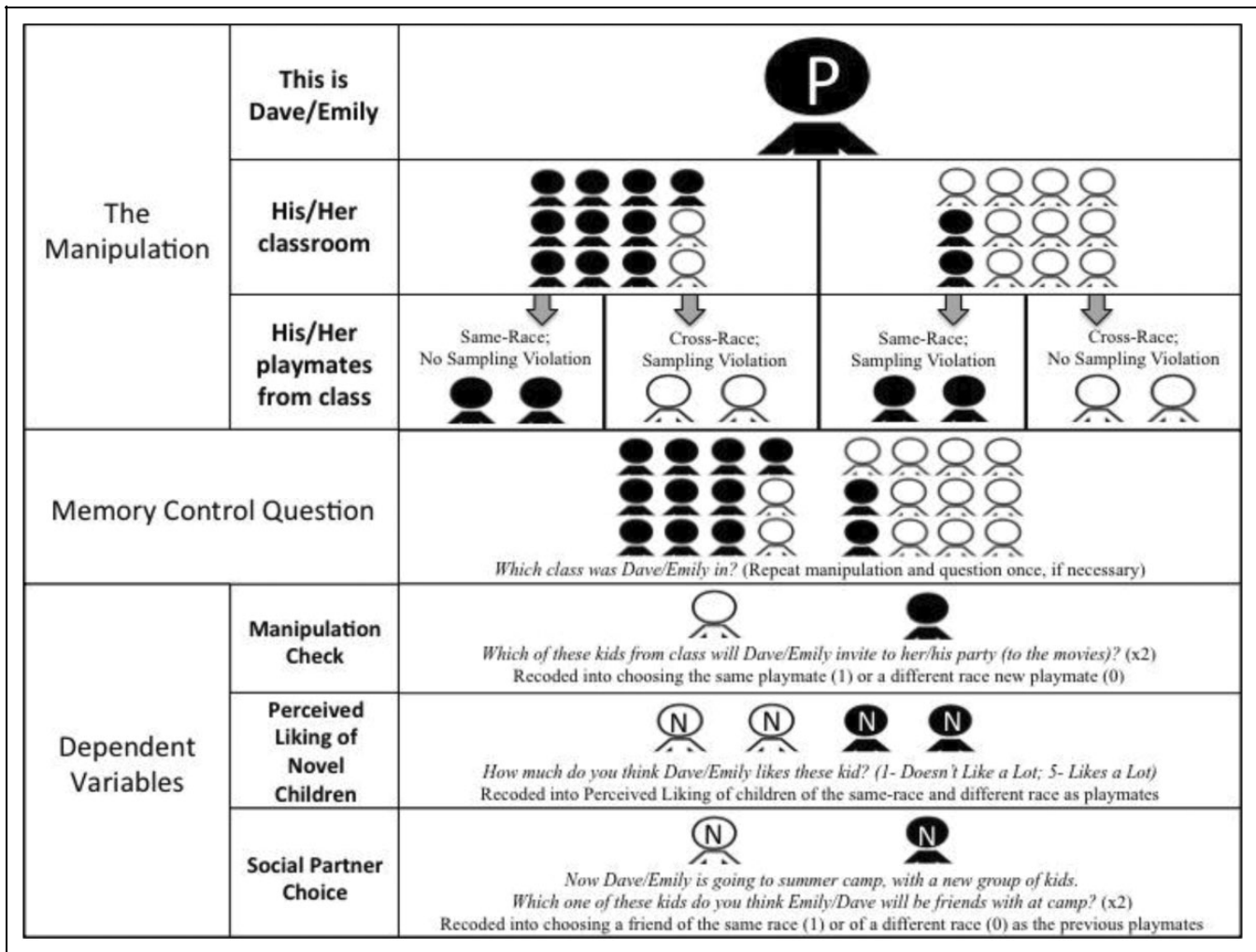


Figure 1. Schematic of the Experiment 1 methods. All of the photographs used for participants were of actual (gender-matched) children, as opposed to the black and white Figures in the schematic. White figures represent White children, and the black figures represent Black children. The P within the figure denotes the protagonist, and the Ns within the figures denote novel children who were not depicted as part of the classroom. Finally, the order of the dependent variables was completely counterbalanced.

Results

Manipulation Check

Overall, 87.1% of the time, children predicted the protagonist would choose interact with their previous friend. To investigate whether this pattern differed by condition, we conducted a 2 (racial composition of friendship: same-race vs. cross-race) \times 2 (sampling information: no sampling violation vs. sampling violation) mixed-model binary logistic regression (to account for the repeated measures nature of the design).

There was a significant main effect of racial composition of friendship, $F(1, 391) = 11.202, p < .001$. Specifically, participants predicted that the protagonist would interact with the same playmates (as opposed to different-race, new individuals) more often when the previous playmates were the same race as the protagonist (i.e., Black; probability = 94.9%), as opposed to when the previous playmates were cross-race (i.e., White; probability = 80.5%), nonetheless

both of these effects were significantly above chance. The results are summarized in Table 2.

There was no significant main effect of sampling information, $F(1, 391) = 2.667, p = .103$, or Racial Composition of Friendship \times Sampling Information interaction, $F(1, 391) = .204, p = .651$.

Perceived Liking

To investigate whether inferred liking differed by racial composition of friendship or sampling information, we conducted a 2 (racial composition of friendship: same-race vs. cross-race) \times 2 (sampling information: no sampling violation vs. sampling violation) \times 2 (target: same race as previous playmates vs. different races than previous playmates) mixed-model analysis of variance (ANOVA), with the last factor within subjects.

As expected, there was a main effect of target, $F(1, 193) = 6.38, p = .012, \eta^2_{\text{partial}} = .03$, such that participants inferred

Table 2. Results From the Mixed-Model Binomial Logistic Regression, With an Unstructured Covariance Matrix, Predicting the Percentage of Times the Same Playmate Was Selected From the Racial Composition of Friendship and the Sampling Information in Experiment 1 (Manipulation Check).

Predictor	<i>b</i> (SE)	Exp(<i>b</i>)	95% CI Exp(<i>b</i>)
Racial composition of friendship	.76** (.23)	2.13	[1.37, 3.32]
Sampling information	−0.37 (.23)	.69	[.44, 1.08]
Racial Composition of Friendship × Sampling Information	−.10 (.23)	.90	[.58, 1.41]
Intercept	2.18*** (.23)	8.83	[5.66, 13.76]

Note. Values shown in the *b* column are unstandardized coefficients, values in the Exp(*b*) column represent the odds of selecting that the protagonist would choose the same playmate as opposed to the different-race child. Racial composition of friendship was coded as −1 for cross-race friendships and 1 for same-race friendships. Sampling information was coded as −1 for no sampling violation and 1 for sampling violation. CI = confidence interval. ***p* < .01. ****p* < .001.

greater liking of children of the same race as the protagonist’s previous playmates, relative to children of a different race than the protagonist’s previous playmates.

This was qualified by a significant Target × Racial Composition of Friendship interaction, $F(1, 193) = 12.34, p = .001, \eta^2_{\text{partial}} = .060$, which was further qualified by a significant Target × Racial Composition of Friendship × Sampling Information interaction, $F(1, 193) = 11.00, p = .001, \eta^2_{\text{partial}} = .054$. We conducted follow-up analyses to break down the significant three-way interaction and investigate the role of statistical sampling information when observing the same-race and cross-race friendships.

For *same-race friendships*, there was a significant Target × Sampling Information interaction, $F(1, 193) = 11.03, p < .001, \eta^2_{\text{partial}} = .054$. Simple effects analyses revealed that when Black playmates were chosen from a predominantly White classroom (i.e., there was a sampling violation), participants inferred that the protagonist liked novel Black playmates more than novel White playmates, $F(1, 193) = 29.65, p < .001, \eta^2_{\text{partial}} = .13$. However, Black classmates were chosen from a predominantly Black classroom (i.e., there was no sampling violation), and the protagonist’s perceived liking of novel Black and White children did not differ, $F(1, 193) = .36, p = .549, \eta^2_{\text{partial}} = .002$. That is, only when the protagonist chose Black playmates from a majority White classroom did children infer that the protagonist liked Black children more than White children (see Figure 2 and Table 3).

However, for *cross-race friendships*, the Target × Sampling Information interaction was not significant, $F(1, 193) = 1.78, p = .184, \eta^2_{\text{partial}} = .009$. Specifically, when the protagonist chose White playmates, children inferred the protagonist liked novel White and Black children equally, regardless of the whether the playmates were from a majority White or a majority Black classroom (see Figure 2 and Table 3). Thus, participants did not utilize relevant sampling

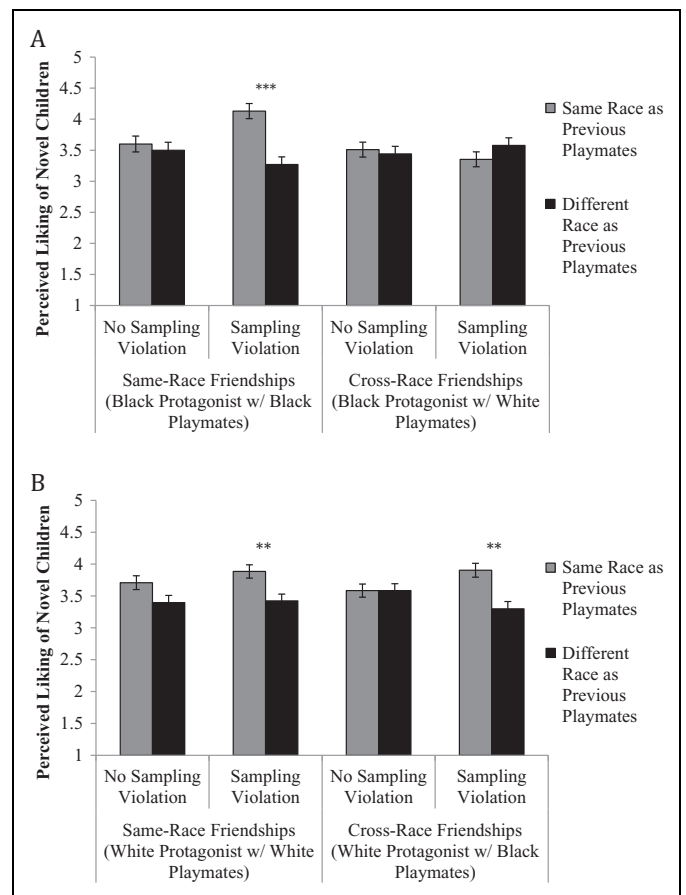


Figure 2. Panel A. Perceived liking—perceived liking as a function of sampling and racial composition of friendship in Experiment 1. Panel B. Perceived liking—perceived liking as a function of sampling and racial composition of friendship in Experiment 2. Error bars represent ± 1 SE. ***p* < .01. ****p* < .001.

Table 3. Estimated Marginal Means and 95% Confidence Intervals for the Perceived Liking DV, for Each Condition of Experiment 1.

Condition	Mean Perceived Liking	
	Children of the same race as previous friends [95% CI]	Children of a different race than previous friends [95% CI]
Same-race friendships		
No sampling violation	3.60 [3.35, 3.85]	3.50 [3.25, 3.75]
Sampling violation	4.13 [3.89, 4.37]	3.27 [3.03, 3.51]
Cross-race friendships		
No sampling violation	3.51 [3.35, 3.85]	3.44 [3.20, 3.68]
Sampling violation	3.35 [3.12, 3.29]	3.58 [3.34, 3.82]

information when making inferences about the Black protagonist’s racial attitudes after learning that Black protagonist had cross-race playmates (i.e., White friends).

Table 4. Results From the Mixed-Model Binomial Logistic Regression, With an Unstructured Covariance Matrix, Predicting the Percentage of Times the Friend of the Same-Race as the Previous Playmates Was Selected From the Racial Composition of Friendship and the Sampling Information in Experiment 1 (Social Partner Choice DV).

Predictor	<i>b</i> (<i>SE</i>)	Exp(<i>b</i>)	95% CI Exp(<i>b</i>)
Racial composition of friendship	.55*** (.12)	1.74	[1.38, 2.20]
Sampling information	−0.22 (.12)	.80	[.64, 1.02]
Racial Composition of Friendship × Sampling Information	.06 (.12)	1.06	[.84, 1.34]
Intercept	.55*** (.12)	1.73	[1.37, 2.18]

Note. Values shown in the *b* column are unstandardized coefficients, values in the Exp(*b*) column represent the odds of selecting that the protagonist would choose a friend of the same-race as the previous playmates (vs. a friend of a different race than the previous playmates). Racial composition of friendship was coded as −1 for cross-race friendships and 1 for same-race friendships. Sampling information was coded as −1 for no sampling violation and 1 for sampling violation.

****p* < .001.

There were no other significant main effects, racial composition of friendship: $F(1, 193) = 2.71, p = .102, \eta^2_{\text{partial}} = .014$; sampling information: $F(1, 193) = .56, p = .456, \eta^2_{\text{partial}} = .003$, or interactions, Target × Sampling Information: $F(1, 193) = 2.15, p = .144, \eta^2_{\text{partial}} = .011$; Racial Composition of Friendship × Sampling Information: $F(1, 193) = .73, p = .396, \eta^2_{\text{partial}} = .004$.

Social Partner Choice

Overall, 61.9% of the time, children predicted the protagonist would choose the child who was the same race as their previous playmates. To investigate whether this pattern differed by participants' condition, we conducted a 2 (racial composition of friendship: same race vs. cross race) × 2 (sampling information: no sampling violation vs. sampling violation) mixed-model binary logistic regression.

There was a significant main effect of racial composition of friendship, $F(1, 392) = 21.63, p < .001$. Specifically, participants predicted that the protagonist would interact with a child of the same race (vs. a child of a different race) as the previous playmates more often when the previous playmates were the same race as the protagonist (i.e., Black; probability = 75.0%) than when the previous playmates were cross-race (i.e., White; probability = 50.0%). The results are summarized in Table 4 (see Figure 3 for predicted probabilities in each condition).

There was no significant main effect of sampling information, $F(1, 392) = 3.36, p = .067$, or Racial Composition of Friendship × Sampling Information interaction, $F(1, 392) = .240, p = .625$.

Thus, regardless of the sampling information, participants inferred the protagonist would choose a novel friend of the

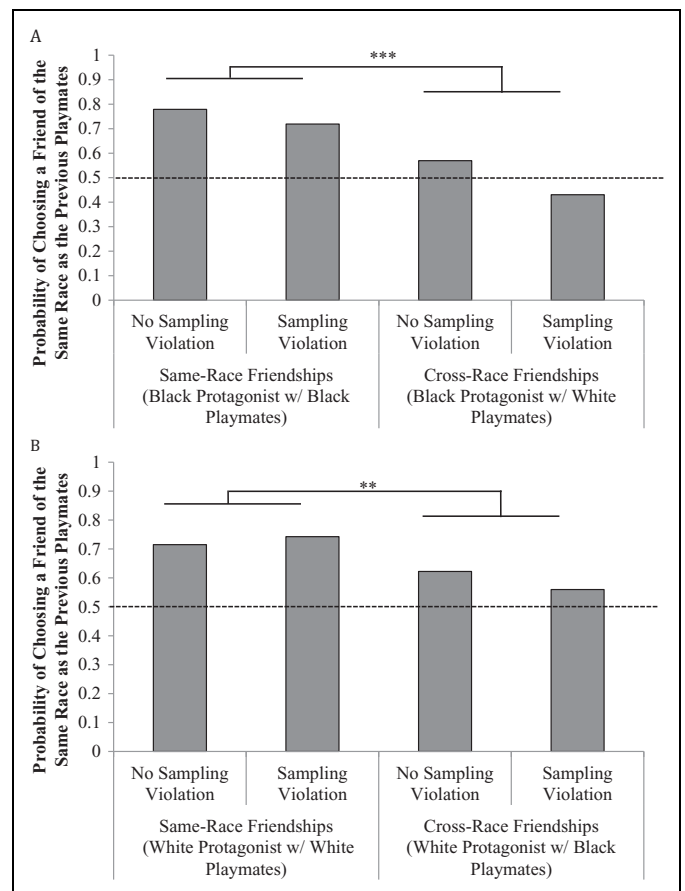


Figure 3. Panel A. Predicted probability of predicting the protagonist would choose a friend of the same race as the previous playmates as a function of racial composition of friendship and sampling information in Experiment 1. Panel B. Predicted probability of predicting the protagonist would choose a friend of the same race as the previous playmates as a function of racial composition of friendship and sampling information in Experiment 2. Predictions are based on the estimates shown in Tables 4 and 7. ****p* < .01. ****p* < .001.

same race as their previous playmates, only when friendships were same-race, but not when they cross-race.

Discussion

The results of Experiment 1 provide some evidence that when making inferences about others' racial attitudes children are attuned to both the race of others' friends and the racial demographics of the context in which those friendships occurred. Specifically, viewing Black children affiliate with each other in a predominantly White environment led children to infer that the protagonist preferred Black to White children. As expected, viewing the analogous same-race friendships occur within a predominantly Black environment did not lead children to infer that the protagonist had a significant racial preference. However, participants' perceptions of the protagonist's racial attitudes when cross-race (i.e., White) friends were chosen did not seem to be sensitive to the racial demographics of the context (and thus the statistical sampling information). In

particular, in neither of the cases when children saw cross-race friendships (i.e., the Black protagonist choosing White friends) did children infer that the Black protagonist preferred White children to Black children.

While this experiment alone cannot speak to why statistical sampling information did not affect children's inferences about the racial attitudes of Black children who chose White friends, prior literature provides a possible explanation. Among children of 7–10 years old, cross-race friendships are less likely to be stable over time, less intimate, and more likely to be dropped compared to the same-race friendships (Aboud, Mendelson, & Purdy, 2003). Consequently, children may perceive that cross-race friendships are less strong than the same-race friendships and thus may require additional evidence to make the inference that an individual prefers racial out-group members. The results of the manipulation check and social partner choice provide initial evidence in line with this possibility. Specifically, Black protagonists' friendships with Black children were perceived to be more likely to persist into the future and more likely to generalize to new friendships than Black protagonists' friendships with White children.

Experiment 2

Experiment 1 provided preliminary evidence that within low-diversity environments, asymmetric inferences about racial attitudes may occur. Specifically, Experiment 1 demonstrated that statistical sampling information affected perceptions of Black individual's same-race friendships but not cross-race friendships. To test the generalizability of these findings, and further test why inferences about the same-race friendships seemed to be more affected by statistical sampling information than inferences about cross-race friendships, Experiment 2 replicates Experiment 1, but with a White protagonist.

Method

Participants

Two hundred and eight children participated (see Table 1 for demographics).

Procedure. The procedure and measures for Experiment 2 were identical to Experiment 1, except the protagonist was White, as opposed to Black (see Figure 4).

Results

Manipulation Check

Overall, 90.4% of the time, children predicted the protagonist would choose to interact with their previous friend. A 2 (racial composition of friendship: same race vs. cross race) \times 2 (sampling information: no sampling violation vs. sampling violation) mixed-model binary logistic regression revealed no significant main effects, racial composition of friendship: $F(1, 412) = .264, p = .608$; sampling violation: $F(1, 412) =$

$.010, p = .920$, or Racial Composition of Friendship \times Sampling Information interaction, $F(1, 412) = 2.705, p = .101$. In other words, participants' likelihood of predicting that the protagonist would choose to interact with the same playmates (as opposed to children of a different race than the previous playmates) did not significantly differ across conditions. The results are summarized in Table 5.

Perceived Liking

To investigate whether inferred liking differed by racial composition of friendship or sampling information, we conducted a 2 (racial composition of friendship: same race vs. cross race) \times 2 (sampling information: no sampling violation vs. sampling violation) \times 2 (target: same race as previous playmates vs. different races than previous playmates) mixed-model ANOVA, with the last factor within subjects.

As expected, there was a main effect of target, $F(1, 204) = 22.47, p < .001, \eta^2_{\text{partial}} = .10$, such that participants inferred greater liking of children of the same race as the protagonist's previous playmates, relative to children of a different race than the protagonist's previous playmates.

However, this was qualified by a significant Target \times Sampling Information interaction, $F(1, 204) = 6.83, p = .010, \eta^2_{\text{partial}} = .032$. Simple effects analyses revealed that when there was a sampling violation, participants inferred the protagonist liked children of the same race as their previous playmates ($M = 3.85, SD = .75, 95\% \text{ CI } [3.71, 4.00]$) more than children of a different race than their previous playmates ($M = 3.34, SD = .78, 95\% \text{ CI } [3.19, 3.49]$), $F(1, 204) = 27.58, p < .001, \eta^2_{\text{partial}} = .119$. When there was no sampling violation, the protagonist's perceived liking of children of the same race as previous playmates ($M = 3.64, SD = .77, 95\% \text{ CI } [3.49, 3.79]$) and children of a different race than previous playmates ($M = 3.50, SD = .81, 95\% \text{ CI } [3.34, 3.65]$) did not differ, $F(1, 204) = 2.22, p = .138, \eta^2_{\text{partial}} = .011$. In other words, only when the protagonist chose White playmates from a majority Black classroom and Black playmates from a majority White classroom, did children infer the protagonist liked White children (more than Black children) and Black children (more than White children), respectively (see Figure 2 and Table 6 for information about all conditions).

There were no other significant main effects, racial composition of friendship: $F(1, 204) = .007, p = .933, \eta^2_{\text{partial}} < .001$; sampling information: $F(1, 204) = .16, p = .688, \eta^2_{\text{partial}} < .001$, or interactions, Target \times Racial Composition of Friendship: $F(1, 204) = .06, p = .804, \eta^2_{\text{partial}} < .001$; Racial Composition of Friendship \times Sampling Information: $F(1, 204) = .31, p = .578, \eta^2_{\text{partial}} = .002$; Target \times Sampling Information \times Racial Composition of Friendship: $F(1, 204) = 3.53, p = .062, \eta^2_{\text{partial}} = .017$.

Social Partner Choice

Overall, 65.8% of the time, children predicted the protagonist would choose the child who was the same race as their

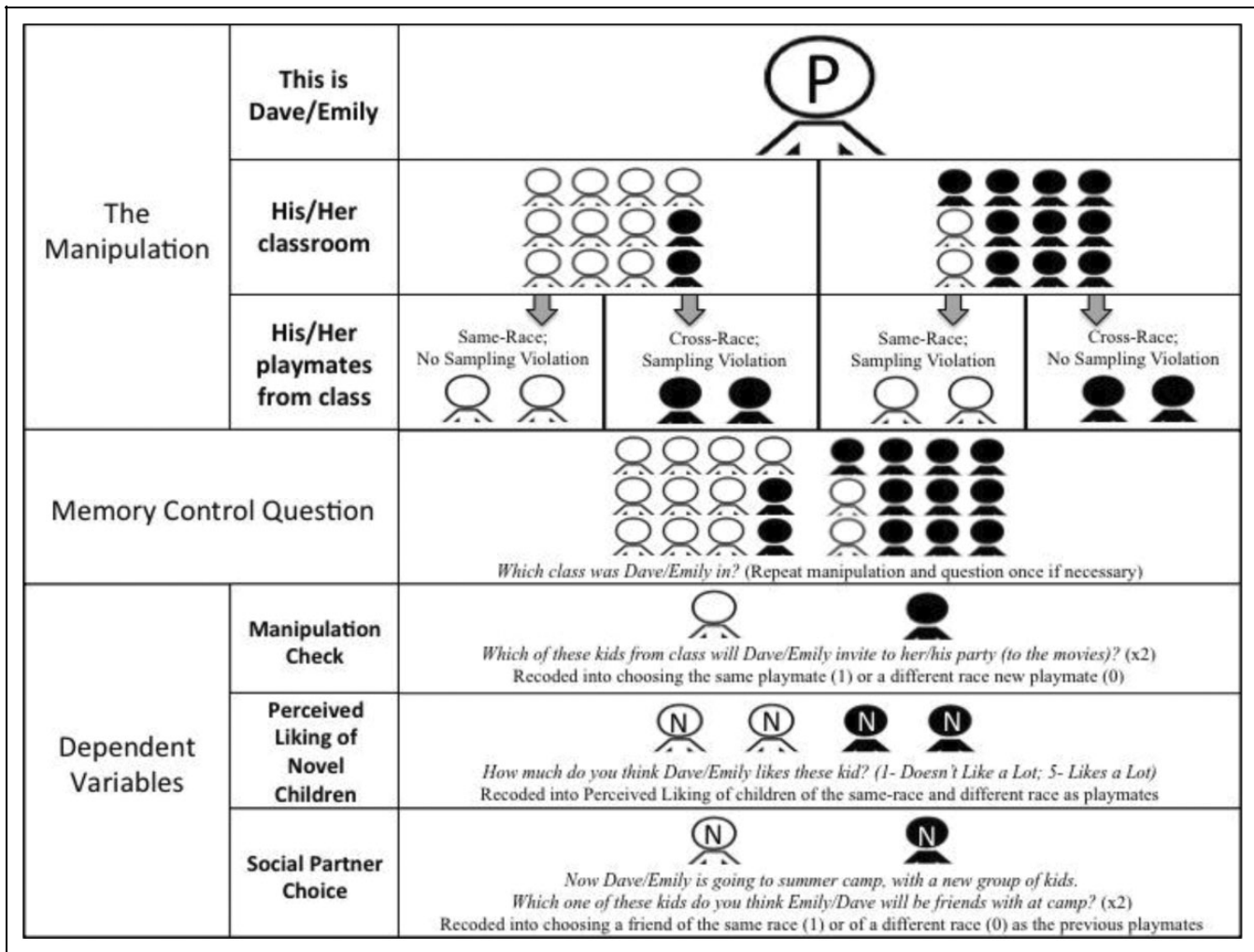


Figure 4. Schematic of the Experiment 2 methods. All of the photographs used for participants were of actual (gender-matched) children, as opposed to the black and white figures in the schematic. White figures represent White children, and the black figures represent Black children. The P within the figure denotes the protagonist, and the Ns within the figures denote novel children that were not depicted as part of the classroom. Finally, the order of the dependent variables was completely counterbalanced.

previous playmate. A 2 (racial composition of friendship: same race vs. cross race) \times 2 (sampling information: no sampling violation vs. sampling violation) mixed-model binary logistic regression revealed a significant main effect of racial composition of friendship, $F(1, 411) = 8.376, p = .004$. Specifically, participants predicted that the protagonist would interact with a child of the same race (vs. a child of a different race) as the previous playmates more often when the previous playmates were the same race as the protagonist (i.e., White; probability = 72.9%), compared to when the previous playmates were cross-race (i.e., Black; probability = 59.1%). The results are summarized in Table 7 (see Figure 3 for predicted probabilities in each condition).

There was no significant main effect of sampling information, $F(1, 411) = .086, p = .769$, or Racial Composition of Friendship \times Sampling Information interaction, $F(1, 411) = .858, p = .355$.

Discussion

Experiment 2 suggests that when making inferences about others' racial attitudes, children are attuned to both the choice of friends and the context in which the choice occurred. Regardless of whether the friendships were same race or cross-race, children inferred that the protagonist preferred individuals of the same race as their previous friends when the choice of friends was unlikely given the context (i.e., there was a sampling violation), but not when the choice of friends was likely given the context (i.e., there was no sampling violation). This is a broader demonstration of the use of sampling information relative to Experiment 1. Thus, this study provides further evidence that within low-diversity contexts, asymmetric perceptions of others' racial attitudes may arise.

However, once again, children's inferences about others' race-related behavior were unaffected by the racial demographics of the context. Instead, children simply expected the protagonist to choose novel children of the same race as their

Table 5. Results From the Mixed-Model Binomial Logistic Regression, With an Unstructured Covariance Matrix, Predicting the Percentage of Times the Same Playmate was Selected From the Racial Composition of Friendship and the Sampling Information in Experiment 2 (Manipulation Check).

Predictor	<i>b</i> (SE)	Exp(<i>b</i>)	95% CI Exp(<i>b</i>)
Racial composition of friendship	-.11 (.21)	.90	[.60, 1.35]
Sampling information	.02 (.21)	1.02	[.68, 1.53]
Racial Composition of Friendship × Sampling Information	.34 (.21)	1.41	[.94, 2.11]
Intercept	2.32*** (.21)	10.21	[6.80, 15.33]

Note. Values shown in the *b* column are unstandardized coefficients, values in the Exp(*b*) column represent the odds of selecting that the protagonist would choose the same playmate as opposed to the different-race child. Racial composition of friendship was coded as -1 for cross-race friendships and 1 for same-race friendships. Sampling information was coded as -1 for no sampling violation and 1 for sampling violation.

****p* < .001.

Table 6. Estimated Marginal Means and 95% Confidence Intervals for the Perceived Liking DV, for Each Condition of Experiment 2.

Condition	Mean Perceived Liking	
	Children of the same race as previous friends [95% CI]	Children of a different race than previous friends [95% CI]
Same-race friendships		
No sampling violation	3.69 [3.48, 3.91]	3.40 [3.18, 3.62]
Sampling violation	3.82 [3.62, 4.03]	3.43 [3.21, 3.64]
Cross-race friendships		
No sampling violation	3.59 [3.38, 3.79]	3.59 [3.37, 3.80]
Sampling violation	3.89 [3.67, 4.09]	3.26 [3.04, 3.48]

previous playmates. Consistently across experiments, we found divergence between inferences about racial attitudes and inferences about race-related behavior—while the former seems to be sensitive to the racial makeup of the broader context, the latter does not. We return to this point in the general discussion.

General Discussion

These experiments demonstrate that within low-diversity environments, biased perceptions of others' racial attitudes can arise. Specifically, across multiple environments (i.e., predominantly White and predominantly Black environments), friendships with members of the numeric majority group led children to infer that the individual likes both groups equally. In contrast, friendship with the underrepresented group was often perceived to indicate that the individual liked members of the underrepresented group more than members of the group

Table 7. Results From the Mixed-model Binomial Logistic Regression, With an Unstructured Covariance Matrix, Predicting the Percentage of Times the Friend of the Same-Race as the Previous Playmates was Selected From the Racial Composition of Friendship and the Sampling Information in Experiment 2 (Social Partner Choice DV).

Predictor	<i>b</i> (SE)	Exp(<i>b</i>)	95% CI Exp(<i>b</i>)
Racial composition of friendship	.31** (.11)	1.36	[1.10, 1.67]
Sampling information	-0.03 (.11)	.97	[.79, 1.19]
Racial Composition of Friendship × Sampling Information	.10 (.11)	1.10	[.90, 1.36]
Intercept	.68*** (.11)	1.96	[1.60, 2.42]

Note. Values shown in the *b* column are unstandardized coefficients, values in the Exp(*b*) column represent the odds of selecting that the protagonist would choose a friend of the same race as the previous playmates (vs. a friend of a different race than the previous playmates). Racial composition of friendship was coded as -1 for cross-race friendships and 1 for same-race friendships. Sampling information was coded as -1 for no sampling violation and 1 for sampling violation.

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

that were the numeric majority. Interestingly, one set of conditions did not show this pattern—Black children choosing cross-race friendships. This unexpected finding is fascinating, and we offer two potential explanations that warrant attention in subsequent research.

First, children may have attributed Black children's engagement in cross-race friends to a factor other than preference. For example, selfish motivations (e.g., the desire for resource acquisition) may underlie children's preferences for high-status individuals (Ahl & Dunham, 2017). As even young children associate Black people with lower status than White people (Shutts, Brey, Dornbusch, Slywotzky, & Olson, 2016), children may have inferred that Black children's friendships with Whites are motivated by status concerns or selfish motivations (rather than motivated by preferences). Expanding future investigations beyond inferences about racial attitudes and behavior, and even beyond Black-White interactions, can shed light on whether this inference accounts for why children did not infer that Black children who chose Whites friends in predominately Black environments had a preference for Whites.

A second possibility for why Black children with White friends, in a majority Black context, were not perceived to have a racial preference for Whites is that this condition was the most cognitively taxing for children. Specifically, considerations of random sampling are cognitively taxing (Xu & Denison, 2009) and may be especially taxing in novel tasks. As both predominantly Black environments and taking the perspective of out-group members (i.e., Black children) are novel activities for participants, this may have created an especially cognitively taxing situation for 7-10 years old children. Consequently, children may have had been cognitively overloaded, thus leading to a more random pattern of responses in this particular condition.

Although we found largely consistent evidence that within low-diversity environments asymmetric inferences about others' racial attitudes may result, unexpectedly a different pattern of results emerged when making inferences about the protagonist's race-related behavior (i.e., choice of social partners). Across both experiments, participants were more likely to infer that the protagonist would choose a partner of the same race as their previous playmates when the friendships were the same-race as opposed to when friendships were cross-race, regardless of whether the friendships were likely or unlikely in the context (i.e., the statistical sampling information). As attitudes, especially those about racial preferences, do not always align with attitude-consistent behavior (e.g., Azjen & Cote, 2008; Crosby, Bromley, & Saxe, 1980; Wicker, 1969), inferences about others' attitudes and attitude-consistent behavior may not align. While we did not predict this divergence, other researchers have also found similar divergence (Berndt & Heller, 1985; Cain, Heyman, & Walker, 1997; Liu, Gelman, & Wellman, 2007).

Particularly, both theoretical perspectives and empirical evidence suggest that the more abstract the inference is, the more likely it is to be informed by contextual information (e.g., Trope & Liberman, 2010). Because making a general inference about preferences is more abstract than an inference about a constrained and concrete future behavior (Semin & Fiedler, 1988), people may be more likely to use statistical sampling information in the former case than in the latter. This may be particularly true of children, as they are still developing the ability to recognize the causes of others' behavior and use that information to make predictions (Abrams, Rutland, Pelletier, & Ferrell, 2009; Fitzroy & Rutland, 2010; Selman & Byrne, 1974). Future research may consider investigating the circumstances that lead to high (vs. low) concordance between inferences about others' preferences and behaviors, especially within the context of social preferences and friendship choices.

To return to the question of why do all the Black kids sit together, our work provides novel insight into why this question may be more frequent than why do all the White kids sit together. The overwhelming prevalence of predominantly White environments (KewalRamani et al., 2007; U.S. Department of Education, 2006) can serve as foundation for such inferences. Specifically, viewing the same-race Black friendships in these environments suggests that Black people strongly prefer other Black people; however, seeing the same-race White friendships in the same environments suggests that White individuals are relatively egalitarian (i.e., like White and Black people equally). These inferences have important implications for promoting positive intergroup interactions. Specifically, the more that White people believe that Black people prefer to interact with the same-race as opposed to cross-race individuals, the less likely Whites are to engage in and initiate future cross-race interactions (Shelton & Richeson, 2005), an important way to promote positive racial attitudes (e.g., Pettigrew & Tropp, 2008). Together, our studies begin to highlight the potentially underappreciated role of demographic contexts in shaping perceptions of intergroup relationships.

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Supplemental Material

The supplemental material is available in the online version of the article.

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