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Multiracial Children's and Adults' Categorizations of Multiracial Individuals

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Abstract

Research has explored how multiracial individuals are categorized by monoracial individuals, but has not yet explored how they are categorized by multiracial individuals themselves. We examined how multiracial children (4-9 years) and adults categorized multiracial targets (presented with and without parentage information). When parentage information was provided, multiracial targets were more likely to be categorized as neither wholly black nor wholly white. However, both multiracial adults and children more often categorized multiracial targets as black than as white regardless of the absence or presence of parentage information. For multiracial children, increased contact with white people predicted the tendency to categorize multiracial targets as black. These data suggest that multiracial children's categorizations are more flexible than those of monoracial children in previous research, and that the tendency to categorize multiracial targets as black emerges early in development within multiracial samples, and is especially likely in predominantly white contexts.

Keywords

multiracial person perception; children; social categories; inter-group contact

In the U.S., individuals with black and white parentage (henceforth referred to as “multiracial individuals”) are often perceived as more black than white (Davis, 1991; Ho, Sidanius, Levin, & Banaji, 2011). This black-categorization bias has been studied from the perspective of monoracial adults and children (e.g., Authors, in press; Ho, Sidanius, Cuddy, & Banaji, 2013), but not yet from the perspective of multiracial adults and children. Here we examined how multiracial adults and children (ages 4 to 9) categorized multiracial individuals. This research permits a deeper understanding of how group membership affects social category concepts. Recent work showed that multiracial individuals, who constitute a rapidly growing demographic group (Brunsma, 2006), have concepts of race that differ from those of their monoracial peers (Gaither, 2015). The present study is the first to examine how those concepts differ with regard to the categorizations of multiracial individuals. We also explored the relation between group contact and these categorizations. Notably, because

racial categories do not map onto meaningful biological differences, we use the terms “monoracial” and “multiracial” to refer to individuals who self-identify or are identified by their parents as belonging to one or multiple racial groups.

Monoracial Adults and Children

Monoracial adults categorize multiracial individuals as being neither wholly black nor wholly white when parentage information and racial labels are provided, and are especially likely to do so when motivated to behave without racial bias (Chen & Hamilton, 2012; Chen, Moons, Gaither, Hamilton, & Sherman, 2014). However, they are nonetheless biased toward categorizing multiracial individuals as more black than white. This categorization pattern (also referred to as “hypodescent” or the “one-drop rule”) was once an official U.S. policy in which individuals with any trace of black ancestry were deemed categorically black (but not white or both) and was established to keep the categories of “black” and “white” as distinct and separate (Davis, 1991). Although this policy was abandoned by the U.S. Census by 2000, today's U.S. adults continue to categorize multiracial individuals (both explicitly and implicitly) as more black than white. For white adults, this black-categorization bias may stem from ideological motives, such as social dominance orientation, that *maximize* boundaries between themselves and relatively lower-status social groups (e.g., black Americans), thereby resulting in the decision to exclude multiracial individuals from their in-group (e.g., Authors, in pressb; Ho et al., 2013; Krosch et al., 2013). For black adults, this black-categorization bias may stem from ideological motives, such as egalitarianism, that *minimize* boundaries between themselves and relatively higher-status social groups (e.g., white Americans), thereby resulting in the decision to include multiracial individuals within their in-group (Davis, 1991; Morning, 2005).

Monoracial children are also not without categorization biases (Hirschfeld, 1995). Authors (in press) recently explored how children's (ages 4-13) and adults' categorizations of multiracial individuals varied as a function of participant race, age, and experiences with inter-group contact. They also examined variation as a function of parentage information (i.e., multiracial individuals were presented with or without parents), because such information disambiguates racially ambiguous individuals by revealing their racial backgrounds, thereby making black-[mis]categorizations less likely (Peery & Bodenhausen, 2008; Skinner & Nicolas, 2015). Authors (in press) found that when multiracial individuals were shown without parentage information (and thereby with unknown backgrounds), white children, especially those from predominantly white contexts, showed a black-categorization bias, and this bias was stronger among white children compared to black children. However, when multiracial individuals were shown with parentage information (and thereby with known and disambiguated backgrounds), older children (white children at ages 10-13 and black children at ages 7-9) and adults conceptualized them as not wholly white or wholly black.

Taken together, research suggests that when monoracial adults and children categorize multiracial individuals, they are influenced by ideological motives, social group membership, parentage information, and experiences with inter-group contact. Research has

not yet explored how multiracial individuals make adults and children categorize multiracial individuals.

Multiracial Adults and Children

As mentioned above, multiracial children show greater cognitive flexibility in their race-based concepts than their monoracial peers do (Gaither, 2015; Gaither et al., 2014). For instance, when habituating to faces, multiracial infants show reduced face scanning, whereas monoracial infants show increased face scanning, suggesting that early contact with diverse and multiracial contexts facilitates the speed and regularity with which children perceive, attend to, and encode faces (Gaither, Pauker, & Johnson, 2012; see also Bar-Haim, Ziv, Lamy, Hodes, 2006). Furthermore, whereas monoracial individuals' racial identity development involves learning about membership within a single racial category (Marks, Settles, Cooke, Morgan, & Sellers, 2004; Quintana, 1998), multiracial individuals' racial identity development involves learning about membership within two or more racial categories (Kerwin, Ponterotto, Jackson, & Harris, 1993; Rockquemore & Brunnsma, 2008), which may lead to particularly flexible concepts of race (Gaither, 2015; Khanna, 2011). How multiracial individuals identify racially depends heavily on their context. For instance, mothers' discussions about race help multiracial children understand their multiple racial backgrounds (Morrison, 1995), and priming multiracial children's racial identity influences which identity they associate themselves with (Gaither et al., 2014). Also, how multiracial individuals self-identify varies across time and contexts (Hitlin, Scott Brown, & Elder, 2006; Rockquemore & Brunnsma, 2006). For instance, black-white multiracial individuals may go from identifying as multiracial to identifying as black [and vice versa] across their lifespan, and they often change their racial identities depending on the racial demographics of their environment. Given multiracial children's flexibility when thinking about race, they may at a young age reason that people with black and white parentage are not necessarily black *or* white, unlike same-aged white children, for instance, who categorize multiracial children as more black than white (see Authors, in press).

However, flexibility does not necessitate a complete absence of bias. Even if multiracial individuals typically categorize multiracial individuals as not necessarily black or white, this still leaves open the question of whether they, like their monoracial peers, show biases in their categorizations. Previous research warrants two competing predictions. On the one hand, previous work shows that multiracial individuals show pro-white biases (Johnson, 1992; Neto & Paiva, 1998), which may be especially likely when their white racial background is primed (Gaither et al., 2013, 2014). Thus, one prediction is that multiracial individuals, as a result of pro-white biases, will categorize multiracial individuals as white more often than as racial minority. Other work, however, shows that in the U.S., multiracial individuals are often perceived and categorized as being members of their racial minority group, by both adults (e.g., Ho et al., 2013; Skinner & Nicolas, 2015) and children (Hirschfeld, 1995; Authors, in press), and are often pressured by others to identify with their racial minority background (Bowles, 1993; Kerwin et al., 1993; Khanna, 2011). As a result of such categorization biases, multiracial individuals may be more likely to identify as racial minority than as white (e.g., Harris & Sim, 2002; Rockquemore & Brunnsma, 2008; Townsend, Fryberg, Wilkins, & Markus, 2012), which could subsequently influence them to

perceive other multiracial individuals as more racial minority than white. Thus, an alternative prediction is that multiracial individuals' experiences with being categorized by others as racial minority, as well as their greater likelihood of identifying as racial minority, influence them to categorize other multiracial individuals as racial minority more than white. Additionally, white children (especially those from predominantly white contexts) are particularly likely to categorize multiracial individuals as racial minority (Authors, in press). Thus, multiracial children living in predominantly white contexts are more often categorized by others as racial minority, and may therefore be especially likely to categorize multiracial individuals as racial minority.

The Present Studies

We investigated how multiracial children (4-6 and 7-9 years of age) and adults categorized faces of black-white multiracial individuals (henceforth referred to as multiracial targets). We included these age groupings because they were the focus of prior research with monoracial participants (Authors, in press), and because race-based concepts develop across these years (Quintana, 1998; Rhodes, Gelman, & Karuza, 2014). For theoretical purposes mentioned above, we focused on a multiracial sample of individuals who were of both white and racial-minority descent (or who were explicitly labeled as multiracial, biracial, or mixed), whose categorization biases could thus stem from either pro-white biases or experiences with being categorized by others and identifying as racial minority. We randomly assigned participants to one of two conditions. The parent-absent condition assessed children's categorizations when multiracial targets were presented without parentage information (and therefore had an ambiguous racial background), and the parent-present condition assessed categorizations when multiracial targets were presented with parentage information (and therefore had a disambiguated racial background) (for a similar method, see Skinner & Nicolas, 2015). As described in the Method section, participants were asked to indicate whether a series of black, white, and multiracial targets (all presented without racial labels) were the same kind as a black girl, a white girl, or a never-seen girl who was hidden behind a red curtain. We focused on female faces because previous research shows that male faces are more susceptible to hypodescent (Ho et al., 2011). Thus, this method avoids gender-of-target effects and provides a conservative test of categorization biases. The curtain method was used because it (a) assessed participants' beliefs about race-based category boundaries, (b) prevented participants from using a perceptual matching strategy (see Rhodes et al., 2014), and (c) allowed participants to indicate that the individual was not necessarily black *or* white.

We made four predictions based on four sets of logical premises. Previous research showed that white children conceptualize multiracial targets as not wholly black or white around the age of 10-13, whereas black children show this reasoning around age 7-9 (Authors, in press). Compared to monoracial children, multiracial children may be more familiar with the concept of being multiracial, and they show greater flexibility in their race-based concepts (Gaither, 2015). Thus, our first prediction was that multiracial children would conceptualize multiracial targets as not wholly black or white at an earlier age than monoracial children from previous research, by 4-6 years of age. Because parentage information disambiguates multiracial targets (Peery & Bodenhausen, 2008; Skinner & Nicolas, 2015), our second

prediction was that multiracial children and adults would be more likely to conceptualize multiracial targets as not wholly black or white in the presence of parentage information compared to the absence of parentage information. However, flexibility in race-based concepts does not necessitate the complete absence of bias, and previous research suggests that multiracial children's categorizations are influenced by pro-white biases (e.g., Johnson, 1992; Neto & Paiva, 1998), as well as by the tendency for others to categorize them as racial minority more often than as white (e.g., Ho et al., 2013; Krosch et al., 2013). Given the large and growing body of research on categorization biases toward multiracial targets (e.g., Ho et al., 2011; Skinner & Nicolas, 2015), as well as the literature showing that multiracial individuals are more likely to self-identify as racial minority than as white (e.g., Harris & Sim, 2002; Hitlin et al., 2006), our third prediction was that multiracial children and adults would categorize multiracial targets as black more often than as white. As mentioned previously, increased contact with white perceivers suggests more frequent experiences with being categorized by other as racial minority (Authors, in press; Halberstadt et al., 2011). Thus, our fourth prediction was that increased contact with white people would predict the tendency for multiracial individuals to categorize multiracial targets as black.

Method

Participants

We included three age groups of multiracial participants ($N = 111$)¹: thirty-four 4- to 6-year-olds (58% female, M age 5;4, range 4;0-6;11); thirty-four 7- to 9-year-olds (41% female, M age 8;5, range 7;1-9;11), and forty-three adults (54% female, M age 25, range 18-58). In total, there were 10 ways in which parents identified their children (26 Black/White, 16 Asian/White, 13 Biracial/Multiracial/Mixed [not further specified], 4 Latino/White, 2 Arabic/White, 2 Asian/Black/White, 2 Black/Latino/White, 2 Black/White/Native American, 1 Indian/White). There were 9 in ways in which adults self-identified (17 Asian/White, 7 Black/White, 7 Biracial/Multiracial/Mixed [not further specified], 7 Latino/White, and 1 of each of the following labels: Asian/Black/White, Black/White/Mayan, Black/White/Latino/Native American, Indian/White). An additional 11 children and 4 adults were excluded for selecting the same response option throughout the entire condition. Children were recruited in the Midwest at schools, community centers, and a university-affiliated museum. Adults were recruited through Amazon's MTurk and an Introductory Psychology Subject Pool. Prior work indicates MTurk and in-person testing yield comparable data (Casler, Bickel, & Hackett, 2013; Paolacci & Chandler, 2014; Peer, Vosgerau, & Acquisti, 2014).

Materials

The images used in this study were drawn from the Radboud Faces Database (Langner et al., 2010), Child Affective Facial Expression Set (CAFE; Lobue & Thrasher, 2014), Kinzler and

¹To test the robustness of the present data, we conducted power analyses using G*Power software (Faul, Erdfelder, Lang, & Buchner, 2007). We expected to find effect sizes that were comparable to those detected by Authors (in press) and indeed, the power analyses revealed that the present sample exceeded the size necessary to detect main effects of target race, condition, and age group. The present sample size was slightly underpowered to detect interactive effects; however, our a priori predictions warranted an investigation of interactions (focusing on multiracial targets specifically). As expected, all obtained effect sizes were comparable to those found by Authors (in press), thereby attesting to the robustness of these data.

Dautel (2012), and online sources. The full CAFE set can be obtained at databrary.org. In total, the images consisted of 24 parent faces and 17 female child faces, and were all forward-facing with happy expressions and dark hair and eye color. All images were pretested with 55 U.S. adults, who for each face were asked, “What is the racial background of this person?” (with response options of “black”, “white”, “black and white”, or “other”). The majority of participants categorized all images as intended (namely, black, white, or black and white). For a full report on the pretest data see Authors (in press).

For participants assessed in-person, the conditions were presented on a laptop computer using PowerPoint software. For participants assessed via MTurk, the conditions were presented on Qualtrics. Each condition consisted of three phases (described in the Procedure section below): training, experimental, and post-test. In each phase, there were 3 response options shown at the top of the screen. In the first set of training trials, the response options were a cat, a red curtain, and a dog. For the second set of training trials, the response options were a Dalmatian, a red curtain, and a Rottweiler. In the experimental phase, the response options were a girl who was categorized as white 100% of the time in the pretest, a red curtain, and a girl who was categorized as black 100% of the time in the pretest. In the first half of the post-test, the response options were a black girl, a white girl, a multiracial girl, and a chicken. In the second half of the post-test, the response options were a crocodile, a red curtain, and a penguin. The red curtain was always positioned in the middle. In the experimental phase, the position of the response options was counterbalanced across participants, and the order of the response options reversed after the first 6 experimental trials within participants (i.e., white girl, red curtain, black girl; black girl, red curtain, white girl). In the experimental phase, all 12 targets (i.e., four white, four multiracial, four black) were presented one at a time, centered at the bottom of the screen, and in random order with the constraint that the first three targets were a white girl, a multiracial girl, and a black girl (in counterbalanced order across participants).

Procedure

Participants were randomly assigned to either the parent-absent condition (M ages 5;3 8;4, and 25) or the parent-present condition (M ages 5;5, 8;6, and 26). Participants tested in-person were tested by trained research assistants.

Parent-Absent Condition—This condition assessed participants' categorizations in the absence of parentage information.

Training phase: On the first set of training trials, participants were told that they would be asked to identify which animals were the same kind as a cat, a dog, or another animal hidden behind a red curtain. The research assistant then raised the curtain and showed the child that a pig was behind it. The research assistant then dropped the curtain (thereby hiding the pig), revealed a target pig, and asked the child, “Where is the animal that is the same kind as this one (*pointing to the target pig*)?” After participants indicated that the animal that was the same kind as the target pig was behind the red curtain, the research assistant told them that they would now look at some more animals, but that they would no longer be able to see what was behind the red curtain. Participants then identified the response options that were

the same kind as a dog, a cat, and another pig. On the second set of training trials, participants saw trials in which all images belonged to the same basic-level category (i.e., dogs). These trials showed participants that even when all response options belonged to the same basic-level category, the full range of response options could be used. The research assistant showed and told them that the response options were a Dalmatian, a Rottweiler, and a never-seen dog hidden behind the red curtain. Participants then identified the response options that were the same kind as a Dalmatian, a Rottweiler, and a Chihuahua. Research assistants gave feedback when necessary and proceeded to the experimental phase only after the successful completion of the training phase (see Figure 1 in the online supplementary materials).

Experimental phase: Participants were told that they would be asked to identify which girls were the same kind as a girl on the top-left of the screen (e.g., black girl), a girl on the top-right of the screen (e.g., white girl), or another never-seen girl hidden behind the red curtain at the top-center of the screen. On each of 12 trials, a research assistant revealed a target (e.g., multiracial girl) and asked the participant, “Where is the girl that is the same kind as this one [*pointing to the target*]?” Racial labels were never provided.

Post-test: Next, only the red curtain was shown and participants were asked, “What can you tell me about the girl behind the red curtain?” Participants were then asked, “What do you think she looks like?” Then, participants were shown a black girl, a white girl, a multiracial girl, and a chicken, and were asked which image they believed was behind the red curtain all along. These questions were included for exploratory purposes and are reported in the online supplementary materials. Lastly, participants were shown three more animal trials, in which the response options were a rabbit, a never-seen animal behind a red curtain, and a crocodile. Participants were asked to identify the animal that was the same kind as a target rabbit, a target crocodile, or a target penguin. These trials ensured that after the experimental phase, participants would still use the full range of response options.

Parent-Present Condition

The only difference between the parent-present condition and the parent-absent condition was that in the parent-present condition, each target image was presented with the faces of two parents. For each trial, participants were asked to point to both of the parents and then identify the response option that was the same kind as the target (e.g., “Look at this girl's dad and mom [*pointing to each*]. Point to this girl's dad [*pointing to the target*]. Point to this girl's mom [*pointing to the target*].” Next, both parent images faded out so that the display was identical to that in the parent-absent condition, and participants were then asked to identify the response option that was the same kind as the target. We randomly assigned each target girl to one of two parent dyads (i.e., one mother, one father per set), counterbalanced across participants, with the constraint that the parents matched the target by race (i.e., one black parent and one white parent for multiracial targets; two black parents for black targets, and two white parents for white children). For multiracial targets, the race of the parent dyads was counterbalanced within participants, such that two multiracial targets had a white mother and a black father, and two had a black mother and a white father.

Adults recruited via Amazon's MTurk did not receive the pointing condition, but were told at the beginning of the condition that each target child would be presented with their parents.

Demographic Survey—Following children's participation, parents were emailed a follow-up survey that assessed their child's inter-group contact (Pahlke, Bigler, & Suizzo, 2012). Specifically, parents were asked to estimate the percentage of Asian, black, Latino/Hispanic, white, and other people among their child's friends and within the neighborhood where their child spent most of their time. Adult participants self-reported this information immediately following the categorization task and all questions pertained to themselves (e.g., think about the racial/ethnic background of your friends).

Results

There were no effects of participant gender, parent set, race of the multiracial parent dyad (i.e., which parent was which race for the multiracial targets), or adult recruitment site (subject pool vs. MTurk), so data were collapsed over these variables.

Expected Categorizations

We calculated the frequency of expected categorizations for all target types (i.e., how often black targets were matched with the black response option, white targets with the white response option, and multiracial targets with the curtain; scores could range from 0 to 4). We examined these expected categorizations through a 3 (target race: black, white, multiracial) $\times$ 2 (condition: parent-absent, parent-present) $\times$ 3 (age group: 4-6, 7-9, adult) repeated measures ANOVA with target race as a within-subjects factor, condition, and age group as between-subjects variables, and expected categorizations for black, white, and multiracial targets as the dependent variables. Expected categorizations were also compared to chance (i.e., 1.33) by one-sample *t*-tests (see Table 1 and Figure 1).

There was a main effect of target race, $F(2, 210) = 24.01$, $\eta_p^2 = .19$, $p < .001$. Pairwise comparisons indicated that participants made more expected categorizations for black targets ($M = 3.30$, $SE = .08$), followed by white targets ($M = 2.99$, $SE = .11$), followed by multiracial targets ($M = 2.21$, $SE = .14$).² There was also a main effect of age group, $F(2, 105) = 17.89$, $\eta_p^2 = .25$, $p < .001$. Pairwise comparisons showed that adults ($M = 3.35$, $SE = .11$) made significantly more expected categorizations than 7- to 9-year-olds ($M = 2.72$, $SE = .12$; $p < .001$) and 4- to 6-year-olds ($M = 2.42$, $SE = .12$; $p < .001$), but that the latter two age groups did not differ from one another ($p = .23$). There was a significant interaction of target race and condition, $F(2, 210) = 9.54$, $\eta_p^2 = .08$, $p < .001$, and a marginally significant 3-way interaction of target race, condition, and age group, $F(4, 208) = 2.27$, $\eta_p^2 = .04$, $p = .054$.

²This finding is consistent with previous research (Bar-Haim et al., 2006; Halberstadt et al., 2011) and research using the same method (Authors, in press). That is, people attend more to faces that they have less frequent exposure to. For instance, white children who have more contact with white people show more expected categorizations for black targets than for white targets, whereas black children who have more contact with black people show comparable rates of expected categorizations for black targets and white targets. Thus, it is no surprise that in the present sample, multiracial children who have mostly contact with white people show higher rates of expected categorizations for black targets than white targets (they attend to them more). These data contribute to research showing that participant race and experiences with group contact influence race-based concepts.

Because of our a priori prediction that both children and adults would make more expected categorizations for multiracial targets in the presence of parentage information than in the absence of parentage information, subsequent pairwise comparisons and one-sample *t*-tests focused exclusively on multiracial targets (though the results of pairwise comparisons with black and white targets are presented in Table 1). Adults and 4- to 6-year-olds, but not 7- to 9-year-olds, made more curtain matches in the parent-present condition than in the parent-absent condition (p s = .001, .002, .977, respectively). One-sample *t*-tests revealed that in the parent-absent condition, 4- to 6-year-olds made curtain matches at chance levels, whereas 7- to 9-year-olds and adults did so at above chance levels (4-6: $t(17) = -.15$, $p = .88$; 7-9: $t(17) = 2.11$, $p = .05$; adults: $t(20) = 2.10$, $p = .049$). In the parent-present condition, all three age groups made curtain matches at above chance levels (4-6: $t(14) = 3.07$, $p = .052$; 7-9: $t(15) = 2.26$, $p = .039$; adults: $t(21) = 9.24$, $p < .001$).

Biases in Categorizing Multiracial Targets

To assess whether multiracial targets were categorized as white more than black (possibly as a result of a pro-white bias) or as black more than white (possibly as a result of being categorized by others as racial minority), we created bias scores by subtracting the frequency with which participants categorized multiracial targets as white from the frequency with which participants categorized multiracial targets as black. Scores of zero indicated no bias, whereas positive scores indicated a bias toward categorizing multiracial targets as black relative to white, and negative scores indicated a bias toward categorizing multiracial targets as white relative to black (scores could range from -4 to +4). We then conducted a 2 (condition: parent-absent, parent-present) $\times$ 3 (age group: 4-6, 7-9, adult) ANOVA with condition and age group as between-subjects variables and the bias score as the dependent variable. We also conducted one-sample *t*-tests comparing the bias scores against chance (i.e., 0) for each age group.

There was a main effect of condition, $F(1, 105) = 9.81$, $\eta_p^2 = .10$, $p = .001$. Pairwise comparisons showed that participants had significantly more positive bias scores in the parent-absent condition ($M = 1.61$, $SE = .19$) than in the parent-present condition ($M = .68$, $SE = .20$). One-sample *t*-tests revealed that in the parent-absent condition, all three age groups had positive bias scores that were significantly above chance (4-6: $t(17) = 3.07$, $p = .007$; 7-9: $t(17) = 4.45$, $p < .001$; adults: $t(20) = 6.90$, $p < .001$). In the parent-present condition, 4- to 6-year-olds had positive bias scores that approached significance, and 7- to 9-year-olds and adults had positive bias scores that were significantly above chance (4-6: $t(14) = 1.85$, $p = .086$; 7-9: $t(15) = 2.49$, $p < .025$; adults: $t(21) = 2.13$, $p = .045$).

Group Contact

As an index of group contact, we summed and averaged the percentage of participants' friends and neighborhood residents who were white (white contact) or black (black contact), with each index potentially ranging from 0% to 100%. Given that the parental survey was distributed as a follow-up email, only 33% of parents completed the survey. We therefore collapsed the data across the two child age groups ($N = 21$). One adult did not complete the survey. To compare rates of group contact between children and adults, we conducted a 2 (age group: child, adult) multivariate ANOVA with age group as a between-subjects variable

and indices for white contact and black contact as the dependent variables. Then, to test our a priori prediction that increased white contact would predict the tendency to categorize multiracial targets as black, we conducted one-tailed regression analyses with group contact as the independent variables and the bias score as the dependent variable.

Children and adults had comparable rates of white contact (children: $M = 62\%$, $SE = 5.7$; adults: $M = 52\%$, $SE = 4.0$, $p = .15$) and black contact (children: $M = 27\%$, $SE = 5.2$; adults: $M = 20\%$, $SE = 3.7$, $p = .30$). As expected, children's increased white contact predicted their tendency to categorize multiracial targets as black relative to white, $R^2 = .15$, $\beta = .39$, $t(20) = 1.83$, $p = .042$. Children's black contact did not predict their bias scores, $R^2 = .01$, $\beta = -.19$, $t(20) = -.83$, $p = .21$, and adults' group contact did not predict their bias scores (white contact: $R^2 = .004$, $\beta = -.06$, $t(41) = -.40$, $p = .35$; black contact: $R^2 = <.001$, $\beta = .001$, $t(41) = -.004$, $p = .50$).

Subgroup Analysis: Black-White Participants

We conducted additional analyses with the subsample of participants who had both black and white backgrounds. Consistent with the data from the larger sample, black-white multiracial adults made more expected categorizations for multiracial targets than did black-white multiracial children, and all age groups showed a black-categorization bias; none showed a white-categorization bias. For children, this bias was predicted by their rates of white contact. The online supplementary materials provide all analyses and statistics with black-white multiracial participants.

Discussion

We explored how U.S. multiracial children (ages 4-6 and 7-9) and adults categorized multiracial targets. Consistent with research with monoracial samples (Chen & Hamilton, 2012), we found that multiracial participants made more expected categorizations for monoracial targets than for multiracial targets, suggesting that even within a multiracial sample, categorizations of multiracial targets are more challenging than categorizations of monoracial targets.

More central to the study were our first two predictions: that because multiracial children show greater flexibility in their race-based concepts, they would reason, unlike their monoracial peers, that children with black and white parentage were not wholly black or white (as indicated by choosing the curtain option), and that they would especially do so in the presence of parentage information. Indeed, when multiracial targets were presented with parentage information, multiracial 4- to 6-year-olds were more likely to categorize them as neither black nor white and they did so at above-chance rates (unlike same-age monoracial children in previous research; Authors, in press). Similarly, adults were most likely to categorize multiracial targets as not wholly black or white when given parentage information, thereby replicating previous research with monoracial adults (Peery & Bodenhausen, 2008). Seven- to nine-year-old multiracial children were also above chance both in the absence and in the presence of parentage information, but unlike younger children and adults, their expected categorizations for multiracial targets did not differ across conditions. One possible interpretation of this age difference is that we lacked the sample

size needed to detect a reliable condition by age group interaction. An alternative and perhaps more interesting interpretation, however, is that within multiracial samples, the use of parentage information to guide race-based categorizations develops curvilinearly, such that it is present during early childhood, declines during middle childhood, and subsequently increases again during early adolescence. Younger children may simply reason that multiracial individuals are a combination of their parents, older children may look to information not based on parentage to guide their categorizations (e.g., cultural activities, friendship patterns), and adolescents may begin to reasons (like adults) that racial categories are rooted in biology and therefore inherited from parents (Quintana, 1998; Rhodes & Gelman, 2009). Additional research with a larger sample and older multiracial children is needed to test this interpretation. Until then, these data provide evidence that although multiracial children's categorizations of multiracial targets are not adult-like, they are more adult-like than those of same-aged monoracial children.

Multiracial 4- to 6-year-olds' chance-level responses in the parent-absent condition (for multiracial targets) could be interpreted as a reluctance to use the curtain as a response option. However, this interpretation is unlikely. All participants used the curtain appropriately in both the training phase and the post-test phase (e.g., when shown a Rottweiler, a curtain, and a Dalmatian, all children included in the final sample judged that the same kind of animal as a Chihuahua was behind the curtain, even though they never actually saw what was behind the curtain). Also, such a reluctance would not explain why 4- to 6-year-olds were more likely to use the curtain in the presence of parentage information, and it would not explain why they showed a black-categorization bias (rather than equal selection of the black and white response options). An alternative explanation is that although multiracial children show greater flexibility in their race-based concepts (e.g., Gaither et al., 2014), these concepts may not guide their categorizations under ambiguous circumstances (in the absence of parentage information). Indeed, recent research suggests that 4- to 6-year-olds do not readily engage in race-based reasoning (Kinzler & Dautel, 2012).

We also explored whether multiracial individuals were more (or less) likely to categorize multiracial targets as black than as white. Research suggests that as a result of a pro-white bias (Johnson, 1992; Neto & Paiva, 1998), multiracial individuals may categorize multiracial targets as white more often than as racial minority. However, because other work shows that multiracial individuals are themselves often categorized as racial minority (e.g., Ho et al., 2013; Skinner & Nicolas, 2015), pressured to identify as racial minority (Bowles, 1993; Kerwin et al., 1993; Khanna, 2011), and more likely to self-identify as racial minority than white (Harris & Sim, 2002; Rockquemore & Brunson, 2008; Townsend et al., 2012), our third prediction was that multiracial children and adults would categorize multiracial targets as black more often than as white. As expected, both children and adults, both in the absence and presence of parentage information, showed this tendency.

Additionally, and consistent with research suggesting that multiracial individuals in predominantly white contexts are often categorized as racial minority (Halberstadt et al., 2011), we found that multiracial children living in predominantly white contexts were especially likely to categorize multiracial targets as black (thereby supporting our fourth

prediction). This categorization pattern was similar to those found with white (but not black) children in previous research (Authors, in press), thereby suggesting that multiracial children's categorizations paralleled the majority perspective (in this case the perspective of white children). That is, multiracial children categorized multiracial targets as black more often than as white, although they were of the same racial category as those targets, thereby responding more like white children in their categorizations. Important questions for future research are to examine how and to what extent multiracial children adopt the perspective of other white children and how that perspective shapes their categorizations. Of equal importance is to examine these categorizations with multiracial children from predominantly non-white contexts, as they are likely to adopt different perspectives, and also to explore the ideological motives (in addition to contextual predictors) that predict multiracial individuals' categorizations. Of course, because our inter-group contact data were based on a sub-group of the larger sample, we encourage a cautious interpretation of these results and look forward to additional research with larger samples. Until then, we have converging evidence, both theoretical and data-driven, suggesting that as a result of being categorized as racial minority in predominantly white contexts, multiracial children (and adults) are more likely to categorize multiracial targets as black relative to white.

Importantly, although the curtain method is informative about the categorization of multiracial individuals as not wholly black or wholly white, it does not assess the use of "multiracial" as a category. Other methods are needed to assess children's beliefs about multiracial categories per se. Such methods would do well to examine the meaning people attribute to being multiracial. That is, "multiracial" could entail the belief of being (a) not wholly black or wholly white, (b) being both black and white, (c) being a member of a distinct third category, or (d) something else entirely. Our data do not speak to this issue, which is an important one for understanding people's beliefs about racial concepts and boundaries.

A further direction for future research is to explore in more depth the concepts of multiracial individuals of different backgrounds. Multiracial individuals vary widely from one another in parentage as well as different experiences with identity development, social preferences, and rates of inter-group contact (Gaither, 2015; Hitlin et al., 2006). For instance, although white adults categorize both Asian/white and black/white multiracial targets as more racial minority than white, this bias is stronger toward individuals with black ancestry (which is consistent with a motive to enforce the racial hierarchy in the U.S.) (Ho et al., 2011). Because Asian/white multiracial individuals may less often experience being categorized as racial minority, they may themselves be less likely to categorize multiracial targets as racial minority. Thus, although this research is the first to explore categorizations of multiracial individuals with a developmentally diverse multiracial sample, it is just the first step toward additional research that considers variation *within* larger and more diverse multiracial samples.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Research Highlights

1. Multiracial children are less likely than multiracial adults to categorize black-white multiracial targets as neither wholly black nor wholly white.
2. Multiracial children (like multiracial adults) are biased toward categorizing black-white multiracial targets as black more than white, which is a categorization pattern similar to those of white (but not black) children in previous research.
3. Increased contact with white people predicts multiracial children's tendency to categorize black-white multiracial targets as black more than white.
4. This work is the first to systematically explore how multiracial individuals categorize multiracial targets, and contributes to a growing body of literature on how race-based concepts vary by age, social group, and experiences with group contact.

Figure 1.

Mean frequency (out of 4) of expected categorizations for each target type across condition and age group. Bars depict standard errors.

Table 1
Means and Standard Errors of Expected Categorizations

Condition	Age Group	Race of Target Image M (SE)		
		Black	White	Multiracial
Parent-Absent	4-6	3.39 (.21)^a₁	2.72 (.28)^b₁	1.28 (.34) ^c ₁
	7-9	3.28 (.30)^a₁	2.89 (.30)^{ab}₁	2.11 (.37)^b₁
	Adults	3.90 (.07)^a₁	3.86 (.10)^a₂	1.95 (.30)^b₁
Parent-Present	4-6	2.67 (.38)^a₁	2.20 (.44)^a₁	2.27 (.44)^a₁
	7-9	2.94 (.25)^a₁	3.00 (.29)^a_{1 2}	2.13 (.35)^a₁
	Adults	3.64 (.16)^a₂	3.27 (.24)^a₂	3.50 (.24)^a₂

Note. Bolded values are significantly different from chance (1.33), according to one-sample *t*-tests ($p < .05$). Superscript letters indicate comparisons within condition and age group across target types (compare horizontally). Subscript numerals indicate comparisons within condition and target type across age groups (compare vertically). Scores could range from 0 to 4. Same letters/numerals indicate values that do not differ significantly from one another at $p < .05$.

Table 2
Means and Standard Errors of Bias Scores

Condition	Age Group	Bias Score M(SE)
Parent-Absent	4-6	1.56 (.50)
	7-9	1.22 (.27)
	Adults	2.04 (.30)
Parent-Present	4-6	<i>0.67 (.36)</i>
	7-9	0.88 (.35)
	Adults	0.50 (.23)

Note. Bolded values are significantly different from chance (i.e., 0) according to one-sample *t*-tests ($p < .05$) and the italicized value is marginally significant ($p = .087$). Positive scores indicate a bias toward categorizing multiracial targets as black and negative scores indicate a bias toward categorizing multiracial targets as white (scores could range from -4 to +4).