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BRIEF REPORT

Adults Delay Conversations About Race Because They Underestimate Children's Processing of Race

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To help children navigate their social environments, adults must understand what children know about race, and when they acquire this knowledge. Across three preregistered studies, we tested United States adults' knowledge of when children first use race to categorize and ascribe traits to others. Participants wildly—and uniquely—misjudged children's abilities to process race. This inaccuracy was consequential: it was a stronger predictor of the preference to delay conversations about race with children than other factors previously theorized to underlie adults' reluctance to talk about race. And, this relation was causal. Our data suggest that fundamental misunderstandings about children's capacities to process race are pervasive in the United States population and may delay when adults engage children in important conversations about race.

Keywords: race, race development, child development, lay-theories, diversity

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Race is a multidimensional and socially constructed (Smedley & Smedley, 2005) lens through which even infants engage with the social world. Research from racially and culturally diverse contexts has shown that 3-month-olds prefer faces from particular racial groups (Bar-Haim, Ziv, Lamy, & Hodes, 2006), and 9-month-olds use race to categorize faces (Anzures, Quinn, Pascalis, Slater, & Lee, 2010). Before entering preschool, 3-year-old United States-based children associate low-status racial groups with negative traits (Dunham, Chen, & Banaji, 2013; Newheiser, Dunham, Merrill, Hoosain, & Olson, 2014), and by age 4, they associate particular racial groups (e.g., Whites) with high status-markers (e.g., wealth; Olson, Shutts, Kinzler, & Weisman, 2012). And United States children experience the negative consequences of living in a racialized world: seven-year-olds experience racial discrimination (Marcelo & Yates, 2019), and race-based discrimination is widespread in schools (U.S. Government Accountability Office, 2018).

Although there is cultural/racial variation in the extent to which people experience race as central and important (Devos & Banaji, 2005; Grossman & Charmaraman, 2009), adults must help children think and talk about the ways in which race may shape their own and other's lives. Yet most (White) Americans—including those who espouse racially egalitarian views—adopt a "colorblind" approach and avoid talking about race, including when talking with children (Apfelbaum, Sommers, & Norton, 2008; Pahlke, Bigler, & Suizzo, 2012). Consequently, children learn to avoid talking about race themselves (Apfelbaum, Pauker, Ambady, Sommers, & Norton, 2008). This is a missed opportunity. When children learn to talk about race and ethnicity constructively, they develop empathy for others (Aboud et al., 2012; Bigler & Wright, 2014; Connolly & Hosken, 2006), learn about new perspectives (Bigler & Wright, 2014), understand their own identity (Phinney, 1990; Quintana, 1998), avoid engaging in practices that reproduce structural inequality (Hagerman, 2018), and even exhibit less racial bias (Aboud & Doyle, 1996).

What factors might motivate adults' desire to delay conversations about race with children? We proposed and tested a new possible explanation: adults avoid talking to children about race because they believe that young children lack the capacities for reasoning about race. If adults believe that children of a particular age are a tabula rasa and have limited capacity for reasoning about race, it is rational to avoid introducing the topic, or to adopt a colorblind approach when doing so. Consistent with this, educational policies (National Association for the Education of Young Children, 2011), educators, and parents frequently advocate that

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All data are available in the supplementary materials or at https://osf.io/z3ya8/.

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conversations about race should be "developmentally appropriate." But, United States adults' impressions of what is developmentally appropriate hinge on what they think children understand about race. Although perhaps assumed implicitly, it is unknown whether adults' beliefs about when children develop capacities for processing race are in line with current scientific estimates about child development.

Method

We conducted three preregistered studies to examine the relation between adults' beliefs about children's ability to process race, and adults' willingness to talk with children about race. All studies were approved by the Institutional Review Board at (*Skidmore College*). Study 2 was a direct replication of Study 1, using a United States census-matched nationally representative sample, so we report the results of these correlational studies together. Study 3 used an experimental design to provide causal evidence of this relation; these results are reported separately.

Participants

Sample. Participants were adult, fluent English speakers from the United States. For Study 1, we aimed for 550 participants postexclusions; to this end, we recruited 728 participants via TurkPrime in exchange for $2. For Study 2, we aimed to recruit a census-matched nationally representative sample of 1,000 participants via Survey Sample International (SSI), preexclusions. To balance the panel with respect to the distribution of participants according to race, sex, age, income, and education, SSI consented 1,193 participants. For Study 3, we aimed to retain 300 or more participants; our minimum recruitment goal was 420, and we consented 442.

Exclusions. To ensure that we were measuring participants' true beliefs (and not ability to use our response scale), as preregistered we excluded participants who completed our study via phone ($n_{S1} = 7$; $n_{S2} = 0$; $n_{S3} = 15$) and those who completed 80% of the study or less ($n_{S1} = 70$; $n_{S2} = 165$; $n_{S3} = 12$).

We also excluded those who failed a total of two (or more) of the following: attention checks or training trials ($n_{s1} = 84$; $n_{s2} = 400$; $n_{s3} = 86$). After exclusions, we retained $n_{S1} = 567$ (female: 52%; parent: 54%; participants of color: 21%; $M_{age} = 36$); $n_{S2} = 628$ (female: 53%; parent: 58%; participants of color: 40%; $M_{age} = 49$), $n_{S3} = 326$ (Female: 56%; Parent: 54%; Participants of Color: 13%; $M_{age} = 35$). Full demographics in online supplemental materials. Including participants who we excluded on the basis of our preregistration plan does not change the overall patterns of data reported in the paper.

Procedure

Participants completed a series of training items to familiarize themselves with our age-in-months sliding response scale, which was the scale used to respond to all our main test questions. Participants then completed several measures (full details in online supplemental materials):

Talking to children about race. Participants indicated the earliest age at which they would talk to children about race by using our sliding age scale.

Lay beliefs about children's development. Participants made estimates on a slide scale (age in months) to indicate the age at which children first develop certain behaviors, traits, and abilities. We tested three domains: race development, non-race-related social development, and general development. Race development is a form of social development; however, to maintain clarity, we use "race development" to describe those questions that focused on race-related development and "social development" to describe those questions that focused on non-race-related social development. We use "general development" to describe those questions that focused on nonsocial developmental milestones. We asked four questions for each domain, and began with the question stem, "At what age IN MONTHS do you think that humans first . . ." Questions addressed children's capacities to reason about race (e.g., ". . . prefer faces from particular racial groups?"), social development (e.g., ". . . can tell the difference between faces and things that aren't faces?"), and general development (e.g., ". . . recognize their mother's voice?").

Questions captured a range of developmental complexity ranging from early developing "low level" processes (e.g., using race to categorize faces) to later-developing "high level" processes (e.g., using race to make inferences about the status of group members). These low level processes are likely qualitatively different from the high level processes (in fact, some might argue that the low level processes are not social in the same way that the high level processes are). We included both in order to assess a range of developing capacities that scientists have identified as relevant to race. We selected each item only if we could identify published scientific data that allowed us to create a preregistered "best estimate" for age of onset of the behavior. We worked to match questions based on content across the race and social domains. For example, in the race domain we asked, "At what age do you think that humans first can categorize faces based on race?"; while in the social domain we asked, ". . . first can tell the difference between faces and things that aren't faces?" As much as possible, we also tried to match questions by age across domains; for example, we had a question in each domain whose best estimate was 36 months (race: ". . . start associating low-status racial groups with negative traits?"; social: ". . . begin associating fatness with negative traits?"; general: ". . . start being able to pedal a tricycle?"). All stimuli and the citations to establish the best estimate for age of onset are documented in the online supplemental materials and preregistrations. Participants also responded to two attention checks (e.g., "At what age IN MONTHS do you think . . . humans first turn seventy-one months old?").

Participants saw three separate measures concerning conversations about race with children. First, they indicated the youngest age (in months) at which it was appropriate to talk about race with children. Then, they reported their comfort talking about race (e.g., "how comfortable or uncomfortable are you talking to [adults, children] about race"; 1 = *extremely uncomfortable*, 7 = *extremely comfortable*; 2 items) and consequences of talking about race ($\alpha = .92_{S1}$; $.94_{S2}$; $.93_{S3}$; e.g., "If I talk to children about race, then they may become racist," 1 = *strongly disagree*, 5 = *strongly agree*, 5 items).

Colorblindness. Next, we assessed the extent to which adults endorsed a colorblind ideology, and the extent to which they believe children naturally hold a colorblind view of the world. For the adults' colorblindness scale, six scale items were adapted from

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manipulations in Wolsko, Park, Judd, & Wittenbrink (2000; e.g., "We should not notice people's race/culture"; $\alpha = .72_{S1}$; $.76_{S2}$; $.68_{S3}$; 1 = *strongly disagree*, 7 = *strongly agree*). For the children's colorblindness scale, we adapted the adult scale to reference children (e.g., "Children do not notice people's race/culture"; $\alpha = .87_{S1,S2}$; $.85_{S3}$).

Participant race factors. We measured the racial homogeneity of participants' everyday social environment (see online supplemental material). Participants then completed Henry and Sears' (2000) 8-item Symbolic Racism Scale (e.g., "Over the past few years, Blacks have gotten less than they deserve"; $\alpha = .67_{S1}$; $.58_{S2}$; $.86_{S3}$), indicating responses on a Likert-type scale.

Demographics. Participants identified their age, race, sex, whether they attended two or more years of college, their parent status, and experience with kids in the past 5 years.

After completing all measures, participants completed a Captcha question to detect bots, read an online debriefing form, and were compensated.

Data Processing

We constructed a binary sex measure (woman = .5/man = −.5; $n_{S1} = 1$ person identified as nonbinary and did not specify any additional sex and did not have a binary sex score). We also constructed a binary race measure (White participant = .5/participant of color = −.5; self-identification with at least one of any nonwhite group was coded as person of color). For each scale, we computed each participant's average score, reverse coding items when necessary. For the Lay Beliefs scale, we calculated a "distance score" for each domain (race, social, general development), which captured how far each participant's estimate differed from the best estimate age of onset for the developmental milestones specified in our questions. To do this, we subtracted our preregistered best estimate of the age of onset of a particular skill from the participant's response, and then took the absolute value (see online supplemental material for preregistered "best estimates" of each age of onset). Because it is possible to provide relatively inaccurate estimates but to nevertheless know something about human's developmental trajectory (e.g., not knowing when children learn to pedal a tricycle, but knowing that they certainly learn to do so after they become able to sit upright), we also calculated ordinality scores, which capture whether the participant correctly ordered the age of onset of each ability; these data mirrored the distance score data, and are reported in the online supplemental materials.

Results

Studies 1 and 2

We first compared participants' estimates to the best estimates available in the current scientific literature. On average, participants' estimates were most distant from the best estimate in the domain of race ($ps < .0001$). Estimates differed from our best estimate by less than a year for general development questions ($M_{S1} = 8.03$; $M_{s2} = 7.69$ months), by more than two years for social questions ($M_{S1} = 25.63$; $M_{S2} = 30.87$ months), and by nearly four and a half years for race questions ($M_{s1} = 53.38$; $M_{S2} = 58.33$ months; Figure 1). Critically, participants nearly always overestimated the onset of social (94.7% S1; 96.5% S2) and race-related (94.8% S1; 95.2% S2) capacities. These data suggest that adults believe that children's capacities for processing the social world—and in particular race—emerge substantially later in development than is suggested by the scientific literature. Additional analyses, including those predicting participants' distance scores in online supplemental material.

We also classified the age at which participants believe that adults should first talk to children about race. Participants thought that the first conversation about race should occur near a child's fifth birthday (Study 1: $M = 58.73$ months, $SD = 32.22$; Study 2: $M = 61.93$ months, $SD = 33.36$, all months).

We next asked what the strongest predictor of adults' preferred age of conversation was. We standardized all collected scales and demographic factors and found that the strongest predictor—better than any other previously hypothesized predictor—of the age at

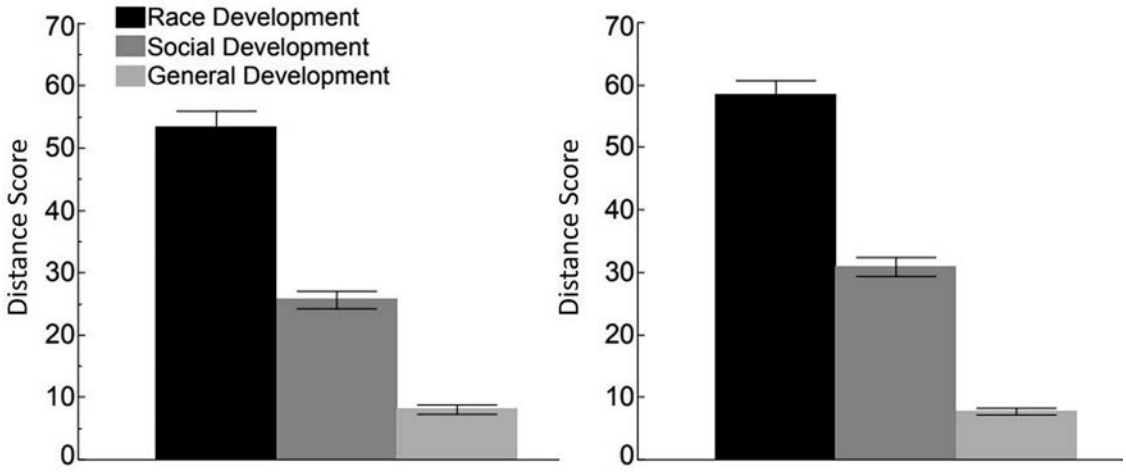


Figure 1. Distance in months between participants' estimates and "best" estimates of age of onset; perfect performance would be 0, error bars are 95% confidence intervals for Studies 1 (left) and 2 (right).

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Table 1
Standardized Regression Coefficients Predicting Talking to Race

Predictor	Study 1 β	Study 1 *SE*	Study 1 *t*	Study 1 *p*	Study 2 β	Study 2 *SE*	Study 2 *t*	Study 2 *p*
Constant	−.07	.06	−1.20	.23	.01	.04	.26	.80
Race distance score	.39	.05	8.23	.0001	.31	.05	6.86	.0001
Social distance score	.17	.05	3.47	.001	.20	.05	4.28	.0001
Control distance score	.10	.04	2.56	.01	.10	.04	2.68	.01
Homogeneity	−.03	.04	−.89	.37	.02	.04	.45	.65
Adult colorblindness	.08	.04	1.97	.05	−.002	.04	−.07	.94
Child colorblindness	−.12	.04	−2.82	.01	−.06	.04	−1.42	.16
Symbolic racism	−.01	.04	−.21	.84	.09	.04	2.38	.02
Parent status	−.01	.05	−.20	.84	−.05	.04	−1.40	.16
Education status	.10	.04	1.07	.29	−.03	.08	−.42	.68
Child experience	.09	.09	1.69	.09	.03	.04	.74	.46
Consequences	.13	.04	3.48	.001	.06	.04	1.51	.13
Comfort	−.11	.04	−3.00	.002	−.07	.04	−1.98	.05
Participant race	.14	1.0	1.42	.16	−.02	.08	−.32	.75
Participant gender	.10	.07	1.38	.17	.14	.08	1.90	.06

Note. Participant race coded as White participant = .5/participant of color = −.5. Participant gender coded as woman = .5/man = −.5.

which adults felt it was appropriate to talk with children about race was the distance score for race (Table 1). Participants who believed that capacities to process race developed later believed that conversations about race should occur later, too. Participants' beliefs about when to talk with children about race were never predicted by participants' race, sex, parent status, education status, experience with children, or environmental racial homogeneity (all *p*s > .10).

Study 3

Our data suggested that (a) adults' estimates of the onset of children's abilities to reason about race are distant from the best estimates available in the literature, and (b) that this inaccuracy is the strongest predictor of adults' willingness to talk with children about race. Study 3 tested whether this relationship was causal, by asking whether improving adults' (N = 328) scientific literacy impacted their willingness to talk with children about race. We randomly assigned participants to one of three scientific literacy interventions. For each intervention, we presented participants with several pieces of information, described as "recent scientific information about humans." For example, in our critical child race development condition, participants learned about current scientific estimates for the age at which children show certain capacities related to race (e.g., "Babies spontaneously prefer faces from particular racial groups at around three months of age"). In the (control) adult race condition, participants learned about recent findings about adults' race reasoning, and in the (control) general development condition participants learned about general developmental milestones.

Our intervention was very effective: participants who experienced the Child Race intervention had very low distance scores:

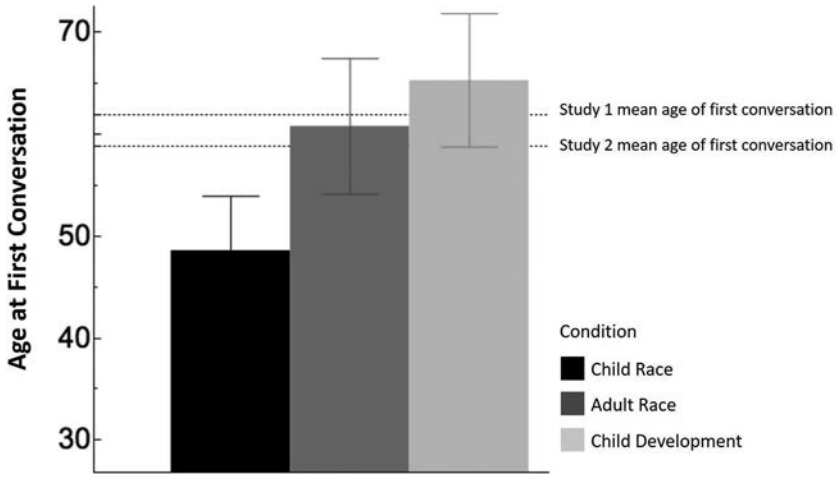


Figure 2. Age at first conversation for child race (black), adult race (gray), and general child development (light gray) development. Mean age at first conversation from Studies 1 and 2 represented in dotted lines. Error bars are 95% confidence intervals.

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their estimates differed from the best scientific estimates by less than one-and-a-half years ($F(2, 325) = 85.99$, $p < .0001$; adult race: $M_{age} = 59.77$ months; child development: $M_{age} = 56.74$ months; child race: $M_{age} = 15.89$ months). These data show that participants were able to increase their scientific literacy about children's capacities for reasoning about race.

Critically, educating participants about the development of children's race-related reasoning capacities caused participants to express willingness to talk with children about race at a younger age than they otherwise would have (Figure 2). Participants in the child race condition endorsed talking with children about race more than 1 year earlier than did participants who learned about adults' reasoning about race ($d = .37$, $p = .007$) or general child development ($d = .499$, $p = .0002$).

Discussion

To effectively communicate and educate about complex topics such as race, it is vital for adults to have a developmentally appropriate grasp of children's developing knowledge states, including their burgeoning capacities to understand and navigate their social environment. Across three preregistered studies, we showed for the first time that United States adults' estimates of when children develop capacities for processing race were surprisingly distant from the best estimates from the scientific literature. In particular, adults estimated that children's capacities for processing race onset about four and a half years later than is suggested by available scientific evidence—a substantially wider gulf than for corresponding estimates in non-race-related social development and general development. Our results point to a profound gap between when adults believe children can begin to process race, and when the scientific literature suggests many children can do so.

A second key finding was that the strongest predictor of the age at which adults were willing to talk to children about race was their (misplaced) beliefs about when children develop capacities for processing race. This factor explained more variance in the timing of adults' willingness to discuss race than any other measured factor. Additional causal evidence demonstrated that improving scientific literacy regarding children's processing of race increased adults' willingness to initiate conversations about race earlier, nearer to when these capacities typically develop.

Our findings are important because the predominant focus on how educators and parents should best convey information about race to young children presumes that adults know *when* children become cognizant of race. Our data challenge this presumption, and suggest that it may be important to arm parents and educators with a scientifically-grounded understanding of how early some children develop capacities to process race (as well as support and encouragement regarding how to take the steps to appropriately engage in such conversations). This could impact not only when adults speak with kids about race, but also what the content of those conversations might be.

While the optimal time or way that adults should talk to children about race remains unclear, fully mitigating racial bias will require talking about it. All too often, adults, and particularly White Americans, are hesitant to talk about race (Bigler & Wright, 2014). When a child does bring race into the conversation, even benignly (e.g., "Susie's skin is dark"), many adults censure this dialogue (e.g., "it's not polite to say things like that"), adopt a colorblind approach (e.g., "skin color doesn't matter"), and emphasize the commonalities between humans (e.g., "we're all the same inside") even though these approaches have been shown to be detrimental to race relations for both adults and children (Apfelbaum, Pauker et al., 2008; Apfelbaum, Sommers et al., 2008).

Surprisingly, in our studies, participants' race, parent status, and experience with children never influenced their willingness to talk to children about race. Black parents (or parents of color, or immigrant parents) may talk with children about race more frequently, and in more depth, than White parents do. We did not address this possibility because we only tested how participants' knowledge of children's race processing was related to their beliefs about the earliest age when they believe adults in general (not only those of a particular background) should talk to children about race. We did not ask about the content or frequency of these conversations, nor did we oversample particular racial demographics in order to test the impact of race on response. Future research should probe whether other relevant and salient factors (e.g., immigrant status, being a Black parent, racial prototypicality) may affect these processes.

The scientific community produces high-quality data describing the development of children's capacities to process race, and describing consequences of racial inequality and discrimination. Yet, our research suggests that the average United States adult drastically underestimates when children develop capacities to process race.

Context

This project represents a cross-disciplinary way to study race. Sullivan is a developmental psychologist who specializes in estimation, Wilton is a social psychologist who specializes in race, and Apfelbaum is a social psychologist who uses experimental and developmental methods to study how adults and children interact in a diverse world. Working across subdisciplines, we considered not only what either children or adults know or do, but we questioned whether there was a gap between those two worlds.

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