Empirical Research Paper

Exposure to Biracial Faces Reduces Colorblindness

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Abstract

Across six studies, we demonstrate that exposure to biracial individuals significantly reduces endorsement of colorblindness as a racial ideology among White individuals. Real-world exposure to biracial individuals predicts lower levels of colorblindness compared with White and Black exposure (Study 1). Brief manipulated exposure to images of biracial faces reduces colorblindness compared with exposure to White faces, Black faces, a set of diverse monoracial faces, or abstract images (Studies 2-5). In addition, these effects occur only when a biracial label is paired with the face rather than resulting from the novelty of the mixed-race faces themselves (Study 4). Finally, we show that the shift in White participants' colorblindness attitudes is driven by social tuning, based on participants' expectations that biracial individuals are lower in colorblindness than monoracial individuals (Studies 5-6). These studies suggest that the multiracial population's increasing size and visibility has the potential to positively shift racial attitudes.

The biracial population is growing quickly—for example, the number of Black/White biracial Americans increased by over a million between 2000 and 2010 and multiracial Americans now make up close to 7% of the U.S. population (Jones & Bullock, 2012; Pew Research Center, 2015; U.S. Census, 2010). As this population grows and as biracial people become more likely to identify as such, the implications of this demographic shift are attracting more attention from both psychological research and policy perspectives. Previous research on biracial individuals has largely focused on the unique cognitive and affective experiences associated with having ancestry from multiple racial/ethnic groups (Gaither, 2015; Lee & Bean, 2004; Nakashima, 1992; Pauker & Ambady, 2009; Shih, Bonam, Sanchez, & Peck, 2007; Shih & Sanchez, 2005, 2009; Telles & Sue, 2009). However, one question that remains under-explored is how the mere presence of biracial individuals may affect the racial attitudes and ideologies espoused by others.

Building on decades of research showing the potential benefits of interracial contact more generally (e.g., Allport, 1954; Hurtado, 2005; Pettigrew & Tropp, 2006, 2011), the present investigation examines the unique impact of exposure to biracial individuals. In particular, we examine how exposure to biracial faces may affect Whites' endorsement of colorblindness as a racial ideology—one of the most common approaches to race relations in the United States (Apfelbaum, Norton, & Sommers, 2012; Plaut, 2010; Richeson & Sommers, 2016). We first examine the motivations and implications of colorblindness as a racial ideology. Next, we review the literature on how exposure to other individuals may affect personal attitudes. Finally, we focus on how encountering biracial individuals in particular could affect attitudes.

Colorblindness and Race Relations

Racial ideologies shape how people respond to interracial contexts. Colorblindness is one particular racial ideology centered on the belief that acknowledgment of race and categorization based on race should be avoided. Specifically, race is considered a superficial characteristic, and as such, the colorblindness approach attempts to prevent race from factoring into assessments of or interactions with other individuals

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entirely (e.g., Apfelbaum et al., 2012; Babbitt, Toosi, & Sommers, 2015; Markus, Steele, & Steele, 2002).

The ostensible goal of colorblindness as an ideology is to prevent racial prejudice, discrimination, and injustice by not considering race at all but rather treating everyone as an individual. The implication is that perceiving differences between racial groups—or even acknowledging the existence of racial categories—is problematic and a precursor to prejudicial attitudes and behavior (Brewer & Miller, 1984; Tajfel & Turner, 1979; Wolsko, Park, Judd, & Wittenbrink, 2000). By this reasoning, ignoring race should decrease racial bias and lead to increased equality and fair-mindedness. Chief Justice John Roberts succinctly captured this view in a U.S. Supreme Court ruling striking down school integration efforts: "The way to stop discrimination on the basis of race is to stop discriminating on the basis of race" (*Parents Involved in Community Schools v. Seattle School District No. 1*, 2007, pp. 40-41). And more recently, discussions surrounding "Black Lives Matter" versus "All Lives Matter" highlight other applications of colorblindness. Thus, the emphasis on colorblindness is apparent in educational, legal, and organizational settings (e.g., Duncan, 2000; Norton, Sommers, Vandello, & Darley, 2006; Plaut, Thomas, & Goren, 2009; Polluck, 2004; Sue, 2004; Tatum, 2003). In fact, a colorblind model was recently highlighted as one of two primary approaches to addressing racial diversity issues in U.S. society, bolstering the need for more research focusing on those who endorse colorblindness ideologies (Richeson & Sommers, 2016).

People may endorse colorblind ideologies for a number of reasons. For example, protecting themselves from being called racist (e.g., Markus et al., 2002), believing that colorblindness benefits racial minorities (Goff, Jackson, Nichols, & Di Leone, 2013), or preserving their positions of privilege within existing social structures (Saguy, Dovidio, & Pratto, 2008; see Babbitt et al., 2015 for a review of motivations for using a colorblind approach). Thus, colorblindness functions across various motivations and contexts, often becoming a default approach for majority group members. In addition, it can negatively affect interracial interactions for members of both racial majority and minority groups (Apfelbaum, Pauker, Sommers, & Ambady, 2010). Specifically, colorblindness worsens the accuracy of social judgments, increases negative affect, and increases both implicit and explicit racial bias and stereotyping (Apfelbaum, Sommers, & Norton, 2008; Correll, Park, & Smith, 2008; Richeson & Nussbaum, 2004; Ryan, Hunt, Weible, Peterson, & Casas, 2007; Vorauer, Gagnon, & Sasaki, 2009). Ignoring racial differences in contexts where race plays an important role has been also shown to be detrimental to the well-being of racial minorities (Holoien & Shelton, 2012; Hughes, Bigler, & Levy, 2007; Schofield, 2007).

Given that a person's race, along with gender and age, is automatically processed within milliseconds (e.g., Fiske, 1998; Ito & Urland, 2003), and that the acknowledgment of race as a visible identifier seems to be strategic and dependent on circumstances (Norton, Sommers, Apfelbaum, Pura, & Ariely, 2006), racial colorblindness is an ideological approach, not a literal failure to notice race. This is not to say that a colorblind ideology is equated with egalitarian beliefs, but instead colorblindness is a strategic approach to race relations where individuals elect to not acknowledge race when doing so might put them at risk of being uncomfortable or seeming racist. However, a common experience among biracial individuals is being asked "What are you?" by strangers (Gaither, 2015; Gaskins, 1999; Williams, 1996) in reference to their racial background. Rather than colorblindness, people are taking the opposite approach—asking directly about race—upon encountering biracial individuals. This suggests that people may be more comfortable talking about race with a biracial individual compared with other racial minorities.

Attitude Change Through Exposure and Social Tuning

Given that colorblindness as a racial ideology can be detrimental to intergroup relations, what might lead to a reconsideration of this attitude? Research on attitude formation and change has highlighted the importance of social norms (e.g., Blanchard, Lilly, & Vaughn, 1991; Cialdini, 2003). These social norms are constructed in a dynamic process (Markus & Kitayama, 1991), which includes interactions with individuals.

Attitudes can change as a consequence of intensive interactions or brief exposures to people. Decades of research show the potential benefits of interracial contact (e.g., Allport, 1954; Pettigrew & Tropp, 2006, 2011), demonstrating that intensive interactions with outgroup members can change racial attitudes (Gaither & Sommers, 2013; Hurtado, 2005; Van Laar, Levin, Sinclair, & Sidanius, 2005). On the other end of the spectrum, relatively brief exposures can also influence attitudes. Something as simple as viewing images of admired Black individual led to a reduction in negative implicit anti-Black attitudes (e.g., Columb & Plant, 2016; Dasgupta & Greenwald, 2001).

One explanation for this process is the social tuning hypothesis, which suggests that people shift their attitudes to be more in line with the ostensible attitudes of those around them. For example, White participants displayed less automatic prejudice when they were in the presence of a Black experimenter compared with a White experimenter, or an experimenter (Black or White) wearing a shirt with an egalitarian racial message on it versus an experimenter with a plain shirt (Lowery, Hardin, & Sinclair, 2001; Sinclair, Lowery, Hardin, & Colangelo, 2005). This social tuning can be driven by different motivations. One example is affiliative motivation, that is, liking toward another person (Sinclair, Huntsinger, Skorinko, & Hardin, 2005; Weisbuch, Sinclair, Skorinko, & Eccleston, 2009). Social tuning can also be driven by the desire to acquire knowledge, particularly when

a given situation is uncertain or ambiguous. For example, when primed with the concept of uncertainty, White participants reported less implicit prejudice in response to an experimenter wearing a shirt with an egalitarian message, compared with those who saw a neutral prime or those who saw the egalitarian message on a poster (Lun, Sinclair, Whitchurch, & Glenn, 2007). Knowing that biracial individuals undermine traditional racial categories and given evidence that biracial categorization is experienced as more difficult (e.g., Blascovich, Wyer, Swart, & Kibler, 1997; Chen & Hamilton, 2012; Freeman, Pauker, Apfelbaum, & Ambady, 2010), we suggest that exposure to biracial individuals creates uncertainty and predict that this uncertainty will lead to more epistemically driven social tuning compared with exposure to monoracial individuals.

Exposure to Biracial Individuals

In line with the present set of studies, attitude change has also been demonstrated as a consequence of encountering biracial people. Among other things, exposure to a racially mixed individual during a dyadic social interaction (Gaither, Babbitt, & Sommers, 2018; Sanchez, Young, & Pauker, 2015), to an array of racially ambiguous faces (Pauker, Weisbuch, & Ambady, in preparation), or to faces specifically labeled as biracial (Young, Sanchez, & Wilton, 2013) all lead to a decrease in racial essentialism, or the belief that race is an inherent, discrete, and fixed trait (Gelman, 2003; Levy, Stroessner, & Dweck, 1998; Rothbart & Taylor, 1992). For example, Sanchez et al. (2015) found that participants reported lower racial essentialism both immediately and 2 weeks after encountering racially ambiguous individuals, including multiracial people; in contrast, essentialism seemed to increase after interacting with nonracially ambiguous people. This divergence could be explained by the finding that racially ambiguous people were presumed not to endorse biological lay theories of race as much as nonracially ambiguous people—and in fact, do not (Pauker & Ambady, 2009; Shih et al., 2007; Shih & Sanchez, 2005, 2009; Telles & Sue, 2009). Here, we expect the same outcomes—biracial people will be presumed not to endorse colorblind ideologies, which in turn will influence one's own level of colorblind endorsement.

The Current Research

We explore the possibility that exposure to biracial individuals may alter colorblind ideology endorsement. Research shows that accurate perceptions of one's racial group membership are more important to biracial than monoracial individuals (Remedios & Chasteen, 2013) suggesting people may now be more exposed to biracial labels, increasing monoracial perceivers' use and acknowledgment of race. Alternatively, one could argue that exposure to biracial individuals should instead increase colorblindness because these

individuals represent the results of successful assimilation and greater cross-group similarity—biracial individuals could be perceived as reducing the distance between groups. However, as people are more likely to tune to others under conditions of ambiguity (e.g., when encountering biracial individuals) and also strive to resolve ambiguity (e.g., by asking biracial individuals what race they are), we hypothesize that exposure to biracial people will instead increase the willingness to acknowledge racial categories, countering the core component of a colorblind belief system—the disregarding of racial group differences.

In a series of six studies, we investigated whether exposure to biracial individuals significantly decreases endorsement of colorblindness. In Study 1, we tested whether real-world exposure to biracial individuals predicts lower endorsement of colorblindness. Study 2 extended these initial findings by exploring whether manipulated exposure to biracial faces would affect not only essentialism (a relationship already established) but also colorblind beliefs. Study 3 further examined this question experimentally to test whether exposure to biracial-labeled faces would decrease colorblindness compared with other types of faces and to default levels. Study 4 tested whether these effects were due simply to the novel appearance of the faces, or something uniquely linked to the category of "biracial." Study 5 tested whether these previous findings were due to participants socially tuning their attitudes to align with their expectations about biracial individuals. Finally, Study 6 provides baseline levels of expectations for colorblind endorsements for biracial, White, and Black individuals while also measuring epistemic and affiliative motivations more specifically. All measures collected are reported in each study.

Study 1: Real-Life Biracial Exposure and Colorblindness

Method

Participants. A sample of 60 White American participants was recruited through Amazon's Mechanical Turk. Data from non-White participants were not analyzed. Four participants skipped some of the survey questions, preventing us from creating composite scores. Excluding these participants left a final sample of 56 (35 female, M_{age} = 38.39, SD_{age} = 12.55) White American participants in a completely within-participants design. This sample size exceeded the estimated required N of 43 for a linear multiple regression to detect a medium effect size (f = .25) with 80% power, as specified by G*Power software (Faul, Erdfelder, Buchner, & Lang, 2009). The anticipated effect sizes for the present set of studies were first approximated based on unpublished pilot data and then retained as additional studies were run.

Procedure. Participants first read the following prompt: "There are many different attitudes about race; we are using

Mechanical Turk to get a sense of what those attitudes are." To measure their endorsement of colorblindness, participants were also asked to indicate their level of agreement with four statements, using a 7-point scale (1 = *not at all*, 7 = *very much*; see Neville, Lilly, Duran, Lee, & Browne, 2000 and Norton, Sommers, Apfelbaum, Pura, & Ariely, 2006 for item details): "It is more important to be colorblind than it is to celebrate differences in race and ethnicity"; "Talking about racial issues causes unnecessary tension"; "If everyone paid less attention to race and color, we would all get along much better"; and "When I interact with other people I try not to even notice the color of their skin" (α = .74). Finally, using a separate 7-point scale (1 = *disagree strongly*, 7 = *agree strongly*), participants responded to each of the following statements to measure their previous racial exposure: "I have had a lot of contact with biracial individuals"; "I have had a lot of contact with White individuals"; and "I have had a lot of contact with Black individuals."

Results and Discussion

To analyze whether exposure to biracial individuals predicts colorblind racial attitudes for White adults, we regressed participants' colorblindness scores on each of the racial exposure items in a multiple regression. We expected that only participants' previous exposure to biracial individuals would significantly predict their levels of colorblind endorsement. Although the overall model was not significant, $F(3, 53)$ = 2.18, p = .10, as hypothesized only exposure to biracial individuals predicted colorblind endorsement, with more biracial contact predicting less colorblindness, β = −.34, $t(53)$ 2.09, p = .04, 95% confidence interval (CI) = [−0.57, −0.13]. Neither White nor Black contact predicted colorblind endorsement (all βs < .14, all ps > .30). In addition, only biracial contact was significantly (and negatively) correlated with colorblindness (r = −.28, p = .032). Neither Black contact (r = −.08, p = .57) nor White contact (r = .15, p = .28) was correlated with levels of colorblindness.

Although these results do not indicate causality, the findings are consistent with our hypothesis that exposure to biracial individuals in everyday life affects White individuals' endorsement of colorblindness as a racial ideology. To test this idea in a more controlled setting and to account for possible overlapping contact reporting between biracial, White, and Black groups, the following studies manipulated exposure to biracial faces.

Study 2: Biracial Exposure, Essentialism, and Colorblindness

Stimuli Pretesting

Four sets of faces and one set of abstract images were created for use in Studies 2 to 5: The *all-White* set contained five White faces; the *all-Black* set contained five Black faces; the *monoracial-diverse* set contained two White faces, two Black faces, and one Asian face; and the *biracial* set contained three biracial faces (one Black/White, one White/Asian, and one Black/Asian), one Black face, and one White face. Two monoracial faces were included in the biracial set to minimize suspicions that we were examining biracial exposure specifically. All face stimuli were created using FaceGen Modeler 3.1 by morphing two color photographs (e.g., two White faces morphed to make one new monoracial White face, or one Black and one White face morphed to make a biracial Black/White face). Therefore, each stimulus shown during these studies was created from two separate original faces.

The final faces were rated on attractiveness by a separate group of raters (N = 20) using a scale of 1 (*not at all attractive*) to 5 (*very attractive*), and each set of five faces was rated as being equally attractive (all ps > .89). The *abstract image* set contained five abstract colorful mosaic images. These images were also rated by a separate group of raters (N = 20) as being completely neutral and not activating any thoughts of people or diversity (see the appendix for stimuli samples).

Because ambiguous individuals do not fit easily within traditional racial boundaries, perceivers often seek to minimize the cognitive effort involved in categorization by using heuristics such as the "one-drop rule" and physical, environmental, and economic cues to classify them into a monoracial category (Darley & Gross, 1983; Freeman, Penner, Saperstein, Scheutz, & Ambady, 2011; Macrae & Bodenhausen, 2000; Maddox & Gray, 2002; Peery & Bodenhausen, 2008). Therefore, to ensure that the racial identity of each face was clear, each face was labeled with a name, age, and racial background.

Method

Participants. A sample of 132 White American participants was recruited through Amazon's Mechanical Turk (see Buhrmester, Kwang, & Gosling, 2011). We used the "Unique Turker" script (Ott, n.d.) on the same Hit used for Study 1 (with an updated study link) to ensure that participants could not take the study more than once and to ensure that these participants would not also be Study 1 participants. Data from non-White participants were not analyzed. Three participants who expressed suspicion about the cover story were excluded from the analyses, leaving a final sample of 129 participants (46 female, M_{age} = 33.79, SD_{age} = 11.63). This sample size exceeded the estimated required N of 128 for a one-way ANOVA with two groups to detect a medium effect size (f = .25) with 80% power (Faul et al., 2009).

Procedure. Participants were first told that they would see five faces to memorize for a later quiz and that there would be a short, unrelated survey between the memory and recognition portions of the study. Participants were then randomly

assigned to see either the all-White set or the biracial set of faces. Each face was presented one at a time and was shown with a short, fictitious demographic profile consisting of the target's name, age, and race (see the appendix). After participants viewed all five faces, they completed an ostensibly unrelated survey, which measured their essentialist and colorblind beliefs. Participants completed an eight-item measure of essentialist beliefs (e.g., "To a large extent, a person's race biologically determines his or her abilities or traits" and "Racial categories are fluid, malleable constructs" [reverse-scored]; α = .85) using a scale of 1 = *not at all* to 7 = *very much* (adapted from No et al., 2008). Next, participants completed the same four-item colorblindness measure as in Study 1 (α = .74). At the end of the study, all participants were probed for suspicion about the link between the faces and the measurements in the ostensibly unrelated survey.

Results and Discussion

An independent samples *t* test revealed that White participants in the biracial exposure condition had lower essentialism scores (*M* = 3.89, *SD* = 1.30) than those in the White exposure condition (*M* = 4.34, *SD* = 1.10), *t*(127) = 2.08, *p* = .039, *r* = .18, 95% CI = [0.01, 0.34]. This demonstrated that the current paradigm could replicate previous research which showed reductions in racial essentialism after exposure to racially ambiguous individuals (Sanchez et al., 2015), but specifically focusing on biracial individuals. More relevant to our hypotheses, these results also showed that White participants in the biracial exposure condition (*M* = 3.97, *SD* = 1.13) had significantly lower colorblindness scores than participants in the White exposure condition (*M* = 4.54, *SD* = 1.30), *t*(127) = 2.64, *p* < .01, *r* = .23, 95% CI = [0.06, 0.39]. Moreover, colorblindness scores were marginally correlated with essentialism scores only for participants in the biracial exposure condition (*r* = .24, *p* = .054). There was no correlation between colorblindness and essentialism for participants in the White exposure condition (*r* = .17, *p* = .19), suggesting that biracial exposure may be unique in shifting some racial ideologies and that colorblindness and essentialism may be separate constructs.

In summary, the results from both Studies 1 and 2 supported our hypothesis: Exposure to biracial individuals is associated with decreased endorsement of colorblindness for White adults. In addition, our in-lab manipulation of biracial exposure replicates past work regarding essentialism. These findings indicate that there is something unique associated with exposure to biracial individuals, compared with exposure to monoracial individuals. However, one might also expect that contact with Black individuals or other racial minority group members should also reduce levels of colorblindness for White individuals. Therefore, Study 3 compares colorblind endorsements after exposure to either biracial faces, monoracial White faces, or a racially diverse set of monoracial faces. A control condition was also used to confirm that exposure to biracial faces does in fact *reduce* colorblind endorsement from default levels.

Study 3: Biracial and Monoracial Exposure on Colorblindness

Method

Participants. A sample of 182 White American participants was recruited through Amazon's Mechanical Turk, using "Unique Turker" to exclude previous participants (Ott, n.d.). Data from non-White participants were not analyzed. Six participants who expressed suspicion about the cover story were excluded from the analyses, leaving a final sample of 176 (107 female, M_{age} = 35.31, SD_{age} = 10.78). This sample size almost met the estimated required *N* of 180 for a one-way ANOVA with four groups to detect a medium effect size (*f* = .25) with 80% power (Faul et al., 2009).

Procedure. Similar to Study 1, participants were first told that they would see either five faces or five images to memorize for a later quiz depending on the condition to which they were randomly assigned and that there would be a short, unrelated survey between the memory and recognition portions of the study. Participants then saw one of the four sets of images: an all-White set, a monoracial-diverse set, a biracial set, or an abstract image set (control). Each image was presented one at a time. Every face was shown with a short, fictitious demographic profile consisting of the target's name, age, and race, and each abstract image was shown with a fictitious profile consisting of the art's title, year made, and the artist's last name. After participants viewed all five images, they completed the ostensibly unrelated survey, which was comprised of the same colorblind attitude measure used in Study 1 (α = .62). Finally, participants were probed for suspicion.

Results and Discussion

A one-way ANOVA revealed a significant effect of condition on colorblindness *F*(3, 172) = 5.00, *p* < .01, η^2 = .05, 95% CI = [0.01, 0.13]. Planned contrasts demonstrated that participants in the biracial label condition had significantly lower colorblindness scores (*M* = 3.96, *SD* = 1.34) than all other conditions: all-White faces (*M* = 4.60, *SD* = 1.14), *t*(172) = 2.67, *p* < .01, *r* = .20, 95% CI = [0.05, 0.34]; diverse monoracial faces (*M* = 4.80, *SD* = .99), *t*(172) = 3.55, *p* < .001, *r* = .26, 95% CI = [0.12, 0.39]; and control (*M* = 4.72, *SD* = 1.13), *t*(172) = 2.97, *p* < .01, *r* = .22, 95% CI = [0.07, 0.36]. In addition, there were no differences on colorblind scores between any of the other conditions (all *t*s < .82, all *p*s > .40).

Overall, the results from Study 3 confirm our previous studies showing that exposure to biracial people significantly reduces White participants' colorblind attitudes, and extend those findings by showing that this effect is specific to

biracial exposure. In other words, mere exposure to a set of faces that includes biracial-labeled faces decreased endorsement of a colorblind ideology significantly more than mere exposure to a set of White or diverse monoracial faces, and from control levels. Neither exposure to White faces nor to diverse monoracial faces seemed to change White participants' colorblind endorsements; those participants did not differ from the control condition. This suggests that exposure to biracial individuals may be unique in reducing Whites' endorsement of colorblindness.

Because the biracial faces used in this study were labeled as biracial, it is not clear if the reduction in colorblindness is due to simply *seeing* biracial faces, or if it is due to *knowing* that those faces are biracial. We argue that it is something unique about the biracial category and what it represents regarding the social construction of race, rather than (a) something physically different about the faces themselves which leads participants to scan those faces in a different manner or (b) the novelty of the biracial label in numerical proportion to more common categories such as White or Black. Another alternative is that the reduction in colorblindness scores in the biracial exposure condition in Study 3 was simply due to being exposed to five different racial groups versus three in the monoracial exposure condition. Therefore, we address these alternative explanations in Study 4 by using the same set of faces in both conditions, but labeling them with biracial categories in one condition and with less common monoracial categories in the other condition. In addition, both conditions in this study include exposure to five different racial/ethnic categories total.

Study 4: Biracial Label Versus Novelty

Method

Participants. A sample of 227 White American participants was recruited through Amazon's Mechanical Turk using "Unique Turker" to exclude previous participants (Ott, n.d.). Data from non-White participants were not analyzed. Thirteen participants who expressed suspicion about the cover story were excluded from the analyses, resulting in a final sample of 214 (112 female, M_{age} = 35.88, SD_{age} = 11.96). This sample size exceeded the estimated required *N* of 180 for a one-way ANOVA with four groups to detect a medium effect size (f = .25) with 80% power (Faul et al., 2009).

Procedure. The methods for this study were identical to those in Study 3, except in this study participants were randomly assigned to see one of four sets of images: biracial faces with a biracial label (i.e., Black/White, Asian/White, Black/Asian), biracial faces with a novel ethnicity label (i.e., Middle Eastern, Native Hawaiian, Pacific Islander), an all-Black set of faces, or an abstract image set (control). To reduce suspicion about the study goals, the two unambiguous faces that were a part of the biracial set of faces were labeled the same

in both conditions: The unambiguous Black face was labeled as Black and the unambiguous White face was labeled as White. After viewing all five faces, participants completed the same colorblindness attitude measure (α = .65). Finally, participants were probed for suspicion.[1]

Results and Discussion

A one-way ANOVA revealed a significant effect of condition on colorblindness $F(3, 210)$ = 3.42, p = .018, η^2 = .05, 95% CI = [0.01, 0.12]. Planned contrasts demonstrated that participants in the biracial label condition had significantly lower colorblindness scores (M = 3.97, SD = 1.07) than all other conditions: novel ethnicity labeled faces (M = 4.61, SD = 1.04), $t(110)$ = 3.19, p < .01, r = .20, 95% CI = [0.07, 0.33]; all-Black faces (M = 4.47, SD = 1.19), $t(110)$ = 2.31, p = .02, r = .22, 95% CI = [0.09, 0.34]; and control (M = 4.50, SD = 1.35), $t(110)$ = 2.29, p = .02, r = .21, 95% CI = [0.08, 0.33]. In addition, there were no differences on colorblindness scores between any of the other conditions (all ts < .63, all ps > .52).

These results demonstrate that exposure to biracial faces reduces colorblindness only when those faces are explicitly labeled as biracial. The same ambiguous faces, when labeled with less common monoracial ethnicities, did not elicit this effect. Thus, these findings indicate that it was not simply the novel visual appearance of the biracial faces that was driving a decrease in colorblindness, nor was it the relative rarity of the biracial label in comparison with more common racial categories. It seems people need to actually know that a person is biracial for this reduction in colorblind attitudes to ensue. Furthermore, these outcomes also demonstrate that exposure to an all-Black set of faces does not shift colorblind endorsement compared with other types of racial exposure.

But why might biracial faces, but not monoracial White, Black, racially diverse, or novel ethnicity faces reduce racial colorblindness? We predicted that White participants may be more willing to socially tune to a biracial person compared with people from other racial backgrounds for three main reasons. First, the biracial demographic is considered a novel and unfamiliar racial category (e.g., Chen & Hamilton, 2012; Dunham & Olson, 2016), meaning there are not many known or established stereotypes that would guide expectations going into a social interaction with a biracial individual. Thus, compared with monoracial minorities in particular, White individuals may view biracial people as less threatening conversation partners when discussing racial issues. Moreover, knowing that a biracial person belongs to two racial groups simultaneously, combined with this novelty, may lead White people to assume that biracial people actually want to discuss race from an identity perspective more than monoracial people would, compared with discussing race from a power disparities perspective (e.g., Saguy et al., 2008). Furthermore, the biracial category goes directly against default essentialist thinking about race, creating

social uncertainty that makes perceivers more likely to socially tune to another person to reduce that uncertainty (Lun et al., 2007; Sanchez et al., 2015). Thus, we expected White participants might be more *willing* to socially tune to biracial individuals, because their perceived motivations for discussing race are less threatening, and their ambiguous biracial group membership may encourage social tuning. We explore this possibility across the next two studies.

Study 5: Social Tuning

Method

Participants. A sample of 306 White American participants was recruited through Amazon's Mechanical Turk using the same "Unique Turker" script from Studies 2 to 4 to exclude previous participants (Ott, n.d.). Data from non-White participants were not analyzed. There were 22 participants who either expressed suspicion about the cover story or did not complete the study in its entirety, resulting in a final sample of 284 (148 female; M_{age} = 37.80, SD_{age} = 12.91). This sample size exceeded the estimated N of 210 for a one-way ANOVA with two groups needed to detect a medium effect size (f = .25) with 95% power (Faul et al., 2009).

Procedure. Participants were randomly assigned to see either the biracial set or the monoracial-diverse set of faces, using the same cover story and procedure as in Studies 2 to 4. Participants first answered questions about their own colorblindness attitudes (α = .69). Next, participants exposed to the biracial set of faces were shown one of the three biracial faces, and those in the monoracial-diverse condition were shown one of the three monoracial faces (Black, White, and Asian) that were not common between the two sets. Participants were provided with the colorblindness scale again, and asked to respond based on what they believed this person's attitudes would be (α = .72). They then answered questions about the person's likability on a 7-point scale (1 = *not at all*; 7 = *very much*): "How likable is this person?" and "How much would you like to be friends with this person?" (α = .89). Next, participants were provided with the following prompt, "If this person were to discuss race-related topics, what aspects of the discussion do you think they would be the most interested in?" Participants then rated their level of agreement with three power-related interests on the same 7-point scale—"To question existing racial disparities in society and push for social change," "To call attention to how members of different racial groups are treated differently by society," and "To discuss current demonstrations of racial injustice in society"; α = .87— and three identity-related interests—"To share how their personal background shaped their racial understandings," "To discuss how racial group differences compare to their own personal experiences," and "To reflect on their personal identity and related experiences"; α = .88. Finally, participants provided their demographic information and were debriefed.

Results and Discussion

An independent samples *t* test revealed that White participants in the *biracial faces* condition (*M* = 4.02, *SD* = 1.24) had significantly lower colorblindness scores than participants in the *monoracial-diverse* condition (*M* = 4.41, *SD* = 1.19), *t*(282) = 2.66, *p* = .008, *r* = .16, 95% CI = [0.04, 0.27]. These results replicate our previous findings that exposure to biracial faces leads to lower colorblindness endorsement than exposure to monoracial faces, this time with a larger sample size. Furthermore, biracial people were perceived to endorse colorblindness less (*M* = 4.18, *SD* = 1.25) than monoracial people (*M* = 4.52, *SD* = 1.25), *t*(282) = 2.30, *p* = .023, *r* = .13, 95% CI = [0.01, 0.24]. White participants' own colorblindness scores were highly correlated with the colorblindness scores they attributed to the target faces in both the biracial condition (*r* = .58, *p* < .001) and the monoracial condition (*r* = .45, *p* < .001). These two correlation coefficients were compared using a Fishers's *r*-to-*z* transformation and found not to be significantly different from each other, *z* = 1.48, $p_{two\text{-}tailed}$ = .14, suggesting that participants' colorblindness ratings were in tune with whichever set of faces they encountered.

There were no differences in liking between the two conditions, biracial faces: *M* = 5.09, *SD* = 1.12; monoracial faces: *M* = 4.99, *SD* = 1.18; *t*(282) = 0.72, *p* = .47, indicating that affiliative motivation was not greater for one set of faces than another. When asked what motivations their target person would have for discussing race, participants thought the biracial people would be significantly more interested in focusing on identity aspects (*M* = 5.17, *SD* = 1.17) compared with monoracial people (*M* = 4.80, *SD* = 1.52), *t*(282) = 2.30, *p* = .02, *r* = .14, 95% CI = [0.02, 0.25]. Biracial targets were not seen as having less motivation to discuss racial disparities (*M* = 5.03, *SD* = 1.15) than monoracial targets (*M* = 4.82, *SD* = 1.42), *t*(282) = 1.36, *p* = .17. However, neither type of motivation predicted targets' perceived colorblindness endorsement (*t*s < 0.88, *p*s > .56), or participants' own colorblindness (*t*s < 1.45, *p*s > .15) and none of these composite scores were correlated with either participant or target colorblind endorsement (all *r*s < .10, all *p*s > .10).

Overall, these results suggest that exposure to biracial faces, contrasted to monoracial faces, is different not because biracial faces provoke greater affiliative motivation, but because White people expect that biracial people will be more focused on identity issues in talking about race. This could be a less threatening context in which to discuss diversity. It is possible that as we asked participants to rate their own colorblindness endorsement first in a between-subjects design before rating the target's level of colorblindness, participants may have socially projected those beliefs onto the target stimuli (Frey & Tropp, 2006). Although social projection is typically limited to ingroup members (Robbins & Krueger, 2005), it is feasible that this design could have impacted perceptions of colorblindness for the target. To provide a more rigorous

test, Study 6 examines baseline levels of colorblindness expectations for biracial, White, and Black targets while also measuring which aspect of social tuning may be contributing to lower levels of colorblindness for White individuals after biracial exposure.

Study 6: Expectations of Biracial Colorblindness

Method

Participants. A sample of 111 White American participants was recruited through Amazon's Mechanical Turk using the same "Unique Turker" script from Studies 2 to 5 to exclude previous participants (Ott, n.d.). Data from non-White participants were not analyzed. There were 12 participants who either expressed suspicion or did not complete the study in its entirety, resulting in a final sample of 99 (50 female; M_{age} = 35.71, SD_{age} = 11.81). This sample size exceeded the estimated required N of 45 for a paired-sample t test to detect a medium effect size (f = .25) with 95% power (Faul et al., 2009). This study was preregistered (http://aspredicted.org/blind.php?x=h38gk2).

Procedure. Participants were told the study was interested in accuracy in social perceptions and that they would be shown three pictures of people and provide judgments. Participants then saw in a random order: one of the three biracial faces, one of three White faces, and one of three Black faces (all faces from previous studies in this article). For each face, participants were provided with the same colorblindness scale and asked to respond with what they believed this person's attitudes would be (biracial α = .71; White α = .76; Black α = .85). To investigate what type of social tuning may be occurring (see Lun et al., 2007), participants then answered questions on a 7-point scale (1 = *not at all*; 7 = *very much*) about (a) the target's likability (affiliative motivation)—"How likable is this person?" and "How much would you like to be friends with this person?" (biracial α = .85; White α = .82; Black α = .82); (b) the target's knowledge (epistemic motivation)—"How knowledgeable would they be about this topic?" and "How much of an expert would this person be about this topic?" (biracial α = .82; White α = .90; Black α = .90); and (c) the participant's perceived level of similarity (anticipated social tuning)—"How much do you think your personal answers would be similar to this person's answers?" and "How much would you consider this person's responses as you form your own perspective on this issue?" (biracial α = .70; White α = .87; Black α = .70). We expected participants to anticipate more social tuning for a biracial target because biracial people directly contradict default racial categories and create ambiguity and uncertainty. We also predicted higher reported affiliative motivation for the racial minority targets due to social desirability concerns, and higher epistemic motivation ratings than White targets due to

expectations that minority group members are more knowledgeable about race-related questions (Crosby, Monin, & Richardson, 2008). Using the same scale, participants next answered how much contact they have had with different racial groups and if the majority of their friends were White (α = .72), Black (α = .70), or biracial (α = .68). Finally, participants provided their demographic information and were debriefed.

Results and Discussion

Paired samples t tests revealed that White participants thought biracial targets were significantly lower in colorblindness (M = 3.61, SD = 1.18) compared with White targets, M = 4.74, SD = 1.18; $t(97)$ = 7.25, p < .001, r = .43, 95% CI = [–1.44, –0.82], and Black targets, M = 3.98, SD = 1.53; $t(98)$ = 2.18, p = .032, r = .13, 95% CI = [–0.67, –0.03]. Black targets were also rated as significantly lower in colorblindness than White targets, $t(97)$ = 4.43, p < .001, r = .27, 95% CI = [0.42, 1.11]. Regarding affiliative motivation for social tuning, biracial (M = 4.90, SD = 1.10) and Black targets (M = 4.85, SD = 1.10) did not differ, $t(97)$ = .63, p = .53. However, White targets (M = 4.49, SD = 1.10) were rated as less likable than both Black and biracial targets (all ts > 3.10, all ps < .01, all rs > .15). Similar results were found regarding epistemic motivation—biracial (M = 5.07, SD = 1.14) and Black targets (M = 5.15, SD = 1.38) did not differ, $t(98)$ = .69, p = .50, and White targets were rated as lower in expertise (M = 3.61, SD = 1.44) than both Black and biracial targets (all ts > 8.65, all ps < .001, all rs > .47). However, as expected, biracial targets were rated significantly higher on anticipated social tuning (M = 4.77, SD = 1.23) compared with Black targets (M = 4.51, SD = 1.39) and White targets (M = 3.93, SD = 1.55; all ts > 2.01, all ps < .047, all rs > .09). Only Black contact and biracial contact were correlated with Black perceived colorblindness levels (all rs > .26, all ps < .01). There were no other significant correlations (all rs < .12, all ps > .24).

Here, using a within-subjects design, we demonstrate that not only do White individuals expect biracial people to be lower in colorblindness compared with both monoracial White and monoracial Black people (step one in support of our biracial social tuning hypothesis), but White individuals also are more willing to socially tune to a biracial target compared with these same groups, at least concerning colorblindness endorsement. Although we had expected that epistemic tuning, or one's desire to learn from a biracial person about race, might explain our results, the present set of data do not definitively indicate whether this effect is driven by affiliative motivation, epistemic motivation, or a combination of the two. However, these findings still support our original prediction that White individuals do in fact expect biracial people to be lower in colorblind ideologies. If social tuning were to take place equally toward whomever they encountered, this would be sufficient to explain our findings that exposure to biracial

people reduces endorsement of colorblindness. However, these findings also show that White participants anticipate that their responses will be more similar to those of a biracial person compared with a White or a Black person. Biracial and Black targets were rated as equally likable and as having equal expertise regarding colorblind ideologies, and were rated higher than White targets on each of these domains.

Past work argues that ambiguous situations lead to increased social tuning (Bargh & Chartrand, 2005; Lun et al., 2007). Moreover, according to the social tuning hypothesis, people tune their views toward others' beliefs to resolve uncertainty and to connect interpersonally with others. Thus, these results for social tuning, combined with the results from Study 5 indicating that biracial individuals are seen as having identity-related motivations for discussing race, suggest that a form of preferential social tuning is perhaps taking place. In addition, these results replicate recent work highlighting social tuning as a mechanism for reducing essentialist attitudes (Sanchez et al., 2015). Thus, we show that attitudes toward colorblindness are shaped by participants being more willing to socially tune to biracial individuals, perhaps to resolve ambiguity.

General Discussion

These findings are the first to examine the impact of exposure to biracial individuals on the endorsement of colorblindness as a racial ideology for White individuals. Across six studies, we demonstrated that exposure to individuals who are known to be biracial reduced endorsement of colorblindness. We found that the reduction in colorblind attitudes was both linked to real-life exposure and caused by a laboratory manipulation of exposure to biracial individuals. Importantly, these findings occur only when people know that a mixed-race face is actually biracial. Seeing a racially mixed face labeled as another ethnicity does not result in the same reduction in colorblindness. In addition, White individuals seem to expect that biracial people endorse colorblind ideologies less than monoracial White and monoracial Black individuals. This set of results, combined with White individuals' greater willingness to socially tune to a biracial individual, may explain why self-reported contact with biracial individuals predicts lower levels of colorblindness. Moreover, our results suggest that White individuals expect a biracial person to be more identity-focused in discussions about race, highlighting differing levels of perceived threat when acknowledging race with a biracial individual.

However, the benefits from identifying as biracial in terms of reducing colorblindness must be weighed against the potential harms. Previous work finds that disclosing one's biracial identity may make a biracial person more vulnerable to negative feedback (Sanchez & Bonam, 2009). Consequently, future research should examine under which conditions we see positive versus negative outcomes stemming from encounters between White and biracial individuals.

Moreover, it is also important to note that the present studies (like most that have examined racial categorization and exposure) focused only on White participants. We purposefully recruited White participants because they are known to have higher levels of colorblind attitudes than racial minorities (Ryan, Casas, & Thompson, 2010; Ryan et al., 2007). However, future investigation is needed with non-White perceivers and whether these processes may be driven by different social motivations than those presently observed. For example, in certain contexts racial minorities may de-emphasize the importance of race to gain inclusion and respect in mainstream institutions (Purdie-Vaughns & Ditlmann, 2010). Furthermore, the present set of studies included only a small set of computer-generated stimuli. Thus, we do not know whether these effects apply with different types of mixed-race faces, or monoracial faces with more variability in their racial phenotypicality (Chen & Norman, 2016). With other work stressing that more Afrocentric racial minorities experience higher levels of prejudice (Maddox & Gray, 2002), it is important to investigate the intersections of phenotypicality and both known and perceived racial identity in relation to social attitude changes. Relatedly, the present set of studies also does not provide a large enough sample of stimuli to specifically compare colorblindness expectations for Asian individuals compared with Black individuals for example. Thus, additional research comparing expectations for colorblind and other race-related ideologies between different types of biracial individuals and monoracial individuals is needed.

Finally, these changes in levels of colorblindness were all based on self-report measures and utilizing one explicit measure of colorblind ideologies. Although we show a reduction in colorblind attitudes from default levels, future work should extend this paradigm to other contexts. For example, could brief visual exposure to people known to be biracial in an advertisement or television show also influence colorblindness endorsement? Moreover, direct comparisons with other scales measuring colorblindness and multiculturalism would be helpful in further exploring how contact with biracial individuals may shift other types of social ideologies. Researchers therefore should explore how long this change in racial attitudes lasts, how much biracial exposure is needed to see long-term attitudinal changes, and whether these changes also impact actual behavior.

Conclusion

Intergroup contact has long been shown to reduce prejudice toward outgroup members and improve interracial relations (e.g., Allport, 1954; Gaither & Sommers, 2013; Hurtado, 2005; Pettigrew & Tropp, 2006, 2011). But little research has examined the impact of exposure to biracial individuals specifically—one of the fastest growing racial minority populations in the United States. Moreover, scholars have suggested that the growing mixed-race population has the ability to

bridge racial gaps by highlighting the fluidity of group memberships (e.g., Nakashima, 1992; Lee & Bean, 2004, 2010; Telles & Sue, 2009; see also Gaither, Sommers, & Ambady, 2013). Colorblindness, which is one of the most widely used approaches within interracial settings, has harmful effects in diverse settings. The fact that mere exposure to identified biracial individuals can reduce levels of colorblindness for White individuals suggests one route to improving intergroup relations: encouraging the acknowledgment of race through contact with biracial people while simultaneously reducing societal assumptions of difference (Sanchez et al., 2015; Young et al., 2013). With our society constantly facing issues surrounding police brutality, immigration policy, and health care and education, learning to acknowledge group differences (including inequities) is essential to making progress on those fronts.

Appendix

Stimuli Samples

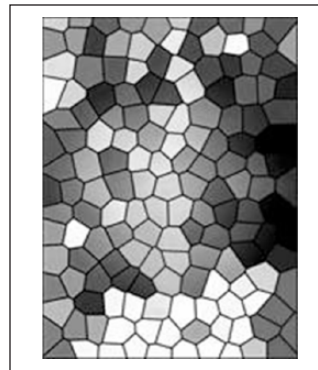Name: Cindy
Race: Biracial, Asian and White
Age: 22

Name: Michael
Race: White
Age: 21

Name: Kim
Race: Black
Age: 22

Examples of a Biracial Asian/White Face, a Monoracial White Face, and a Monoracial Black Face and Their Respective Bios

Title: Grass
Year Made: 1982
Artist: Johnson

Abstract Mosaic Stimuli Sample and its Respective Captions
(Note: All images were shown in color during the study)

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Declaration of Conflicting Interests

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Note

1. For exploratory purposes for a separate research question, participants also completed two five-item scales measuring multiculturalism and polyculturalism (see Rosenthal & Levy, 2012) after the colorblindness questions. There were no differences on either of these scales by condition (all ps > .24).

Supplemental Material

Supplementary material is available online with this article.

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