Beliefs About Social Norms and Racial Inequalities Predict Variation in the Early Development of Racial Bias

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Acknowledgements: We thank the children, parents, teachers, and schools that participated in this research; Gorana Gonzalez and Steven O. Roberts for their feedback on the project; and Paul Gray, Jiaqi Liu, and Shuo Zhang for their assistance with data collection.

Author note: Emile Bruneau passed away on September 30th, 2020. A memoriam about his life and accomplishments can be found here: https://www.asc.upenn.edu/news-events/news/memoriam-emile-bruneau-peace-and-conflict-neuroscientist

Conflict of interest: The authors declare no conflict of interest.

Data availability statement: The data that support the findings of this study are openly available on OSF at https://osf.io/7tcw5/; ref #:10.17605/OSF.IO/7TCW5

Funding information: Funding for this project was provided by Beyond Conflict and the National Science Foundation (Award Number: 2017375).

Research Highlights

- 116 4-year-old children completed a 6-month, 3-wave, longitudinal study examining the developmental predictors of racial bias in early childhood.
- Children developed more pro-White/anti-Black racial attitudes across the three waves and were below chance at choosing to include a Black child throughout the study.
- Children's beliefs about who their parents want them to play with predicted their choice to play with Black children in and across time.
- Children's endorsement of essentialist explanations for racial inequalities was related to more pro-White/anti-Black racial biases in and across time.

Abstract

Racism remains a pervasive force around the world with widespread and well documented harmful consequences for members of marginalized racial groups. The psychological biases that maintain structural and interpersonal racism begin to emerge in early childhood, but with considerable individual variation – some children develop more racial bias than others. The present study (N = 116; 4-year-old children) provides novel insights into the developmental mechanisms underlying the emergence of racial bias by longitudinally documenting how two psychological processes—normative beliefs about interracial friendships and explanatory beliefs about racial inequalities—developmentally predict the emergence of pro-White/anti-Black racial bias during early childhood. In a 6-month, 3-wave, longitudinal study, we found that 4-year-old children's beliefs that their parents and peers do not value interracial friendships predicted increased racial bias in and across time and that children's endorsement of essentialist over extrinsic explanations for racial inequalities predicted the developmental trajectory of racial bias over time. These findings suggest that children's foundational beliefs about the social world developmentally predict the emergence of racial bias in early childhood and speak to the importance of early and persistent intervention efforts targeting children's normative beliefs about interracial friendships and explanatory beliefs about racial inequalities.

keywords: racial bias; interracial friendships; essentialism; social development; childhood

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Structural and interpersonal racism undermine the establishment of fair and just social systems and threaten the wellbeing of marginalized racial and ethnic groups (Richeson & Sommers, 2016; Roberts & Rizzo, 2020). As a result, people of color living in the United States today disproportionately face a host of detrimental health, educational, and economic outcomes (Chetty et al., 2020; Lewis & Van Dyke, 2018; Umaña-Taylor, 2016). An important step towards redressing these injustices is understanding the psychological biases that maintain and reinforce them, and how those biases emerge and develop. Racism has its developmental roots in early childhood: upwards of 90% of Black children and adolescents report experiencing discrimination because of their race (Sellers et al., 2006; Spears Brown, & Bigler, 2005; Umaña-Taylor, 2016) and children themselves demonstrate a range of both implicit and explicit racial prejudices (Aboud, 2003; Raabe & Beelmann, 2011; Rhodes & Baron, 2019; Skinner & Meltzoff, 2019). Much of the current research on racial bias, however, has relied on cross-sectional methodologies that cannot address *how* or *why* racial biases emerge and what might explain variation in their development. Thus, the goal of the present study was to longitudinally identify the psychological factors that predict the emergence and development of racial bias in early childhood, focusing on the critical case of the emergence of anti-Black bias among children in the United States.

During the first year of life, infants begin to form representations of the racial groups that are salient within their cultural context (Bar-Haim et al., 2006; Lee et al., 2017). By early childhood, children growing up in the United States begin using these representations to guide their attitudes, behaviors, and expectations by, for example, expecting racial ingroup members to

be nicer or more friendly than racial outgroup members (Aboud, 2003; Dunham et al., 2015). By middle childhood, children begin to show markers of racial prejudice that include explicit perceptions of racial outgroups as threatening (Nesdale et al., 2005) and the attribution of negative intentions to racial outgroup members in ambiguous situations (McGlothlin & Killen, 2006). Similar developmental patterns have been documented among racial majority members in cross-cultural research, as well. For example, Qian and colleagues (2019) found that Chinese children as young as 4-years-old and as old as 19-years-old preferred to play with a same race than other race peer (see Qian et al., 2016 for a study conducted in China and Cameroon). Indeed, in a meta-analytic review of research on racial, ethnic, and national prejudice from a range of countries and cultures, Raabe and Beelmann (2011) documented a robust increase in both implicit and explicit prejudices towards outgroup members between early and middle childhood. Yet, despite these age-related trends, there is also substantial individual variation in racial bias—some children develop more racial bias than others. Identifying the factors that lead some children to develop higher levels of racial bias than others has the potential to yield novel insights into how these biases emerge as well as what psychological interventions might be effective at preempting or disrupting their development. Most research on the emergence of racial bias in early childhood, however, has relied on cross-sectional methodologies; to advance our understanding of *how* racial bias develops, we need longitudinal research to identify the psychological factors that predict variation in racial bias as it emerges during childhood.

To address this gap, we considered children's foundational beliefs about the social world (i.e., beliefs that frame the shape and scope of future conceptual acquisitions; Rhodes, 2013; Wellman & Gelman, 1992) that are likely to foster or impede the development of racial bias in early childhood. Racism and racial bias are multidimensional, intersectional, and multilevel

constructs that manifest in many ways within and across individuals and groups (Lei et al., 2020; Roberts & Rizzo, 2020) and are thus unlikely to have a single developmental predictor or underlying mechanism. Therefore, the aim of the present study was not to identify what predicts *all* of racial bias, but rather to apply well-established theories of conceptual development to identify the foundational beliefs about the social world that predict *at least some* of the individual variation in the development of racial biases during childhood. To do this, we examined how children's normative beliefs about interracial friendships and explanatory beliefs about racial inequalities developmentally related to their interracial attitudes and playmate preferences.

Foundational Beliefs About Social Norms

Beginning early in development, children are sensitive to normative cues regarding how they are supposed to act and with whom they are supposed to interact (Killen et al., 2002; Rhodes, 2012; Tomasello, 2016). When it comes to interracial friendships, children's beliefs about social norms can lead them to make specific inferences about who they are—and are not—expected to be friends with. By age three, for example, children's beliefs that interracial friendships are valued by members of their group promotes their willingness to play with peers from different racial backgrounds, whereas beliefs that interracial friendships are deviant or atypical foster perceptions of intergroup conflict and threat (Abrams et al., 2003; Nesdale et al., 2005). Accordingly, children who are experimentally placed into groups with exclusive group norms (e.g., peer groups who are not accepting of non-members) report more negative attitudes towards outgroup members compared to children placed into groups with inclusive norms (Abrams et al., 2003; Hitti & Killen, 2015; Hitti et al., 2019; Nesdale et al., 2005; Paluck, 2011; Rutland et al., 2015).

Given the connection between children's beliefs about social norms and their racial attitudes, an important next question is how these constructs are related *developmentally*. That is, do social norms predict the subsequent development of racial biases, or do social norms and racial biases develop jointly, such that changes in one are reflected by simultaneous changes in the other? If the former, emphasizing the value of interracial friendships in early childhood may be an effective way to preempt the long-term development of racial bias. If the latter, a more persistent emphasis on the value of interracial friendships throughout development may be needed. Supporting this latter hypothesis, one longitudinal study with older children (7-11 years old) found that ethnic-majority children's perceptions of social norms at the end of the study partially mediated the relationship between children's initial cross-ethnic contact and their developing evaluations of ethnic outgroup members over time (Feddes et al., 2009). A significant relation was not found, however, for children's initial beliefs about social norms and their developing evaluations of ethnic outgroup members over time, suggesting that children's beliefs about social norms and racial biases develop together, in and across time, rather than having a prolonged developmental impact. Yet, no study has examined this question in early childhood when racial biases are first emerging.

Another important consideration is the source of normative messages about interracial friendships. Two sources that are likely to be particularly important during early childhood are children's parents and peers. Children frequently reference their parents' disapproval of interracial friendships when justifying their decision to exclude a racial outgroup member (Hitti et al., 2019; Killen et al., 2002) and children's interracial attitudes are moderately correlated with their parents' attitudes (Degner & Dalege, 2013). Similarly, as discussed above, children's beliefs about their peer group's norms relates to their own interracial attitudes and desire to play

with racial outgroup members (Abrams et al., 2003; Nesdale et al., 2005; Paluck, 2011; Rutland et al., 2015). Thus, the present study examined how children's racial biases are developmentally predicted by both children's beliefs about who their parents want them to play with and their beliefs about who their friends would want to play with.

Foundational Beliefs About Racial Inequalities

Racial inequalities are pervasive throughout the United States—and many other countries across the world—with White Americans occupying a disproportionate proportion of high-status positions, resources, and opportunities relative to Americans of color (Roberts & Rizzo, 2020). Children first start to become aware of these inequalities as they play out in their local environment by as young as 4- to 5-years-old (Shutts, 2015). For example, both Black and White children growing up in the United States are more likely (over 70% of the time) to match White families with high-wealth cues and Black families with low-wealth cues (Mandalaywala et al., 2020; Shutts et al., 2016). Importantly, however, *awareness* of social inequalities is not itself a form of bias; to the contrary, awareness of inequality is often a necessary first step in rectifying it, and mistaken beliefs about the distribution of resources often impede support for remediation efforts (Elenbaas et al., 2020; Hazelbaker et al., 2018; Kraus et al., 2017).

Yet, how children *explain* racial inequalities may lead them to form problematic conclusions about racial groups that are defined by society as lower status. For example, the cognitive bias to explain observed patterns in the world through inherent/intrinsic features may lead children to develop essentialist beliefs about racial inequalities (Cimpian & Salomon, 2014; Mandalaywala, 2020; Rhodes, 2020). That is, through observing consistent differences in how members of various racial groups are positioned within society, children may infer that racial inequalities reflect fundamental, essential, and intrinsic differences between groups. This

essentialist perspective on racial inequalities could contribute to prejudice against low-status groups because it suggests that groups with lower status (in this case, Black Americans) are somehow *intrinsically* less worthy as social partners than members of higher status groups (e.g., White Americans). Consistent with this possibility, in both White and Black adults, racial essentialism contributes to anti-Black bias by leading adults to think that status differences reflect natural and intrinsic differences between groups (Mandalaywala et al., 2018).

Alternatively, beliefs that differences in social status stem from extrinsic factors may help prevent the development of racial bias. Although past research has found that children struggle to fully identify real-world instances of prejudice and discrimination until middle to late childhood (Brown, 2017), more recent research suggests that the early roots of this ability emerge in early childhood, and particularly so when the external or structural causes of those disparities are made explicit (Elenbaas et al., 2020; Rizzo & Killen, 2020; Vasilyeva et al., 2018). For example, in experimental research using novel social categories (Hussak & Cimpian, 2015) and gender (Rizzo et al., 2020; Rizzo & Killen, 2020), children as young as 3- to 5-years-old were more likely to endorse and perpetuate status inequalities that were explained in essentialist or individual terms and were more likely to reject and rectify inequalities that were explained in extrinsic or structural terms (also see Vasilyeva et al., 2018). Therefore, children who are aware of the extrinsic factors that underlie racial inequalities may be less likely to view those disparities as intrinsically determined, and may thus be less likely to develop biased representations of lower status groups. Yet, it is also possible that young children's awareness of extrinsic factors could have a counterintuitive effect. For instance, Li, Spitzer, and Olson (2014) found that although young children often rectify inequalities between individuals, they also hold more positive attitudes towards high-status individuals and end up favoring them in subsequent tasks

(also see Enright et al., 2020; Qian et al., 2019). Thus, in the present study, we examine how children's endorsement of these two explanatory beliefs about racial inequalities (essentialist, extrinsic) develop during childhood and how they relate to children's developing racial attitudes.

Present Study

The present study examined how the emergence of racial bias in early childhood is developmentally predicted by children's foundational beliefs about interracial friendships and racial inequalities using a 6-month, 3-wave, longitudinal study with 4-year-old children. We selected this age-range and study duration given cross-sectional research documenting the rapid development of racial biases during this time (Raabe & Beelmann, 2011). During each of three sessions, children were assessed on two measures of racial bias (Interracial Attitudes: how much participants like Black and White children; Playmate Preferences: participants' choice to play with children of different races), their beliefs about parent (i.e., who their parents would want them to play with) and peer norms (i.e., who their friends would want to play with), and their endorsement of essentialist and extrinsic explanations for racial inequalities. A combination of linear growth models were used to examine 1) how children's racial biases develop during this time and 2) how children's foundational beliefs developmentally predict their racial biases.

An important strength of the present study was the assessment of two distinct forms of racial biases that are well documented in childhood and directly relate to children's everyday experiences with bias and discrimination. Children's Interracial Attitudes provided an assessment of children's more general attitudes towards Black and White children (as is commonly assessed in research on intergroup biases; Dunham et al., 2011; Raabe & Beelmann, 2011) and children's Playmate Preferences provided an assessment of bias in children's affiliative preferences and inclusion/exclusion decisions (Hitti et al., 2019; Killen et al., 2002).

We focused on pro-White/anti-Black racial bias because it is an important and prevalent form of racial bias within the United States (the cultural context of the study; Roberts & Rizzo, 2020), though we acknowledge the critical importance of addressing biases against all racial groups and the intersectional nature of these biases (and return to these points in the Discussion).

Hypotheses. All hypotheses were preregistered (https://osf.io/7tcw5/). Due to space limitations, we focused on a subset of these hypotheses and measures for the present paper (full data and analysis scripts are available on OSF and the full protocol is provided in the Supplemental Materials). Specifically, we hypothesized that participants' pro-White/anti-Black racial biases would increase across the three waves on each of our measures and that children who (a) believe that their parents want them to play with more White than Black children, (b) think that their friends want to play with more White than Black children, and (c) endorse essentialist over extrinsic explanations for racial inequalities, would all develop higher levels of pro-White/anti-Black racial biases. Because our sample size did not allow for testing models with multiple, higher-order interaction terms, we tested each of these hypotheses in separate models.

Methods

Participants

Participants included 4-year-old children (N = 116; 59 female, 57 male; M_{age} = 4.40 during first wave) who were recruited from five public pre-K centers in downtown Manhattan within New York City (the racial demographics of the five schools ranged from 37% - 67% students of color, with 2% - 19% Black students; the median family income for the zip codes in which the data were collected ranged from $95,702 - $224,663; see Supplemental Materials for more information). Participant race/ethnicity was provided by parents for 98 participants (56

White, 19 Asian, 8 Hispanic/Latinx, 6 Black/African-American, 6 bi- or multiracial, 2 Middle-Eastern, and 1 Native American). A total of 101 participants completed all three waves, 6 participants completed 2 waves, and 9 participants completed one wave (Wave 1, $n = 109$; Wave 2, $n = 104$, Wave 3, $n = 111$). No participants were excluded from the sample. We used the results of Monte Carlo simulations (Hertzog et al., 2008) to estimate power for our design. With $N = 116$, and an estimated growth curve reliability of 0.9, we had adequate power (> 0.8) to detect hypothesized effects based off a meta-analysis of the development of racial bias during this age (Raabe & Beelmann, 2011). This sample size is also consistent with comparable studies examining the longitudinal development of other social-cognitive competencies during a similar age and study duration (e.g., Kuhnert et al., 2017; Lecce et al., 2017). The Institutional Review Board at New York University approved all study procedures.

Preliminary analyses examined potential differences across racial groups by grouping participants into three categories: Black (n = 6), White (n = 56), and children of color who were not Black (n = 36). These groupings reflected children who's racial ingroup members were portrayed in the study (i.e., Black and White children), and children who only evaluated racial outgroup members (i.e., non-Black children of color). These analyses did not yield any significant main or interactive effects of participant race (all ps > 0.22), and thus we did not include this variable in the analyses reported below. We acknowledge, however, that we had limited power to detect effects of participant race, particularly regarding the critical question of how these effects might operate for Black children, and so this work cannot speak directly to whether similar mechanisms underlie the development of racial bias across children from diverse racial and ethnic groups. We return to this point in the discussion.

Procedures

Participants completed the study individually in a quiet space in their pre-K centers. The stimuli and assessments were presented on touchscreen tablets with visual animations and narrated recordings via Qualtrics; participants indicated their responses by touching the on-screen response options. Research assistants helped participants operate the tablet and were trained to not interfere with their responses. We only present the methods and results central to the primary hypotheses in the present manuscript due to space considerations; the full protocol is available in the Supplemental Materials.

Participants completed the same procedure during all three waves; the only differences were the specific images of children presented and a minor wording clarification to the essentialist and extrinsic explanations following the first wave (see Supplemental Materials). The images of children used in the present study were drawn from a database of 475 photographs of children's faces in naturalistic settings (normed by adults on perceived age, happiness, quality of clothes, and attractiveness on MTurk), were presented in a counterbalanced order, and were gender-matched to the participant.

Measures

Each measure is illustrated in Figure 1 and full study scripts and stimuli are available in the Supplemental Materials. Children completed two measures of racial bias (top two rows of Figure 1), assessing their interracial attitudes and playmate preferences.

Children completed two measures assessing their beliefs about social norms (rows 3 and 4, Figure 1), including assessments of who their parents would *want them to play with* and who their peers would *want to play with*.

Children also completed an assessment of their explanations of race-related inequalities (row 5, Figure 1). For this measure, children were asked to explain an inequality that reflected

race-related inequalities in the United States (i.e., children were shown pictures of a Black child who lived in a low-status house and a White child who lived in a high-status house). As shown in Figure 1, children were asked first to rate how much they agreed with each of two explanations for the inequality (given in a set order) and were then asked to select between them. Explanations were modified from Hussak and Cimpian (2015).

Extrinsic Explanation: *"One kid said that this one lives in this house and this one lives in this house because of things that happen in the world. They said that there are things people don't have any control over that make it harder for some kids and easier for others, and it's these things that happen that make it so that each of these kids lives in these houses."*

Essentialist Explanation: *"Another kid said that this one lives in this house and this one lives in this house because of who they are on the inside. They said that there are things about who people are that make it so that there are different types of people in the world, and who these kids are on the inside makes it so that each of these kids live in these houses."*

To avoid perpetuating racial stereotypes, children were subsequently shown a reversed inequality (i.e., a Black child living in a high-status house and a White child living in a low-status house) and were asked similar questions. Children's explanations for the reversed inequality were not related to their racial biases (all *p*s > .05) and are thus not discussed further.

Results

The Development of Racial Bias

To examine longitudinal change for children's interracial attitudes and playmate preferences, we conducted linear growth models (LGMs). These models yield two critical estimates: an intercept (i.e., an estimate of children's responses on a given variable at the start of the study) and a slope (i.e., an estimate of how much children increased on a given variable across the three waves of the study). Significant intercept estimates would indicate that children showed significant levels of bias at the onset of the study (time was coded as 0, 1, 2 for the three waves; intercepts were compared to midpoint/chance values indicating no bias for each assessment: Interracial Attitudes = 0, Playmate Preferences = 0.25). For the Interracial Attitudes assessment, a significant, positive, slope would indicate that children became significantly more pro-White/anti-Black biased over the six-month period. For the Playmate Preferences assessment, a significant, negative, slope would indicate that children became significantly more biased over the six-month period. Linear models were used given the short time-window (6 months) and lack of past research justifying the use of non-linear models within this short age range.

Racial Bias. Descriptives and full statistics are presented in Figure 2 for the Interracial Attitudes assessment and Figure 3 for the Playmate Preferences assessment.

Interracial Attitudes. Children did not show an initial bias in their interracial attitudes at the start of the study ($p > .05$) but developed more pro-White/anti-Black racial bias over time ($p < .001$). That is, across the three waves, children became more positive in their ratings of White relative to Black children. To further explore this effect, we examined the trajectories for children's ratings of White and Black children separately. As shown in Figure 2, children's ratings for White children started off positively ($p < .001$) and did not change over time ($p > .05$),

whereas children's ratings of Black children started off positively ($p < .001$) but declined over time ($p < .001$).

Playmate Preferences. Children were below chance at choosing to play with the Black child at the start of the study ($p < .001$) and did not become more or less likely to choose to play with the Black child over time ($p = 0.05$).

Predictors of Racial Bias. Descriptives and full statistics are presented for the Parent Norms, Peer Norms, Explanation Choice, and Relative Explanation assessments in Figure 4.

Parent Norms. Children expected that their parents would want them to play with more White than Black children at the start of the study ($p < .001$) and their expectations did not change over time ($p > .05$).

Peer Norms. Children expected that their peers would want to play with more White than Black children at the start of the study ($p < .001$) and became more likely to expect their friends to play with more White than Black peers over time ($p = .001$).

Explanation Choice. Children did not differ from chance in their choice between the essentialist and extrinsic explanations at the start of the study ($p > .05$) and did not become more likely to choose one explanation over the other over time ($p > .05$).

Relative Endorsement. Children did not endorse one explanation more than the other at the start of the study ($p > .05$) and did not become more supportive of one over the other over time ($p > .05$).

Interrelations Between Variables

The interrelations between each of the variables are presented in Table 1. Children's beliefs that their parents would want them to play with more Black children were negatively correlated with pro-White/anti-Black interracial attitudes and were positively correlated with

their choice to play with the Black child in the Playmate Preferences assessment. Similarly, children's beliefs that their friends would want to play with more Black children were positively correlated with their choice to play with the Black child. Children's beliefs about who their parents would want them to play with and who their friends would want to play with were positively correlated. Finally, children's choice between the essentialist and extrinsic explanations was positively correlated with their relative endorsement of the explanations. No other significant correlations were found. Intraindividual correlations for each variable over time are reported in the Supplemental Materials.

Longitudinal Relations Between Predictors and Racial Bias

To examine the relations between our predictor and outcome variables over time, we conducted a series of multivariate growth models using the structural equation modeling framework (MGM; Grimm et al., 2016). These analyses allowed us to examine three different types of developmental relations pertaining to our hypotheses: 1) how foundational beliefs relate to racial biases at the start of the study (i.e., the associations between the variables at time 1, as indicated by the covariance between the intercepts; ψ_{31}), 2) how change in foundational beliefs across time relates to change in racial biases across time (i.e., the degree to which changes in the predictor variable across waves are associated with changes in the outcome variable across waves, as indicated by the covariance between the slopes; ψ_{42}), and 3) how initial foundational beliefs predict change in racial biases over time (i.e., the degree to which initial values on the predictor variable are associated with changes in the outcome variable over time, as indicated by the covariance between the intercept of the predictor and the slope of the outcome; ψ_{32}).

In cases where significant effects were found for all three estimates, we do not report the intercept-to-slope estimate given that it may be due to a ceiling effect (this occurred for models

assessing Playmate Preferences by Peer Norms and Interracial Attitudes by Explanation Choice). For example, in cases where the intercept-to-intercept and slope-to-slope estimates were both positive, but the intercept-to-slope estimate was negative, it is possible that children who were initially high on the predictor variable could not become more positive on the outcome variable because they were already at ceiling on both measures. Probit link functions were used to create thresholds for all measures with two or three response options (*Playmate Preferences, Parent Norms, Peer Norms, Explanation Choice*)

Parent Norms. Children's initial beliefs about parent norms related to their racial biases at the start of the study. In particular, children who *initially* expected that their parents would want them to play with fewer Black children were also *initially* less likely to choose to play with the Black child (significant, positive, covariance between the intercepts for Parent Norms and Playmate Preferences: $\psi_{31} = 2.30$, $SE = 0.71$, $p = 0.002$).

Change in children's beliefs about parent norms across the study also related to change in children's racial biases over time. In particular, children who expected that their parents would want them to play with fewer Black children *over time* also became less likely to choose to play with a Black child *over time* (significant, positive, covariance between the slopes for Parent Norms and Playmate Preferences: $\psi_{42} = 0.58$, $SE = 0.26$, $p = 0.027$).

Initial levels of parent norms did not predict change in racial biases over time (i.e., there was no relation between the intercept for Parent Norms and the slopes for either Interracial Attitudes or Playmate Preferences). No developmental relations were found between children's Interracial Attitudes and Parent Norms.

In sum, children's beliefs about parent norms related to their choice to play with Black children *in* and *across* time, but initial parent norms did not predict trajectories of change across this period.

Peer Norms. Children's initial beliefs about peer norms also related to their racial biases at the start of the study. In particular, children who *initially* expected that their friends would want to play with fewer Black children were also *initially* less likely to choose to play with the Black child (significant, positive, covariance between the intercepts for Peer Norms and Playmate Preferences: $\psi_{31} = 1.46$, $SE = 0.16$, $p < 0.001$).

Change in children's beliefs about peer norms across the study also related to change in children's racial biases over time. In particular, children who expected that their friends would want to play with fewer Black children *over time* also became less likely to choose to play with the Black child *over time* (significant, positive, covariance between the slopes for Peer Norms and Playmate Preferences: $\psi_{42} = 0.91$, $SE = 0.12$, $p < 0.001$).

Initial levels of peer norms did not predict change in racial biases over and no developmental relations were found between children's Interracial Attitudes and Peer Norms.

In sum, children's beliefs about peer norms related to their choice to play with Black children *in* and *across* time, but initial peer norms did not predict trajectories of change across this period.

Explanation Choice. Children's initial endorsement of the essentialist over the extrinsic explanation on the choice assessment also related to their racial biases at the start of the study. In particular, children who initially chose the essentialist over the extrinsic explanation were also initially more positive in their attitudes towards White relative to Black children (significant,

positive, covariance between the intercepts for Explanation Choice and Interracial Attitudes: $\psi_{31} = 0.47$, $SE = 0.13$, $p = 0.015$).

Change in children's explanation choices across the study also related to change in their racial biases over time. In particular, children who became more likely to choose the essentialist explanation *over time* also became more positive in their attitudes towards White relative to Black children *over time* (significant, positive, covariance between the slopes for Explanation Choice and Interracial Attitudes: $\psi_{42} = 0.26$, $SE = 0.10$, $p = 0.036$).

Interestingly, a different developmental pattern emerged for children's Playmate Preferences; children's *initial* explanations for inequality predicted the trajectory of change in their racial biases *over time*. That is, children who *initially* chose the essentialist explanation became less likely to choose to play with the Black child *over time* (significant, negative, covariance between the intercept for Explanation Choice and the slope for Playmate Preferences: $\psi_{32} = -0.35$, $SE = 0.07$, $p < 0.001$; Figure 5).

In sum, children's endorsement of the essentialist over extrinsic explanation related to their interracial attitudes in and across time and children's initial endorsement of the essentialist over the extrinsic explanation predicted the likelihood of choosing to play with the Black child over time.

Relative Endorsement. As with children's choice between the two assessments, children's *initial* explanations for inequality predicted the *trajectory of change* in their Playmate Preferences over time. That is, children who were *initially* more supportive of the essentialist than extrinsic explanation became less likely to choose to play with the Black child *over time* (significant, negative, covariance between the intercept for Relative Endorsement and the slope for Playmate Preferences: $\psi_{32} = -0.90$, $SE = 0.29$, $p = 0.002$). Children's relative endorsement did

not relate to children's racial biases in and across time (i.e., there was no relation between the intercepts of the assessments or the slopes of the assessments). No effects were found for children's Interracial Attitudes.

In sum, children's initial relative preference for essentialist explanations for inequalities predicted the likelihood of choosing to play with the Black child over time.

Discussion

The present study found that children's normative beliefs about interracial friendships and explanatory beliefs about racial inequalities predict variation in the emergence of racial bias during early childhood. In our sample of 4-year-old children, children became significantly more positive in their attitudes towards White relative to Black children over a six-month period and were already reliably biased against choosing to play with a Black child at the start of the study. Critically, children who expected that their parents and peers would want them to play with more White than Black children reported higher levels of pro-White/anti-Black racial bias throughout the study, and children who initially endorsed essentialist over extrinsic explanations for racial inequalities became increasingly biased over time.

The Emergence of Racial Bias

We found evidence for the *emergence* of a pro-White/anti-Black racial bias in children's interracial attitudes. That is, children did not report more positive attitudes towards White or Black children at the onset of the study, but became more positive in their attitudes towards White relative to Black children over time. Examining children's attitudes towards Black and White children separately, we found that this effect was primarily driven by children's more negative attitudes towards Black children over time. These findings are consistent with cross-sectional research documenting the emergence of racially biased attitudes around 4-5 years old

(Aboud, 2003; Dunham et al., 2015; Raabe & Beelmann, 2011) and provide evidence that the emergence of attitudinal biases is—at least in some cases—driven by more negative attitudes towards racial outgroup members, rather than more positive attitudes towards ingroup members (but see Nesdale et al., 2005).

Interestingly, children were already reliably biased against choosing to play with the Black child on the playmate preferences task at the start of the study. There are several possibilities for why biases in children's playmate preferences might emerge before biases in interracial attitudes. First, children's choices on the playmate preferences task could reflect an earlier emerging pro-White positivity without specific anti-Black negativity. Such pro-White positivity could lead children to preferentially select the White child—pulling them away from selecting the Black child—despite having generally positive attitudes (over 5 on a 1-6 scale) towards both Black and White children. This explanation is consistent with past accounts of the emergence of racial bias suggesting that ingroup favorability emerges before outgroup dislike, though the pro-White and anti-Black biases in our sample appear to emerge, descriptively, earlier in our sample than past research (Nesdale et al., 2005). Alternatively, it is possible that biases emerge earlier in more intimate and concrete choices (e.g., deciding whom to play with) relative to more abstract or attitudinal attributions (e.g., who is "nice"; see Crystal et al,. 2008). Finally, it is also possible that the single-choice assessment format used in the playmate preferences task is simply more sensitive to bias than the continuous difference score used in the interracial attitudes task (see Dunham & Degner, 2013; Sierksma & Shutts, 2020). Thus, future work should continue to examine why these different measures of racial bias—both commonly used in the developmental literature—show slightly different developmental trajectories in early childhood.

Developmental Predictors of Racial Bias

Multivariate growth models allowed us to examine three different types of developmental relations central to our hypotheses: (1) how foundational beliefs relate to racial biases at the onset of the study, (2) how change in foundational beliefs over time relates to change in racial biases over time, and (3) how initial foundational beliefs predict change in racial biases over time.

Foundational Beliefs about Social Norms. Children's normative beliefs about interracial friendships related to their racial bias in and across time. Interestingly, however, these beliefs did not predict the future acquisition of racial bias. That is, at any given point in time, children who believed that their parents would want them to play with fewer Black children were less likely to choose to play with the Black child when given the chance, and similar patterns were found for children's beliefs about who their friends would want to play with. These results are consistent with research with older children (7-11 years old) finding that children's beliefs about social norms at a given time point mediate the developmental relation between their previously reported cross-ethnic contact and their developing evaluations of ethnic outgroup members (Feddes et al., 2009). More broadly, this pattern suggests that at least some degree of variation in children's racial biases is flexible and responsive to rapid changes in children's perceptions of their social environment. As children's beliefs about their parents' and peers' attitudes towards interracial friendships change, so, too, do children's own racial biases.

Indeed, these findings may reflect a broader social phenomenon: children adapt their own beliefs and attitudes to match the norms of their group as a way of establishing themselves within it (see Paluck, 2011). For example, children placed into groups with explicitly inclusive norms report fewer intergroup biases than those placed into groups without explicit norms of inclusion—or explicit norms of *exclusion*—(Abrams et al., 2003; Hitti & Killen, 2015; Nesdale

et al., 2005; Rutland et al., 2015) and children often reference parental disapproval when justifying their decision to exclude a racial outgroup member (Crystal et at., 2008; Hitti et al., 2019). Our results corroborate these findings and extend this account by revealing how the impact of these beliefs begins in early childhood—as young as 4-years-old—and may only persist for as long as children are still in the group. That is, our results suggest that at least some degree of children's racial biases are flexible and adaptive to their beliefs about their current peer group's attitudes towards interracial friendships (also see Feddes et al., 2009; Paluck, 2011). These findings are particularly important given the relative fluidity of children's friendships in early childhood (Barron, 2011; Corsaro, 2017; Rude & Herda, 2010).

Additionally, these results provide insights into a potential developmental mechanism underlying the relation between parents' and children's racial attitudes (Degner & Dalege, 2013). That is, children may be interpreting subtle cues in their parents' responses to racial outgroup members and interracial friendships, which in turn shapes children's own attitudes and decisions about whom to play with. Importantly, this mechanism provides a developmental account of the correlation between parents' and children's racial attitudes *without the need for any sort of direct transmission of racial bias* (e.g., parents explicitly indoctrinating their children into a racist worldview). Although the latter undoubtedly happens, the former may better explain the widespread and persistent biases found in children's racial attitudes given the prevalence of "colorblind" parenting ideologies, especially in White families (Apfelbaum et al., 2012; Scott et al., 2020).

Foundational Beliefs About Racial Inequalities. Children's explanatory beliefs about racial inequalities were related to their playmate preferences over time and their interracial attitudes in and across time. Specifically, for both the explanation choice and relative

endorsement assessments, children who initially favored the essentialist over extrinsic explanation became less likely to choose to play with the Black child over time and those who became more supportive of essentialist explanations over time also became more likely to report pro-White/anti-Black racial attitudes. Importantly, these results are consistent with constructivist theories of cognitive development arguing that early emerging foundational beliefs about the structure of the social world frame the shape and scope of future conceptual acquisitions (Rhodes, 2013; Wellman & Gelman, 1992). In this case, children's foundational beliefs about racial inequalities frame the shape and scope of children's beliefs about Black and White peers as desirable social partners.

These results are consistent with the argument that essentialist beliefs about racial inequalities in the United States reinforce racist ideologies that Black people occupy lower status positions because they are *supposed to* occupy those positions (i.e., because of "who they are on the inside"; Mandalaywala, 2020; Rhodes, 2020; Roberts et al., 2020). That is, perceiving racial inequalities as a direct result of essential differences between groups supports the development of representations of White people as intrinsically more valuable social partners *because of* their higher status and representations of Black people as intrinsically less valuable social partners *because of* their lower status. These findings are consistent with adult research indicating that racial essentialism leads to anti-Black bias by leading people to accept and reinforce status quo social hierarchies (Mandalaywala et al., 2018). These findings also provide an account for why prior work has sometimes failed to find a relation between children's *awareness* of racial inequalities and the development of their racial attitudes (Mandalaywala et al., 2020; Shutts, 2015). The present data suggest that it is not *awareness* of racial hierarchies, per se, that leads to prejudice, but how children make sense of and explain them. Indeed, an awareness of racial

hierarchies is a critical first step in redressing them (Elenbaas et al., 2020; Hazelbaker et al., 2018; Kraus et al., 2017).

An important question, then, is how to move children away from essentialized beliefs and towards a more extrinsic understanding of racial inequalities. One way to do this might be to provide children with explanations of the external, structural factors that underlie racial inequalities as a way to counter their essentialist beliefs. Indeed, older children and adolescents who report a greater understanding of structural barriers report lower levels of bias and prejudice and are more likely to support challenging unjust social policies (Flanagan et al., 2014). Yet, although this approach seems promising, future research is needed to identify exactly how to educate *young* children about structural barriers to ensure that the effort does not backfire. For example, Roberts and colleagues (2017) found that young children tend to infer prescriptive norms from descriptive occurrences. That is, when children are told about differences between groups, they infer that those differences *should* exist, and censure individuals who deviate from their group. In the context of structural explanations for racial inequalities, this tendency may lead children to infer that if structural barriers exist, then they should exist, and dismiss individuals who attempt to disrupt those barriers. Such beliefs would lead to clearly problematic implications for children's developing racial attitudes. Finally, it is also possible that children's essentialist and extrinsic beliefs about racial inequalities are not mutually exclusive and may develop independently of one another (see Flanagan et al., 2014; Vasilyeva et al., 2018). Thus, a pressing question for future research to examine is *how* to help children prioritize extrinsic over essentialist explanations when making sense of racial inequalities in a way that does not end up reinforcing problematic beliefs about race and status. Such research is desperately needed to

understand how to develop productive interventions for reducing racism and establishing anti-racist mindsets in children, adolescents, and adults.

Future Directions

Future research should continue to build on the present results to provide a more complete picture of how racial biases emerge and develop. We examined the development of pro-White/anti-Black racial biases with a sample of children growing up in the United States. Yet, several open questions remain regarding other forms of racial biases including: (1) How do racial biases against other racial groups emerge and develop (e.g., do the same developmental factors predict the development of anti-Asian or anti-Latinx racial biases)? (2) How do racial biases between racial minority groups differ from racial biases across racial majority and minority groups (e.g., what predicts the emergence of Black/Latinx and Asian/Black racial biases)? And (3) how do intersectional racial biases emerge and develop? Given that children form intersectional representations of race and gender beginning in early childhood (Lei et al., 2020), it is important to understand how racial biases might manifest across a range of intersections with gender, ability, social class, country of origin, sexuality, and other important social identities.

Additionally, an important limitation of our study is that it was not designed nor powered to test for effects of participant race. Differences in racial biases across racial groups is a critical question that has received comparatively little attention in the developmental literature. On the one hand, children of color living in the United States often report lower levels of racial biases than do White children (Dunham et al., 2013). But on the other hand, pro-White/anti-Black racial biases are well-documented in a range of populations, including contexts where both Black and White people are racial minorities (e.g., China; Qian et al., 2016, 2019), and beliefs about status

hierarchies have also been implicated in the development of racial attitudes among children from racial and ethnic minority groups (Newheiser et al., 2014). Research on this topic would benefit from larger samples sizes, latent class models that assess similarities and differences between groups of people (see Jung & Kickrama, 2008), and statistical models that examine non-linear developmental trajectories over extended periods (e.g., an inverse-U trajectory, as identified in Raabe & Beelmann, 2011). With larger sample sizes, researchers could also examine the relative influence of multiple developmental mechanisms in different populations (e.g., to assess whether peer/parent norms and explanations for racial inequalities have disparate impacts for children from different racial backgrounds).

Future research should also continue to examine the developmental predictors underlying the emergence of racial biases using a broader array of racial bias assessments (e.g., implicit biases and stereotypic expectations) and developmental predictors (e.g., social-cognitive competencies like theory of mind, perceptions of outgroup homogeneity, awareness of societal privilege, and children's beliefs about their own racial identities). Given that racial biases are multifaceted, multidimensional, intersectional, and are unlikely to have a single developmental predictor, it is important for research to identify the many nuances that are likely to be found in the pathways that lead to different forms of racial bias. Further, an important limitation of the slope-to-slope results for children's social norms, in particular, is that we cannot speak to the directionality of these effects. For example, it is possible that children seek out peers that hold similar racial attitudes as they do, rather than adapt their racial attitudes to match their peers. Additional methodological techniques including longitudinal social network analysis, assessments of children's exposure to racial inequalities over time, and cross-lagged panel models could be leveraged to resolve lingering questions of directionality.

It is also important to acknowledge the similarity in the question formats for the social norm and playmate preferences questions. The relatively modest magnitude of the correlations between these measures (rs ranging between 0.24 and 0.28) provides some evidence that children were indeed able to distinguish between the questions, however, future research should utilize a variety of question formats when examining multiple sources of norms. Similarly, although we found conceptually consistent results across the relative endorsement and explanation choice assessments, the explanation choice assessment was predictive of children's interracial attitudes and the relative endorsement assessment was not. One explanation for this discrepancy is that single-choice assessments may be more predictive of racial biases because they assess children's direct prioritization of concerns and may thus be more sensitive to the initial emergence of the construct of interest (also see Dunham & Degner, 2013; Sierksma & Shutts, 2020).

Finally, children in the present study were collected from a single sampling population, and thus we cannot know the extent to which our results generalize to different populations within and beyond the United States. Specifically, the children in our sample lived in an area within a large city where most residents are liberal, wealthy, and highly educated. Given that each of those factors is associated with *lower* levels of racial bias in adulthood, and that parents' and children's racial attitudes are somewhat correlated with one another (Degner & Dalege, 2013), it is likely that our sample *underestimates* the degree of racial bias in other areas. Yet, the neighborhoods that our participants live in are also characterized by extreme levels of racial inequalities (Rothstein, 2017; Sharkey, 2013), which may have led to stronger associations between race and wealth, and in turn essentialist explanations for racial inequalities. Future research is needed to identify how environmental and sociopolitical factors (e.g., neighborhood SES, diversity, inequality) impact the formation of racial bias during early childhood. One

promising avenue for this research is through the use of online sampling procedures (see Rhodes et al., 2020).

Conclusions

Taken together, the present study provides novel insights into the developmental mechanisms underlying the emergence of racial bias in early childhood. Children's beliefs about the social norms surrounding interracial friendships predicted their racial biases in and across time, suggesting that at least some degree of children's developing racial attitudes are sensitive to their current perceptions of their peers' and parents' attitudes towards interracial friendships, and supporting calls for sustained interventions emphasizing inclusive norms throughout childhood. Additionally, these results provide the first evidence documenting how children's foundational beliefs about racial inequalities relate to the subsequent formation of racial bias. These results highlight the importance of future research identifying the most effective ways of promoting an extrinsic/anti-essentialist understanding of racial inequalities in early childhood.

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Figure 1.

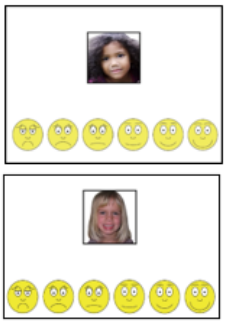
Assessment and Description	Assessment Wording	Response Scale	Example of Visual Stimuli
Interracial Attitudes: Assesses explicit attitudes towards Black and White children.	(1) How nice do you think this kid is? (2) How much do you like this kid?	Responses were scored on a 6-point Likert-type scale (1 = "Really not nice/don't like", 6 = "Really nice/like"). A difference variable was created by first averaging across assessments for each racial group and then creating a difference score between those averages (-5 = Maximum pro-Black bias, 5 = Maximum pro-White racial bias).	
Peer Playmate Preferences: Assesses choice to play with Asian, Black, Latinx, and White children.	(1) Which of these kids would you want to play with the most?	Responses were scored categorically as 1 = chose to play with the Black child, 0 = chose to play with the Asian, Latinx, or White child.	
Peer Norms: Assesses who participants think their friends would play with.	(1) Which of these kids would your friend want to play with the most? (2) Who else would they want to play with?	Responses were scored categorically (0 = White, 1 = Black) and summed to create a 3-point scale: 0 = two White children, 1 = one White and one Black child, 2 = two Black children	
Parent Norms: Assesses who participants think their parents would want them to play with.	(1) Which of these kids would your parents want you to play with? (2) Who else would they want you to play with?	Responses are scored categorically (0 = White, 1 = Black) and summed to create a 3-point scale: 0 = two White children, 1 = one White and one Black child, 2 = two Black children	
Explanations for Racial Inequalities: Assesses children's endorsement of essentialist and extrinsic explanations for racial disparities.	**Relative Endorsement:** (Essentialist) Do you think these kids live in these houses because of who they are on the inside? (Extrinsic) Do you think these kids live in these houses because of things that happen in the world? **Explanation Choice:** What if you had to choose? Would you say it's more because of things that happen in the world or more because of who they are on the inside?	**Relative Endorsement:** Responses for the essentialist and extrinsic explanations were scored from 1 = "Definitely not" to 5 = "Definitely". A difference variable was created by subtracting children's endorsement of the extrinsic explanation from their endorsement of the essentialist one. **Explanation Choice:** Responses were scored categorically as: 0 = Extrinsic, 1 = Essentialist.	 

Figure 1. List of measures used to assess children's racial biases (*Interracial Attitudes, Playmate Preferences*), beliefs about social norms (*Parent Norms, Peer Norms*), and explanations for racial inequalities (*Relative Endorsement, Explanation Choice*). Stimuli for the Explanations for Racial Inequalities task were adapted from Olson et al., (2012). Images of children in all measures were gender-matched and varied across the three waves. All images were matched on perceived age, happiness, SES, and attractiveness based on ratings generated via MTurk.

Figure 2.

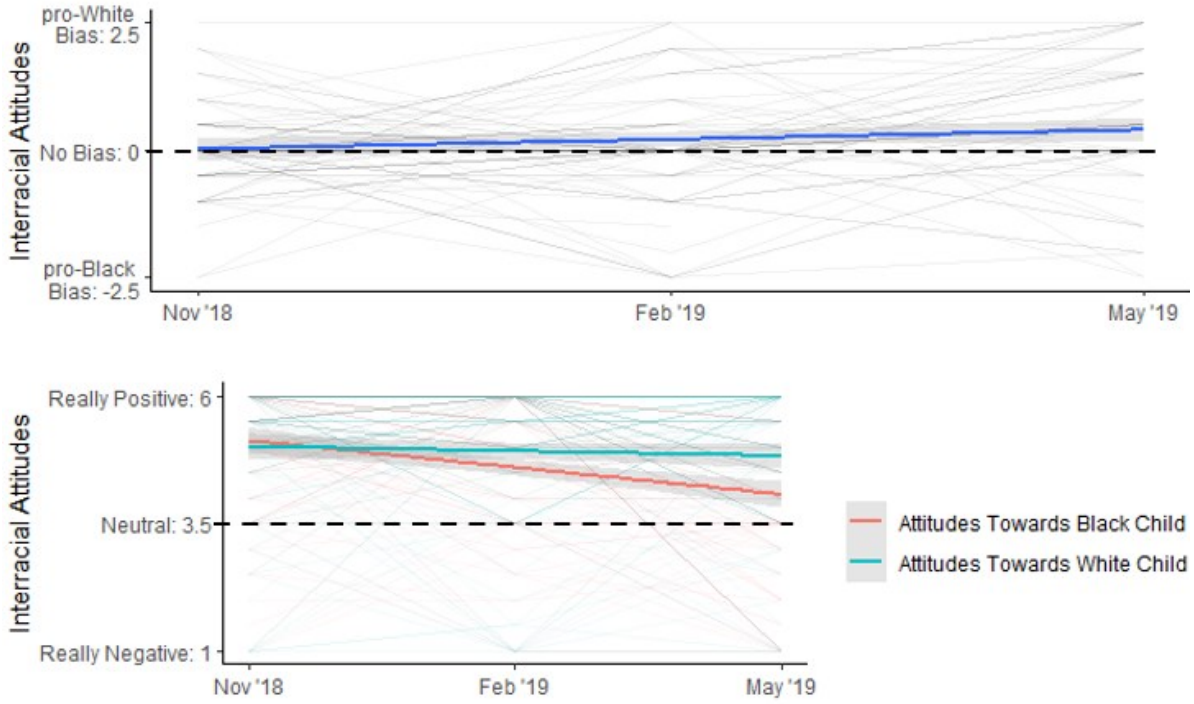


Figure 2. Graphs for children's Interracial Attitudes plotted across the three waves. *Pro-White/anti-Black bias composite* (Intercept: No Bias = 0, M = -0.13, SE = 0.13, $p > .05$, 95% CI [-0.39, 0.14]; Slope: M = 0.44, SE = 0.10, $p < .001$, 95% CI [0.25, 0.64]), *Attitudes Towards Black Child* (Intercept: Neutral = 3.5, M = 5.17, SE = 0.18, $p < .001$, 95% CI [4.83, 5.50]; Slope: M = -0.71, SE = 0.15, $p = 0.007$, 95% CI [-0.99, -0.44]), *Attitudes Towards White Child* (Intercept: Neutral = 3.5, M = 5.22, SE = 0.16, $p < .001$, 95% CI [4.89, 5.53]; Slope: M = -0.13, SE = 0.11, $p > .05$, 95% CI [-0.51, 0.01]). Solid lines represent linear regression lines, shaded areas represent 95% confidence intervals, dashed lines represent no bias on the composite and a neutral evaluation on the individual assessments, and faded thin lines represent individual participant responses (darker lines represent multiple participants showing the same response pattern).

Figure 3.

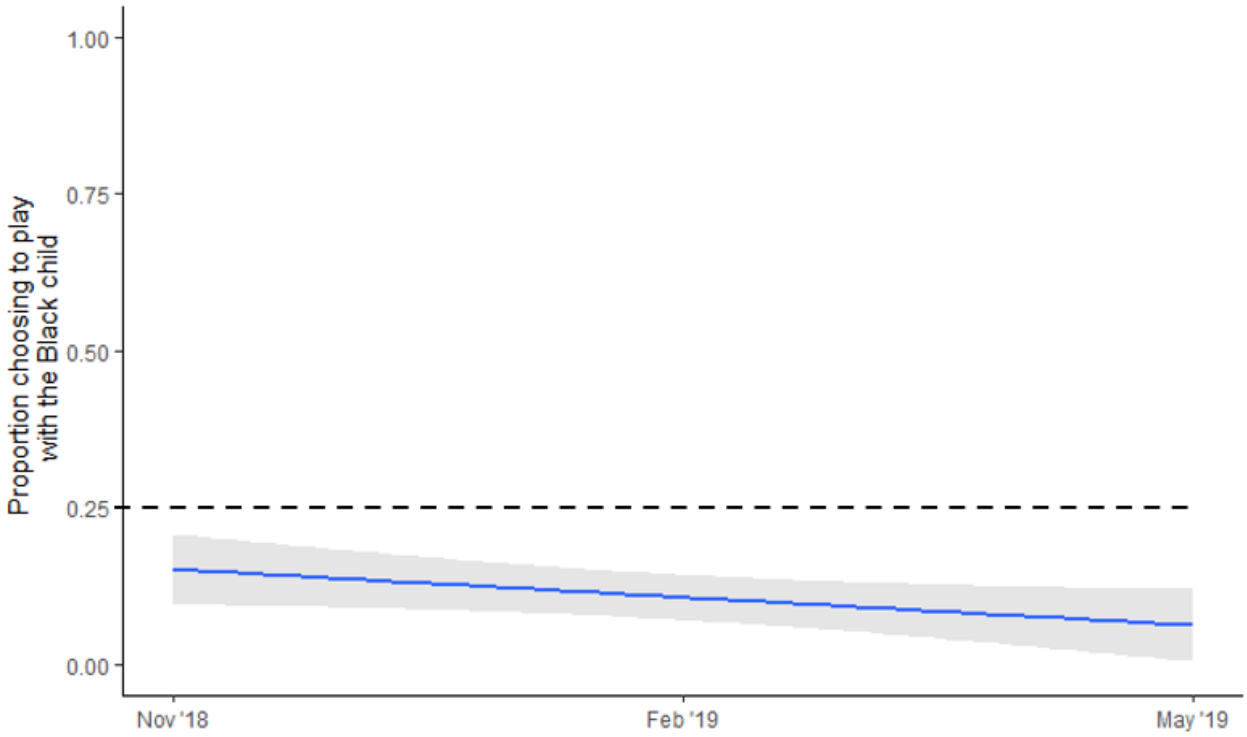


Figure 3. Graph for children's *Playmate Preferences* (Intercept: No Bias = 0.25, *M* = 0.15, SE = 0.03, $p < .001$, 95% CI [0.08, 0.21]; Slope: M = -0.04, SE = 0.02, $p = .05$, 95% CI [-0.08, 0.004]) plotted across the three waves. The blue line represents the linear regression line, the shaded area represents the 95% confidence intervals, and the dashed line represent no bias on the assessment. Individual participant responses are not plotted for *Playmate Preferences* because the binary scale obscures the frequency of individual data points.

Figure 4.

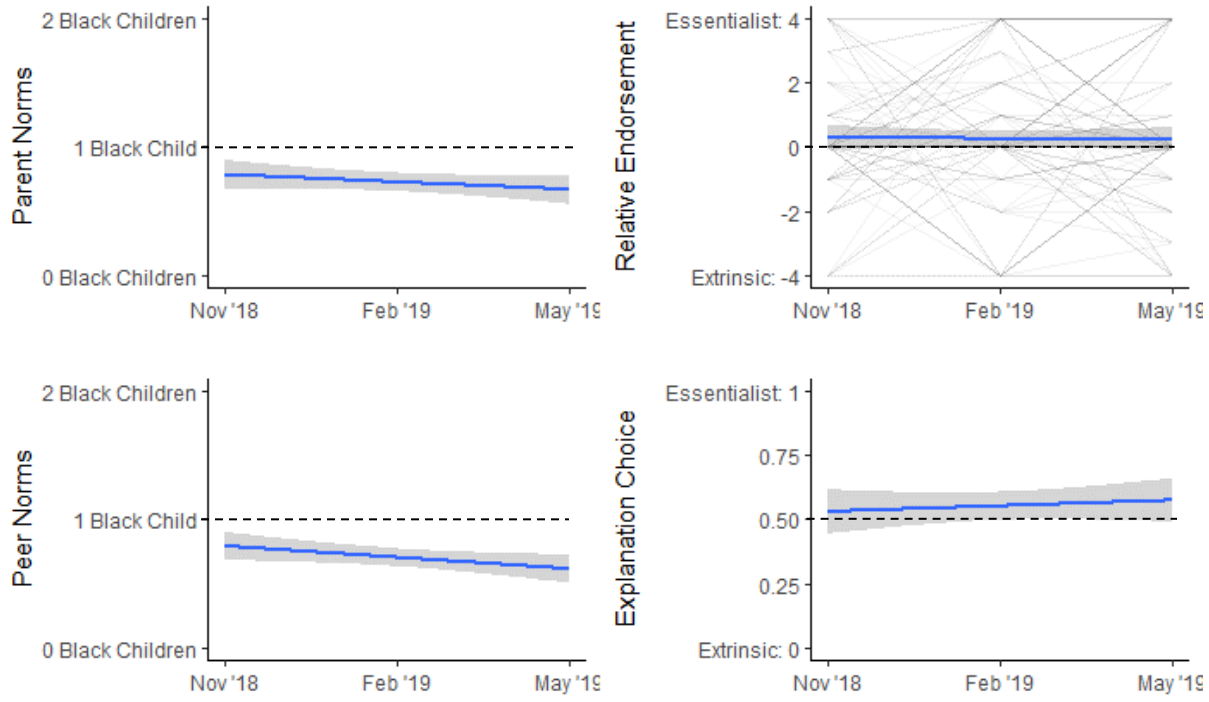


Figure 4. Graphs for children's *Parent Norms* (Intercept: No Bias = 1.0, $M = 0.79$, SE = 0.06, $p < .001$, 95% CI [0.66, 0.91]; Slope: $M = -0.06$, SE = 0.04, $p > .05$, 95% CI [-0.14, 0.02]), *Peer Norms* (Intercept: No Bias = 1.0, $M = 0.79$, SE = 0.05, $p < .001$, 95% CI [0.69, 0.90]; Slope: $M = -0.09$, SE = 0.05, $p = .001$, 95% CI [-0.17, -0.01]), *Relative Endorsement* (Intercept: No Bias = 0, $M = 0.28$, SE = 0.18, $p > .05$, 95% CI [-0.08, 0.63]; Slope: $M = -0.02$, SE = 0.15, $p > .05$, 95% CI [-0.31, 0.27]), and *Explanation Choice* (Intercept: No Bias = 0.50, $M = 0.53$, SE = 0.04, $p > .05$, 95% CI [0.45, 0.61]; Slope: $M = 0.02$, SE = 0.03, $p > .05$, 95% CI [-0.04, 0.09]) plotted across the three waves. Blue lines represent linear regression lines, shaded areas represent 95% confidence intervals, dashed lines represent no bias on the assessment, and thin gray lines on the Relative Endorsement graph represent individual participant responses (darker lines represent multiple participants showing the same response pattern). Individual participant responses are not plotted for the remaining assessments because the limited number of response options obscures the frequency of individual data points.

Figure 5.

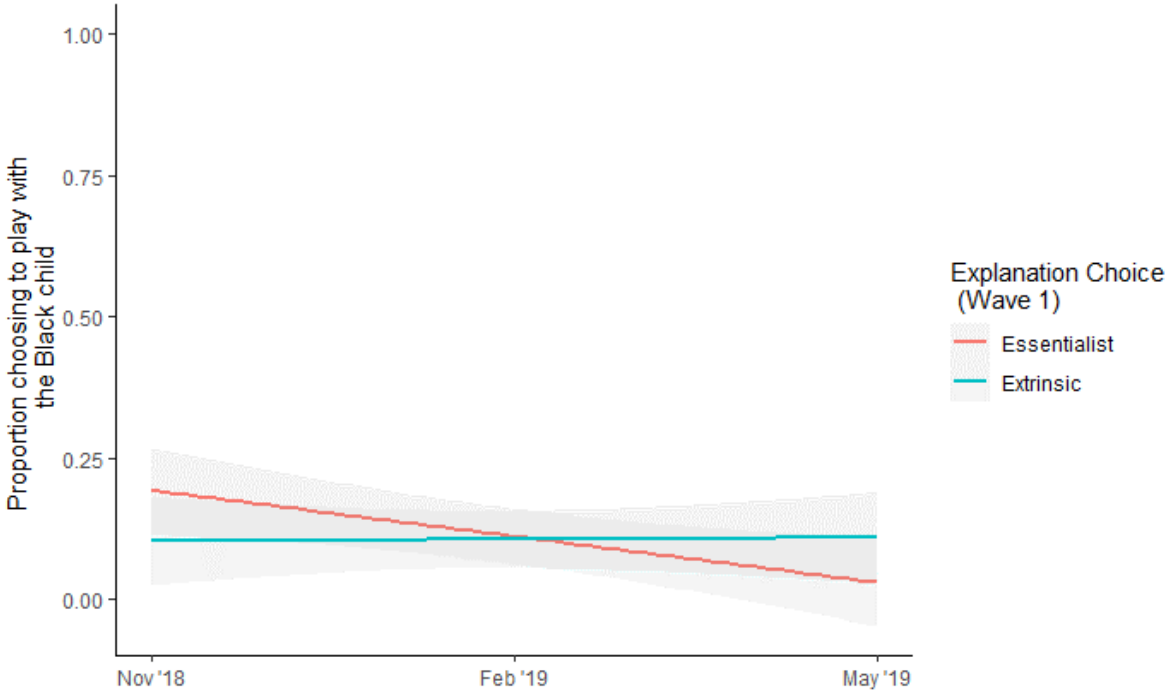


Figure 5. Proportion of children who chose to play with the Black child in the Playmate Preferences assessment plotted across time and by children's explanation choice between the essentialist and extrinsic explanation during the first wave of the study. Red lines represent participants who initially endorsed the essentialist explanation, blue lines represent participants who initially endorsed the extrinsic explanation, and dashed lines represent no bias on the assessment.

Table 1.

Means, standard deviations, and correlations with confidence intervals for each variable collapsed across the three waves.

Variable	*M*	*SD*	1	2	3	4	5
1. Interracial Attitudes	0.32	1.78					
2. Playmate Preferences	0.11	0.31	-.06 [-.17, .05]				
3. Parent Norms	0.73	0.66	-.23** [-.33, -.12]	.28** [.18, .38]			
4. Peer Norms	0.70	0.64	-.08 [-.19, .03]	.24** [.14, .34]	.41** [.32, .50]		
5. Relative Endorsement	0.26	2.23	-.00 [-.11, .11]	-.00 [-.11, .11]	-.06 [-.17, .05]	-.02 [-.13, .09]	
6. Explanation Choice	0.55	0.50	-.04 [-.15, .07]	.09 [-.02, .20]	.08 [-.03, .19]	.01 [-.10, .12]	.13* [.02, .23]

Note. M and *SD* are used to represent mean and standard deviation, respectively. Values in square brackets indicate the 95% confidence interval for each correlation. The confidence interval is a plausible range of population correlations that could have caused the sample correlation (Cumming, 2014). * indicates $p < .05$. ** indicates $p < .01$.