Registered Report

Resolving racial ambiguity in social interactions☆

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A B S T R A C T

People take longer to categorize racially ambiguous individuals, but does this perceptual complexity also affect social interactions? In Study 1, White participants interacted with a racially ambiguous confederate who was either labeled as biracial Black/White, monoracial Black, or given no racial label. White participants in the biracial condition were significantly less cognitively depleted, less essentialist in their thoughts about race, and exhibited more accurate face memory for their partners than when partner race remained unspecified or was labeled as monoracial Black. Confederate reports and nonverbal behavior in the biracial condition were also more positive. In Study 2, White participants perceived more similarity with a biracial Black/White labeled interaction partner compared to a Black-specified or race-unspecified partner, highlighting for the first time how racial ambiguity and racial labeling affect behavioral outcomes in social interactions.

What are you? Are you mixed? Where are you from?

These are questions often asked of people who appear racially ambiguous. Racially mixed and racially ambiguous individuals do not fit neatly into just one racial category—for example, while some of their features may suggest they are White (e.g., smooth brown hair and thinner lips), other features (e.g., dark eyes and darker skin tone) may suggest another racial background such as Hispanic, Middle Eastern, or Black. As the ubiquity of the questions above implies, perceivers often feel a strong need for closure when faced with social ambiguity (Kruglanski, 1990), and in this case, that need for closure may manifest in terms of using cues to determine how to fit another person into a pre-existing racial categorization scheme (e.g., Freeman & Ambady, 2011; Freeman, Pauker, Apfelbaum, & Ambady, 2010). Moreover, biracial individuals also feel the desire to be accurately categorized by others and prefer interactions with people who know their actual racial background (Gaither, 2015; Remedios & Chasteen, 2013). Therefore, resolving racial ambiguity seems important both for the multiracial target and the perceiver, but whether it actually improves social interactions has not been empirically tested.

Although limited, research has implied that ambiguity can negatively affect social interactions because people often incorrectly categorize racially ambiguous others, which creates the wrong set of expectations for upcoming social interactions (Berger, 1986; Mendoza-Denton, Shaw-Taylor, Chen, & Chang, 2005). And despite the fact that racial ambiguity within social interactions has not been specifically examined to date, research regarding other types of ambiguous or concealable stigmas (such as sexual orientation) has shown that learning about a concealed identity can improve social interactions (e.g., Davis, 1961; Griffith & Hebl, 2002; Hebl & Kleck, 2006). For example, one study showed that participants who interact with someone who is open about their sexual orientation actually perform better on a variety of tasks in comparison to participants interacting with someone whose sexual orientation is left unknown, because knowing someone's sexual orientation resolves ambiguity and frees up cognitive resources (Everly, Shih, & Ho, 2012).

But do all types of identity disclosure resolve all types of ambiguity equally? To date, interracial interaction research has primarily involved only unambiguous monoracial minorities, where the racial identity is clearly visible to the perceiver. This is surprising since there is known variation within racial phenotypes (e.g., Maddox, 2004). This phenotypic variation in the U.S. has led to research focusing on racial ambiguity as a visual categorization process, but not regarding racial ambiguity in interracial interactions (Chao, Hong, & Chiu, 2013; Chen & Hamilton, 2012; Freeman et al., 2010; Krosch, Berntsen, & Amodio, 2013; Sanchez, Young, & Pauker, 2015).

Thus, the present study aims to merge findings from interracial interaction studies with findings focusing on racially ambiguous categorization by examining whether interacting with a racially ambiguous individual whose racial identity is known (thus resolving any uncertainty) positively affects social interaction outcomes and racial attitudes. Moreover, we were interested in testing whether the type of racial identity that is disclosed may differentially influence social interactions. Specifically, we explored whether knowing the racial background of a racially ambiguous individual affects White participants': 1) levels of cognitive depletion; 2) facial memory; 3) social behavioral tendencies; and 4) endorsement of racial essentialist beliefs. We provide support for measuring these variables in the sections that follow.

Racial ambiguity, cognitive depletion, and face memory

Perceivers tend to use categorical, either-or thinking about social groups (e.g., Allport, 1954; Bodenhausen & Macrae, 1998; Fiske & Neuberg, 1990), meaning that racially ambiguous individuals complicate social perception. The face is a vital clue to a person's identity. Thus, the majority of research examining racially ambiguous perceptions has utilized face categorization and memory tasks to measure whether people view racially ambiguous others as their racial ingroup versus their racial outgroup which can influence levels of social approachability. Multiracial individuals who appear racially ambiguous often report that others ask them direct questions such as "What are you?" (e.g., Gaskins, 1999; Williams, 1996), highlighting the perceptual confusion that perceivers face when trying to place racially ambiguous individuals within pre-defined racial boundaries.

Past work shows that it takes longer to categorize racially ambiguous faces than unambiguous monoracial faces (Blascovich, Wyer, Swart, & Kibler, 1997) and that perceivers are slower to categorize faces when presented with the category "multiracial," which is not thought to be as cognitively accessible as other racial categories (Chen & Hamilton, 2012). Because this perceptual ambiguity confuses perceivers, they often search for other sources of information that can be used to disambiguate targets (e.g., Chen & Hamilton, 2012; Corneille, Huart, Becquart, & Bredart, 2004; Freeman et al., 2010; Sorrentino, Hodson, & Huber, 2001). Perceivers often evaluate ambiguous faces in a piecemeal fashion, assessing physical features that may cue one social category over another (e.g., Freeman et al., 2010; Macrae, Bodenhausen, & Milne, 1995; Willadsen-Jensen & Ito, 2008). For example, Freeman, Penner, Saperstein, Scheutz, and Ambady (2011) showed that a racially ambiguous Black/White individual was more often categorized as Black when pictured wearing a janitorial outfit than when wearing a business suit—demonstrating the use of other contextual cues to aid in social categorization. This research suggests that perceivers will seek out additional information until they find an end point that resolves the ambiguity, even if those cues are unconsciously applied (Fiske & Neuberg, 1990; Freeman et al., 2010; Freeman et al., 2011; Freeman & Ambady, 2011; Freeman, Ambady, Rule, & Johnson, 2008; Peery & Bodenhausen, 2008; Rothbart & John, 1985). We expect that the added effort associated with processing the perceptual complexity of racially ambiguous faces will lead to increased levels of cognitive depletion, negatively affecting social interaction outcomes when interacting with a racially ambiguous person.

Other work has shown that although racially ambiguous faces are remembered just as poorly as other racial outgroup faces, a racial label can significantly improve memory performance, since it resolves some ambiguity (Pauker et al., 2009). Therefore, if the addition of a racial label on a racially ambiguous face can improve facial recognition in a lab study, we predict a racial label will also aid in facial encoding during a face-to-face social interaction. To date, facial recognition studies, particularly with racially ambiguous faces, have been largely computer-based, meaning we do not know how ambiguity may impact actual in-person face perception and memory. Here, we predict that a racial label will aid in cognitively encoding and memorizing a racially ambiguous person's face, which will result in more accurate facial recognition—particularly when a biracial racial label is applied compared to a Black racial label.

Social behavior in interracial interactions

It is well established that interracial interactions have the potential for inducing anxiety (e.g., Plaut, 2010; Shelton & Richeson, 2005; Shelton, Richeson, Salvatore, & Trawalter, 2005; Toosi, Babbitt, Ambady, & Sommers, 2012; Trawalter, Richeson, & Shelton, 2009). More specifically, past work has shown that White individuals often enter interracial settings concerned about being viewed as prejudiced (e.g., Plant & Butz, 2006; Plant & Devine, 1998; Richeson & Shelton, 2003) and that this expectation can negatively affect interracial interaction outcomes (e.g., Dovidio, Kawakami, & Gaertner, 2002; Plant, 2004). Nevertheless, what remains unknown is whether the same prejudice expectations occur when interacting with racially ambiguous or biracially-identified individuals. Past research has often utilized a race-salient discussion topic since it heightens interaction concerns, particularly for White individuals (e.g., Goff, Steele, & Davies, 2008). Although making race salient can result in negative interaction outcomes (e.g., increased anxiety; Trawalter et al., 2009), a meta-analysis also shows that race salient discussions can also lead to more positive attitudes (Toosi et al., 2012). In the present work, we extend this research to explore how White individuals behave when interacting with someone who is racially ambiguous in a race-salient interracial interaction. Because biracial individuals are living examples that go against society's either/or thinking about race, we predict that knowing a racially ambiguous individual's biracial background in particular may not only improve social interactions, but it also may positively shift racial attitudes. We explore this prediction further in the next section.

Endorsement of essentialism

Only one study to date has examined how biracial individuals behave within interactions (Gaither, Sommers, & Ambady, 2013). That study focused on the experience of biracial individuals within interracial interactions, and therefore did not explore how these interactions proceeded for the person who interacted with the biracial individual. What is known is that exposure to biracial individuals, who often physically represent a challenge to default either-or categorizations of race, leads to a decrease in racial essentialist thinking (Pauker, Weisbuch, and Ambady, in preparation; Sanchez et al., 2015; Young, Sanchez, & Wilton, 2013).

Racial essentialism is a concrete (as opposed to malleable) view of race, in which racial groups are perceived as naturally-occurring discrete categories based on traits such as physical appearance (e.g., Estrada, Yzerbyt, & Seron, 2004; Leyens et al., 2001; Rothbart & Taylor, 1992). Past work has linked essentialist thinking to endorsement and use of social stereotypes (Bastian & Haslam, 2006; Levy & Dweck, 1999; Pauker, Ambady, & Apfelbaum, 2010). Adults who are high in essentialism believe that the boundaries between racial groups are in fact discrete (Haslam, Rothschild, & Ernst, 2000; Kalish, 2002; Plaks, Malahy, Sedlins, & Shoda, 2012), when in reality there is substantial variation and ambiguity *within* groups, especially for the multiracial population. Thus, the finding from previous research that mere exposure to a biracial individual through a photo actually reduces these engrained essentialist beliefs has important implications for future intergroup relations—it suggests that as exposure to and interactions with multiracial individuals increase, essentialist beliefs might decrease. In fact, one recent study showed that interacting with a racially ambiguous person results in lower essentialist beliefs (Sanchez et al., 2015). However, this study did not control for the level of ambiguity, nor did it

measure the impact of racial labels on shaping essentialist beliefs. Here, we expect that a biracial label for Black/White biracial individuals, which directly competes with essentialist thinking and fixed social group membership, will lead to reduced endorsement of essentialist beliefs compared to when race is left simply unknown.

1. Study 1: Biracial-, Black- and Race-Unspecified interactions

Here, we tested whether disclosing a biracial identity improved social interactions compared to disclosing a Black racial identity or leaving race unspecified and ambiguous. We hypothesized that receiving no racial information about one's racially ambiguous interaction partner or learning that one's interaction partner is monoracial Black should both lead to more negative interaction outcomes than learning that one's interaction partner is biracial Black/White, but for different reasons. Having no racial information leaves ambiguity in the interaction, but learning someone is Black instills the same interracial interaction expectations and concerns about appearing prejudiced that past research has demonstrated, even though the racial ambiguity is resolved. Furthermore, since previous work has shown that racially ambiguous faces are harder to remember when a racial label is absent (Pauker et al., 2009), we predicted that in general, participants who knew the race of their partner would draw more accurate representations—but we also expected that a Black racial label may bias skin tone memory. Finally, we hypothesized that only participants who knew that they were interacting with a biracial partner—whose identity challenges essentialist beliefs—would show decreased endorsement of racial essentialism (Pauker et al., 2009; Sanchez et al., 2015; Young et al., 2013) compared to race being left unknown or when one's partner was labeled as Black. In this study, we report all measures, manipulations, and exclusions.

1.1. Participants

Two hundred White undergraduates participated for course credit. Participants were recruited across two semesters—130 participants were recruited and randomly assigned to either the *Biracial-Specified* or the *Race-Unspecified* condition, and 70 additional participants were recruited the following semester and were assigned to the *Black-Specified* condition. The same exclusion criteria were used in both semesters and students were also recruited at the same points within each semester from the same participant pool of university students. The demographics of the participant pool across both semesters were comparable: Semester 1 (66% White, 60% Female, M_{age} = 19.72; Semester 2: 60% White, 51% female, M_{age} = 21.52. Participants from both semesters also had multiple studies from which to choose ensuring a random sample. A priori exclusion criteria were used from a previous study with similar design (Babbitt & Sommers, 2011), such that we excluded participants who either knew their interaction partner already (n = 18) or were suspicious about the interaction itself due to previous study participation in the same lab, where they knew confederate interaction partners were often used (n = 36). This resulted in a final sample of 147 undergraduates (60% female, M_{age} = 18.63, SD = 0.88). This sample size was close to the estimated required N = 159 to detect a medium effect size (f = 0.25) with 80% power (Faul, Erdfelder, Buchner, & Lang, 2009). Data collection took place at a small university which meant a greater chance of students knowing each other, and repeated involvement in studies in the same lab via the participant pool. This resulted in more exclusions than planned. The participant pool was closed when exclusions were accounted for so additional data could not be collected. The goal of this study was to examine how individuals interact with racially ambiguous others in novel settings. Therefore, if participants knew their interaction partner, then the racial label manipulation would not be relevant. Additionally, if participants knew that the interaction involved a confederate or had

already discussed affirmative action during a previous interaction study, these goals could not be met.[1]

1.2. Method

Participants were greeted by a non-Black[2] experimenter and were told that the study examined how first impressions based on limited information influence social interactions, and that they would later interact with a participant in another room. The experimenter explained that first they would be exchanging basic demographic information with their partner, and asked participants to fill out an information sheet while the experimenter left to ostensibly give instructions to the other participant. This sheet asked for class year, major, age, and gender; importantly, half of the participants were also asked to list their race whereas for the other half of participants there was no line asking for race. The experimenter returned and handed participants their partner's already completed information sheet, which either included the partner's race, listed as Biracial Black/White or listed as Black, or no racial information at all. Thus, participants were randomly assigned to one of three conditions: *Biracial-Specified* (n = 46), *Black-Specified* (n = 56), or *Race-Unspecified* (n = 45). Next, the experimenter took the participant's sheet and told them they would return with their partner for the interaction.

One of seven biracial Black/White racially ambiguous confederates returned with the experimenter. Three of the confederates were monoracial Black, but due to their light complexion, pre-testing indicated that they appeared equivalently ambiguous. The other confederates were biracial Black/White. Four confederates were used in each semester's data collection, with one confederate being used during both semesters of data collection. Photos of each confederate had been pre-tested by 40 adults (25 female; 33 White) on Mechanical Turk for attractiveness on a scale of 1 (*not at all*) to 7 (*very much*) and racial ambiguity on a scale of 1 (*very White*) to 7 (*very Black*) with the midpoint 4 labeled (*ambiguous*). All confederates were equivalent on racial ambiguity (M_{avg} = 4.26, SD = 0.88; all ps > 0.37). Female confederates were rated as more attractive than male confederates (all ps < 0.06), but confederates were matched to participant gender and there were no differences on attractiveness within confederate gender (all ps > 0.33).[3] Confederates were blind to study condition and trained to respond comparably to each participant.

The experimenter next explained that there would be two roles for the interaction—interviewer and interviewee—and that they would select the interview topic via random draw. Through a rigged drawing, the confederate was always the interviewer and the topic was always "campus diversity" to heighten the salience of the interracial nature of the interaction (Goff et al., 2008; Shelton, Richeson, & Salvatore, 2005; Shelton, Richeson, Salvatore, & Trawalter, 2005; Sommers, Warp, & Mahoney, 2008; Toosi et al., 2012). The confederate read from a scripted set of questions during the five-minute videotaped interview (e.g., *What is your definition of racial diversity*? *What are the benefits and consequences of having racial diversity on campus*?).

After the interaction, participants were told they would be completing additional tasks. The confederate was taken to another room ostensibly to use a different computer, leaving the actual participant in the interaction room. The participant completed the Stroop (1935) color-naming task to measure cognitive depletion. In incompatible trials, participants saw a color name (e.g., "blue") in a font color different than

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[1] Including the excluded participants in analyses significantly affects the results. Interacting with people one knows creates an entirely different research setting and is not in line with the goals of the present study.

[2] Experimenters were either White or Asian; experimenter race did not affect interaction outcomes.

[3] Since data were collected across two semesters with two different sets of confederates, 20 adults rated the first set of confederate photos and an additional 20 adults rated the second set of confederate photos.

what the word said (e.g., green) and responded with the font color using one of four labeled keyboard buttons (red, yellow, green or blue). In control trials, participants saw a string of Xs, which were either red, yellow, green or blue, and again responded with the font color. Trials were preceded by a fixation cross and the inter-trial interval was 1500 ms. After a practice block of trials, participants completed 10 blocks of 12 trials each, for a total of 120 experimental trials. Following methods from Richeson and Shelton (2003) and Trawalter and Richeson (2006), the Stroop data were trimmed by replacing values that were 2.5 *SD* above the mean with the mean and latencies < 200 *ms* were recoded as 200 *ms*. From these values, Stroop interference scores were calculated by subtracting the average latency for the control trials from the average latency for the incompatible trials, such that higher scores indicate more cognitive depletion. Richeson and Trawalter (2005) found that participants performed worse on the Stroop task after stressful experiences such as interracial interactions. We predicted that in the *Biracial-Specified* condition, White participants should be less cognitively depleted since there is less racial ambiguity to navigate compared to the *Race-Unspecified* condition, and fewer concerns about appearing prejudiced than in the *Black-specified* condition.

In order to assess participant ratings of the interaction, participants completed a post-interaction questionnaire using a scale of 1 (*not at all*) to 7 (*very much*) to assess how anxious, enthusiastic, tense, and engaged they felt, and how much they thought their partner enjoyed getting to know them (adapted from Shelton, Richeson, & Salvatore, 2005; Shelton, Richeson, Salvatore, & Trawalter, 2005). Confederates answered the same questions about the participant (i.e., how anxious, enthusiastic, tense, and engaged the participant seemed, and how much the participant enjoyed getting to know them).

Next, using methods adapted from Eberhardt, Dasgupta, and Banaszynski (2003), participants were handed a sheet of paper and two boxes of crayons (including Crayola's multicultural crayon set, which includes a wide array of skin tone colors) and were asked to draw their partner. They were told that we were interested in how accurately people remember others after short interactions and that these drawings would later be coded for accuracy. As detailed earlier, previous work has shown that racial labels affect facial encoding and memory (e.g., Eberhardt et al., 2003; Pauker et al., 2009). Therefore, we predicted that White participants in the *Biracial-Specified* condition would draw more accurate renderings of their partners to link the social perception and interaction literatures.

Lastly, to measure whether exposure to a known biracial individual versus simply a racially ambiguous individual shifted levels of racial essentialism, participants completed a short demographic form including an eight-item measure of racial 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 = 0.74), using a scale of 1 (*not at all*) to 7 (*very much*; adapted from No et al., 2008). Finally, participants were asked what they thought the study was about, what they thought about the interaction, and what they thought about their interaction partner, to check for suspicion and determine whether participants knew their partner was a confederate (see Online Supplementary materials for all methods and materials).

1.2.1. Nonverbal coding

Two coders who were both blind to condition and hypotheses rated each participant's nonverbal behavior. Since data were collected across two semesters, they were also coded across two semesters. Two female coders (one Black, one White; intraclass *r* = 0.81) coded the first semester's interactions and two additional coders (one female, one Black, one White; intraclass *r* = 0.78) coded the data from the second semester. Past studies show that people monitor their nonverbal behavior less effectively than their verbal behavior, and that nonverbal behavior significantly affects social evaluations (e.g., Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997). Coders watched silent videos of each interaction in which only the participant was visible, and used a

Table 1
Outcomes for White participants in Biracial-Specified, Race-Unspecified, and Black-Specified conditions.

Participant	Biracial-specified	Race-unspecified	Black-specified
	(*n* = 46)	(*n* = 45)	(*n* = 56)
Rating			
Anxious	3.37 (1.45)	3.32 (1.51)	3.30 (1.53)
Enthusiastic	3.85 (1.25)	3.50 (1.29)	3.77 (1.08)
Engaged	4.61 (1.12)	4.48 (1.30)	4.64 (1.39)
Tense	3.48 (1.26)	3.30 (1.44)	3.40 (1.63)
Enjoyed interaction	4.24 (1.08)	4.18 (1.17)	3.98 (1.16)
Confederate Rating			
Anxious	1.45 (0.55)*	1.82 (0.86)	2.42 (1.71)**
Enthusiastic	3.32 (1.55)**	2.56 (1.10)**	4.00 (1.64)
Engaged	4.02 (1.59)	3.93 (1.29)*	4.53 (1.60)
Tense	1.67 (1.17)	2.00 (1.41)	2.25 (1.47)*
Enjoyed interaction	4.16 (0.95)*	3.66 (1.09)	4.45 (1.56)
Nonverbal Behavior			
Anxious	3.91 (1.13)	3.98 (0.80)	3.90 (1.828)
Engaged	4.78 (0.92)	4.66 (0.66)	4.31 (0.96)*
Tense	3.15 (1.21)	3.37 (0.86)	3.79 (1.24)*
Enjoyed interaction	4.22 (0.91)*	3.68 (0.92)	3.55 (1.36)*
Smiles	3.77 (1.15)*	3.19 (1.26)*	3.79 (1.30)
Moved naturally	3.39 (1.09)*	2.89 (1.11)*	3.65 (1.15)

Note. Standard deviations are in parentheses; higher numbers reflect greater endorsement on a scale of 1–7; *p < .05, ** p < .01; significance levels in the *Biracial-Specified* column reflect differences between that and the *Race-Unspecified* condition, significance levels in the *Race-Unspecified* condition reflect differences with the *Black-Specified* condition, and significance levels in the *Black-Specified* condition reflect differences between that and the *Biracial-Specified* condition.

scale of 1 (*not at all*) to 7 (*very much*) to rate participants on traits such as perceived anxiety and physical body movements (see Table 1 for all traits; Dovidio et al., 2002; Gaither et al., 2013; Norton, Sommers, Apfelbaum, Pura, & Ariely, 2006; Shelton, Richeson, & Salvatore, 2005; Shelton, Richeson, Salvatore, & Trawalter, 2005). The two coders were high in reliability across all traits, so responses were averaged to create one overall rating for each assessment.

1.2.2. Drawing coding

A separate group of four coders blind to condition and hypotheses, rated overall drawing and skin tone accuracy using a scale of 1 (*not accurate*) to 7 (*very accurate*). Four coders (three female, two White, one Black, one biracial Black/White; intraclass *r* = 0.85) coded the first semester's interactions and four additional coders (two female, two White, two Black; intraclass *r* = 0.85) coded the data from the second semester. The same photos used for pre-testing the confederates were used as reference during coding; none of the coders personally knew the confederates. Using a scale of 1 (*low skill*) to 7 (*high skill*), coders also rated each participant's drawing ability. The coders were high in reliability across all ratings (intraclass *r* = 0.85), so responses were averaged to create one overall rating for each assessment.

1.3. Results

Since neither the participant self-reported traits nor the nonverbal behavioral coding variables were correlated, we could not perform MANOVAs, and therefore report the *t*-tests and one-way ANOVA results from each condition. However, since the confederate ratings were correlated (with all *r*s ranging from 0.23 to 0.54, reducing the risk of multicollinearity; Maxwell, 2001), a MANOVA was run for those results.

1.3.1. Participant results

A one-way ANOVA revealed no significant effects by condition regarding participant self-report (*F*s < 1.04, *p*s > 0.35; see Table 1 for means). For Stroop scores, there was also no effect by condition

($p = .13$) with White participants in the *Black-Specified* condition ($M = 38.18$, $SD = 41.48$) falling between those in the *Biracial-Specified* ($M = 30.69$, $SD = 36.54$) and *Race-Unspecified* condition ($M = 48.90$, $SD = 48.27$). However, a planned contrast revealed White participants in the *Biracial-Specified* condition ($M = 30.69$, $SD = 36.54$) exhibited less post-interaction cognitive depletion than participants in the *Race-Unspecified* condition ($M = 48.90$, $SD = 48.27$), $t(86) = 2.01$, $p = .048$, $r = 0.21$.

There was also a marginally significant effect by condition on racial essentialism scores, $F(2, 138) = 3.01$, $p = .052$, $\eta_p^2 = 0.04$. Planned contrasts revealed that participants in both the *Black-Specified* ($M = 4.00$, $SD = 0.98$) and the *Race-Unspecified* conditions ($M = 3.98$, $SD = 0.84$) were significantly higher in racial essentialism after the interaction than participants in the *Biracial-Specified* condition ($M = 3.61$, $SD = 0.84$; all $ts > 2.02$, all $ps < 0.047$, all $rs > 0.22$).

1.3.2. Confederate results

A one-way MANOVA comparing the three conditions on all confederate ratings revealed significant effects by condition $F(10, 260) = 7.54$, $p < .001$, Wilks $\Lambda = 0.601$, partial $\eta_p^2 = 0.23$; (see Table 1 for means). Post hoc Tukey HSD tests showed that participants in the *Black-Specified* condition were perceived as more enthusiastic than those the *Race-Unspecified* condition ($p < .001$), but did not differ from participants in the *Biracial-Specified* condition ($p = .12$). Additionally, participants in the *Black-Specified* condition were perceived as more anxious compared to participants in both the *Race-Unspecified* ($p = .024$) and *Biracial-Specified* ($p < .001$) conditions. On the other hand, participants in the *Black-Specified* condition were also perceived as enjoying the interaction more than participants in both the *Race-Unspecified* ($p = .005$) and *Biracial-Specified* ($p = .011$) conditions. Participants in the *Biracial-Specified* condition were perceived as less anxious ($p = .019$), more enthusiastic ($p = .009$), and as enjoying the interaction more compared to participants in the *Race-Unspecified* condition ($p = .027$; all $ts > 2.26$, all $rs > 0.24$). There were no differences on ratings of perceived tenseness (all $ps > 0.11$) or engagement (all $ps > 0.12$).

1.3.3. Nonverbal behavior

A one-way ANOVA revealed significant effects by condition on all measures except for perceived anxiety ($Fs > 3.26$, $ps < 0.042$, $\eta_p^2s > 0.05$; see Table 1 for means). Participants in the *Black-Specified* condition were rated as more tense ($p = .015$), less engaged ($p = .023$), and appeared to enjoy the interaction less ($p = .014$) than participants in the *Biracial-Specified* condition (all $ts > 2.31$, all $rs > 0.24$). There were no significant differences between the *Black-Specified* and *Race-Unspecified* conditions in levels of anxiety or enjoyment of the interaction (all $ts < 0.33$, all $ps > 0.74$). Participants in the *Black-Specified* condition moved their bodies more naturally ($p = .013$) and smiled more ($p = .023$), but appeared marginally less engaged ($p = .07$) and more tense ($p = .059$) than participants in the *Race-Unspecified* condition (all $ts > 1.83$, all $rs > 0.20$). There were no differences between the *Black-* and *Biracial-Specified* conditions in levels of anxiety, body movements, or smiling (all $ts < 0.57$, all $ps > 0.47$). Participants in the *Biracial-Specified* condition were also rated as moving their bodies more naturally ($p = .048$), smiling more ($p = .037$), and they appeared to enjoy the interaction more ($p = .011$) than participants in the *Race-Unspecified* condition (all $ts > 2.01$, all $rs > 0.22$). There were no significant differences between the *Biracial-Specified* and *Race-Unspecified* conditions on perceived anxiety, tenseness, or engagement (all $ts < 0.95$, all $ps > 0.35$).

1.3.4. Drawing coding

A one-way ANOVA revealed no perceived differences in participants' drawing abilities between those in the *Biracial-Specified* ($M = 2.67$, $SD = 1.18$), *Race-Unspecified* ($M = 2.58$, $SD = 0.94$), and *Black-Specified* conditions ($M = 2.58$, $SD = 0.94$), $F(2, 139) = 1.27$,

$p = .28$. However, there were significant effects by condition on overall accuracy and skin-tone accuracy (all $Fs > 3.22$, all $ps < 0.043$, all $\eta_p^2s > 0.04$). Planned contrasts showed that participants in the *Black-Specified* condition ($M = 2.58$, $SD = 0.86$) drew significantly more accurate drawings than participants in the *Race-Unspecified* condition ($M = 2.14$, $SD = 0.62$; $t(97) = 2.87$, $p = .005$, $r = 0.28$), but were equally as accurate as participants in the *Biracial-Specified* condition ($M = 2.46$, $SD = 0.81$; $t(98) = 0.773$, $p = .44$). Further, participants in the *Biracial-Specified* condition drew more accurate representations of their interaction partners than participants in the *Race-Unspecified* condition, $t(85) = 2.04$, $p = .044$, $r = 0.22$. However, drawings from the *Black-Specified* condition ($M = 3.00$, $SD = 1.00$) were rated as significantly less accurate in skin tone than drawings from the *Biracial-Specified* condition ($M = 3.46$, $SD = 1.08$), $t(98) = 2.23$, $p = .028$, $r = 0.22$, and the *Race-Unspecified* condition ($M = 3.40$, SD = 0.92); $t(96) = 2.04$, $p = .044$, $r = 0.20$. There were no differences in skin-tone accuracy between the *Race-Unspecified* and *Biracial-Specified* conditions, $t(84) = 0.28$, $p = .78$ (see Appendix A for drawing samples).

Past work has shown racially ambiguous faces are difficult to remember and recognize. These results suggest that when participants are given a racial label—either Biracial or Black—that label may resolve that visual ambiguity, leading to more encoding of specific facial features compared to when race is left unspecified (since, after all, they drew drawings that were more accurate). However, since skin tone accuracy was lower for drawings in the *Black-Specified* condition compared to both the *Biracial-* and *Race-Unspecified* conditions, it is possible that visual hypodescent (i.e., using a one-drop rule, in which someone with any Black ancestry—even "one drop" of Black blood—is categorized as Black) was applied during facial encoding. This visual bias could have led participants to draw their partner using darker crayons. Eberhardt et al. (2003) found that labeling a racially ambiguous face as Black versus White caused participants to draw that face with more Afrocentric or Eurocentric features, respectively. To test this possibility, we coded the crayon color used for skin tone. Each crayon was ranked from 1 (*lightest*) to 8 (*darkest*). Analyses revealed that drawings from the *Black-Specified* condition were significantly darker in color ($M = 5.27$, $SD = 1.55$) than both drawings from the *Biracial-Specified* ($M = 4.48$, $SD = 2.10$; $p = .032$) and *Race-Unspecified* ($M = 4.32$, $SD = 2.33$; $p = .017$) conditions (all $ts < 2.18$; all $rs > 0.21$). Drawings did not differ in darkness between *Biracial-Specified* and *Race-Unspecified* conditions, $t(88) = 0.34$, $p = .73$. Therefore, these results extend Eberhardt et al. (2003) findings, showing how hypodescent can be applied through facial memory after a live, in-person interaction.

An alternative explanation could also be that the *Race-Unspecified* condition created a sense of colorblindness or lack of a willingness to acknowledge the interaction partner's race and facial features, resulting in less accurate drawings (Apfelbaum, Pauker, Ambady, Sommers, & Norton, 2008). Either way, however, these results demonstrate that knowing a biracial person's race may improve memory of racially ambiguous individuals, which could have various social downstream consequences such as friend selection and job interview outcomes.

1.4. Discussion

Racial labels have been shown to significantly alter people's social judgments (e.g., Darley & Gross, 1983; Eberhardt et al., 2003), change the characteristics applied to a given target (Hilliar & Kemp, 2008; Macrae & Bodenhausen, 2000), and shift views about race and racial categories (Pauker, Weisbuch, and Ambady, in preparation; Young et al., 2013). Moreover, research has shown that the most anxiety-provoking interracial interaction is that between a White and a Black individual (Littleford, Wright, & Sayoc-Parial, 2005). Our results build on those findings by empirically demonstrating that interactions with racially ambiguous others may be just as negative in some regards, and more positive in other regards, than interactions with Black individuals.

Our results show that White participants in the *Black-Specified* and

the *Race-Unspecified* conditions were more cognitively depleted than participants in the *Biracial-Specified* condition. In fact, correlational analyses for participants in the *Race-Unspecified* condition show that Stroop scores were: 1) marginally positively correlated with confederate ratings of tenseness ($p = .056$, $r = 0.30$) and nonverbal coding of perceived tenseness ($p = .032$, $r = 0.34$); 2) negatively correlated with confederate ratings of enjoyment of the interaction ($p = .02$; $r = -0.37$); and 3) marginally negatively correlated with nonverbal ratings of positive body movements ($ps < 0.095$; $rs < -0.27$). This provides some support for the role of cognitive depletion in negative interaction outcomes with racially ambiguous others, and is in line with past work showing that ambiguity is cognitively demanding (e.g., Blascovich et al., 1997; Chen & Hamilton, 2012). It also complements the interaction literature, which has demonstrated that stressful interracial interactions lead to cognitive depletion (Richeson & Shelton, 2003; Richeson, Trawalter, & Shelton, 2005). However, since mediation was not found, cognitive depletion cannot be the only contributing factor to these interaction outcomes.

Furthermore, our results also demonstrate that White participants in the *Black-Specified* and the *Race-Unspecified* conditions were more racially essentialist than participants in the *Biracial-Specified* condition. Correlational analyses show that essentialism levels were marginally correlated only with nonverbal ratings of overall engagement during the interaction ($p = .08$, $r = -0.16$). No other correlations were present. Therefore, it is unclear to what extent levels of racial essentialism are associated with interaction outcomes. Additionally, baseline measures of racial essentialism were not measured, so we do not know if exposure to a biracial-specified individual changed pre-existing levels of racial essentialism—a limitation of our methodology which should be addressed in future research. However, these findings extend the recent work showing that exposure to biracial individuals reduces racial essentialist beliefs (Pauker, Weisbuch, and Ambady, in preparation; Sanchez et al., 2015; Young et al., 2013), demonstrating that *actual* interpersonal exposure to a biracial individual may also lead to a reduction in essentialism. This is one of the first pieces of behavioral evidence to suggest that the biracial population may have the ability to bridge the racial divide by shifting people's beliefs about how fixed social categories are.

However, results were mixed regarding specific interaction outcomes. White participants in the *Black-Specified* condition moved their bodies more naturally, smiled more, and were more tense and less engaged than *Race-Unspecified* participants, but both groups were equally anxious and appeared to enjoy the interaction similarly. Compared to *Biracial-Specified* participants, White participants in the *Black-Specified* condition were more tense and less engaged, but both of those groups had similar ratings of anxiety and physical engagement during the interaction. Therefore, interacting with a racially ambiguous other labeled as Black seems to be more tense for White individuals, therefore causing more negative physical behaviors and experiences than interacting either with a biracial-labeled or a non-labeled racially ambiguous individual. Furthermore, the fact that participants smiled more and appeared more engaged during interactions with Black-specified targets is consistent with previous work highlighting that people often try to overcompensate in their physical behaviors when experiencing discomfort or anxiety (Trawalter et al., 2009). Although we did not include an unambiguous-appearing Black confederate, these results suggest that the Black label may have created an experience similar to interacting with an unambiguous monoracial minority. This is of course a question worthy of direct empirical comparison. Additionally, although it might seem surprising that there were different results for ratings of tension and anxiety, it is possible that coders were interpreting anxiety as an emotional state and tension as a physical state. This would suggest that racial ambiguity affects emotional and physical outcomes differently.

Lastly, White participants in the *Black-Specified* condition remembered their interaction partners as darker in skin tone than White participants in both the *Biracial-Specified* and *Race-Unspecified*

conditions. As Eberhardt et al. (2003) demonstrated, participants likely misremembered their interaction partner's skin tone because the monoracial Black label was strongly associated with dark skin. Additionally, White participants in both the *Black-Specified* and *Biracial-Specified* conditions were also more accurate in drawing their interaction partners from memory, which aligns with past work examining the role of labels in ambiguous facial memory (e.g., Pauker et al., 2009) and extends these findings to an actual behavioral setting. Taken together, these results make this study the first to measure the effects of racial ambiguity on both cognitive and behavioral outcomes within a social interaction paradigm.

In sum, it is clear that resolving racial ambiguity with a biracial label seems to lead to more positive interaction outcomes compared to a Black label or no racial label. But it is also clear that just disclosing a racial identity is not enough to improve that social interaction—there seems to be something unique to a biracial disclosure. One possibility is that the positive interaction outcomes found for participants in the *Biracial-Specified* condition could be due to learning that their interaction partner actually shares an ingroup identity (i.e., White), rather than being a full outgroup member. In fact, past work argues that having a perceived common ingroup can lead to more positive intergroup perceptions and attitudes (e.g., Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993). This knowledge could in turn reduce tension and lead to more positive outcomes through perceptions of similarity and a common ingroup (Crisp & Hewstone, 2007)—a question that is directly tested in Study 2.

2. Study 2—perceived similarity and prejudice

Here we examined the possible mechanism that a perceived common ingroup identity may lead to more positive intergroup perceptions and attitudes (e.g., Crisp & Hewstone, 2007; Gaertner et al., 1993). Specifically, we investigated whether a biracial Black/White racial label (designating that an interaction partner is, in fact, half White) affects White participants' levels of perceived similarity with their partner as a pathway toward more positive interaction experiences. However, since the biracial category has been shown to be a less cognitively accessible category (Chen & Hamilton, 2012) and one about which there are no established stereotypes, Study 2 also investigated whether concerns about being perceived as prejudiced within cross-race encounters also varied by racial label. Study 2 recruited online participants for a hypothetical interaction with a racially ambiguous interaction partner who was either labeled as Black, Biracial Black/White, or had no racial label at all; perceived similarity and commonality with the interaction partner and prejudice concerns were measured (e.g., Dovidio et al., 2002; Plant, 2004; Plant & Butz, 2006; Plant & Devine, 1998; Richeson & Shelton, 2003). In this study, we report all measures, manipulations, and exclusions.

2.1. Participants and method

One hundred and twenty-four White participants were recruited via Mechanical Turk in exchange for a small payment. Nine participants who either did not complete the study entirely or who showed suspicions about the photos used were excluded resulting in a final sample of 115 White participants (48% female, $M_{age} = 33.89$, $SD = 11.14$).[4] This sample size exceeded the estimated required N to detect a medium effect size ($f = 0.25$) with 60% power (Faul et al., 2009) since hypothetical interaction studies have previously shown weaker effects compared to actual social interactions. The same photos of confederates from Study 1[5] were used in this study as stimuli. Participants were told

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[4] Non-White ($n = 25$) participants were also excluded since this study only focuses on interactions with White individuals.

[5] The photos used were of the confederates recruited for the second semester of data collection.

that the study was about their expectations for a social interaction with a person they had never met. They first answered basic demographic questions so that, unbeknownst to participants, we could match partner gender to participant gender, and then participants were shown the photo of their interaction partner and a short bio comprised of their partner's name, gender, age and race. As in Studies 1a and 1b, participants either did not know the racial background of their partner (n = 37), learned that their partner was biracial Black/White (n = 37), or learned that their partner was Black (n = 41). All other partner bio information was the same (except female partners were named Michelle and male partners were named Brian).

Next, participants read the following prompt to keep the methods in line with Studies 1a and 1b: "Imagine you have just been introduced to the person pictured above and that you have been asked to discuss university diversity issues. By the flip of a coin, they have been assigned to be the interviewer and you are the interviewee for this short, five-minute interview." Using a scale of 1 (*not at all*) to 7 (*very much*), participants were asked to rate how much they agreed with the following statements: I would be similar to my partner; I would have a lot in common with my partner; I would have similar views with my partner; I would be concerned that my partner would think I am prejudiced; I would control my behavior; and I would control what I said. We used these variables to measure whether learning that one's interaction partner was in fact half White (i.e., half ingroup), would lead to perceptions of increased similarity and lower levels of prejudice concern in comparison to the *Black-Specified* or *Race-Unspecified* conditions. Therefore, the first three items were averaged to a composite perceived similarity score (α = 0.86) and the second three items were averaged to a composite prejudice concern score (α = 0.83).

2.2. Results

As expected, a one-way ANOVA revealed significant effects on the perceived similarity composite, $F(2, 111)$ = 5.12, p = .008, η_p^2 = 0.08. Planned contrasts demonstrated that the *Race-Unspecified* and *Black-Specified* conditions did not differ from each other, $t(111)$ = 0.04, p = .97. Participants in the *Biracial-Specified* condition has significantly higher ratings of perceived similarity compared to participants in both the *Black-Specified* (p = .006) and the *Race-Unspecified* (p = .007) conditions (all ts > 2.75, all rs > 0.25). A one-way ANOVA revealed no differences by condition on the prejudice concerns composite, $F(2, 110)$ = 0.04, p = .96. In fact, the means for prejudice concerns were low across all three conditions (*Race-Unspecified*: M = 3.07, *Biracial-Specified*: M = 3.10, *Black-Specified*: M = 3.01 on a 7-point scale), suggesting that White perceivers may not be concerned (or may not be accurately predicting whether they would be concerned) during an interaction with someone who appears less prototypically Black. This pinpoints one possible distinction between interacting with unambiguous versus ambiguous racial minorities, but more research is needed.

2.3. Discussion

There were no differences by condition in the behavioral approaches participants would use in a hypothetical interaction with a racially ambiguous appearing partner. However, participants did report more perceived similarity, more commonality, and more similar views with their racially ambiguous partner when that partner was labeled as Biracial Black/White compared to when the partner was labeled as Black or had no racial label provided. These results suggest that it is not simply knowing the racial background of one's ambiguous interaction partner that mitigates negative social interaction outcomes, since Study 1 showed a Black label still led to negative interaction outcomes. Instead it may be learning that one's interaction partner is actually Biracial Black/White and thus half-ingroup (since these were all White participants) that may push more positive interracial interaction

outcomes. Therefore, this extends the discussion surrounding perceptual ambiguity toward a needed and novel identity focus. Would interactions with other types of biracial individuals (e.g., Black/Asian) also be more positive than interactions with a monoracial Black person?

Furthermore, the data also reveal that levels of prejudice concern did not differ by condition. This suggests that something different is likely occurring during interracial interactions involving racially ambiguous appearing and/or biracial individuals compared to interactions with unambiguous racial minorities. Previous research has found that negative interaction outcomes with unambiguous monoracial minorities are often due to prejudice concerns (Toosi et al., 2012), but our results suggest that prejudice might not be as much of a concern when interacting with racially ambiguous targets, no matter what racial label may be present. Based on past research, we might expect participants in the Black label condition to have shown the highest concern about being perceived as prejudiced, but to the extent that we can interpret these null results, they might indicate that racial label and phenotypicality interact to affect prejudice concerns in a way that has yet to be explored. Furthermore, without a direct comparison to an unambiguous racial minority, we also still do not know how prejudice concerns in various interracial settings might compare.

Another limitation of the present study is the fact that it involved a merely hypothetical interaction. Therefore, we could not measure the same in-person interaction outcomes as in Study 1. However, previous work demonstrates similar effects stemming from hypothetical and in-person interactions (e.g., Babbitt & Sommers, 2011; Plant & Butz, 2006; Plant & Devine, 2003). Thus, we believe that these results suggest for the first time how perceived similarity may improve interactions with biracial individuals, leading to more positive interaction outcomes for White perceivers (and potentially for their interaction partners as well).

In sum, these data support the theory that highlighting a common ingroup identity may in fact be a pathway to more positive social interactions. Other work has shown that thinking about a common goal or task improves interracial interactions by drawing the focus away from social concerns (e.g., Babbitt & Sommers, 2011; Sommers, 2008; Trawalter & Richeson, 2006). Our results extend those studies to include the biracial demographic—we found that White participants: a) believed they had more in common with their biracial Black/White interaction partners; and b) had more positive interaction outcomes when interacting with someone they knew to be biracial.

3. General discussion

Our results highlight for the first time the complex interaction between racial ambiguity and racial labels in social interaction outcomes. We show that White individuals who interacted with a *Biracial-Specified* ambiguous individual had more positive interactions than those who interacted with a *Race-Unspecified* ambiguous individual (Study 1). Additionally, we showed that interactions with a *Black-Specified* racially ambiguous individual were more tense than interacting either with a *Biracial-Specified* or a *Race-Unspecified* ambiguous individual, and that interacting with a *Black-Specified* ambiguous individual led to more smiling and physical engagement than interacting with a *Race-Unspecified* ambiguous individual (Study 1). Relatedly, interacting with a *Black-Specified* or a *Race-Unspecified* ambiguous individual led to increased cognitive depletion and levels of racial essentialism compared to interacting with a *Biracial-Specified* individual. Furthermore, a biracial label aided facial memory more than a Black label or no label at all, with a Black label biasing skin color memory. Lastly, White participants also reported feeling more similar to a biracial Black/White individual than to a *Black-Specified* or a *Race-Unspecified* individual (Study 2), suggesting that perceived commonalities may benefit interactions with racially ambiguous individuals.

Therefore, our results show that when interacting with a racially ambiguous individual, outcomes depend on whether a racial label is present (and what that label is). When no label is given and race

remains ambiguous, we show that there are significant increases in cognitive depletion and racial essentialism and decreases in physical engagement in the interaction for White individuals, with cognitive depletion specifically linked to some interaction outcomes. However, since correlational support for the relationship between cognitive depletion and interaction outcomes was limited (and mediational support was absent), future work should more fully examine cognitive depletion in different types of social interactions. Furthermore, when White participants thought about interacting with a *Biracial-Specified* individual versus with a *Black-Specified* or a *Race-Unspecified* individual, they reported having more views in common with their interaction partner. This suggests that in addition to less cognitive depletion contributing to more positive interaction outcomes with biracial labeled individuals, thinking that one has a common ingroup identity with their interaction partner may also predict more positive interracial interaction outcomes (Gaertner et al., 1993).

Our results are the first to demonstrate that cognitive depletion within an interracial interaction occurs not only for White individuals interacting with unambiguous monoracial minority interaction partners, but also for those interacting with a racially ambiguous person whose racial background is unknown. Additionally, we also show for the first time that White participants see themselves as having significantly more in common with a biracial Black/White labeled individual compared to the identical individuals in the *Black-* and *Race-Unspecified* conditions. Therefore, studying biracial individuals provides a unique opportunity to dissociate the interaction between racial labels, racial appearance, and perceived ingroup commonalities within interracial settings, which advances the intergroup relations literature by considering multiple social groups simultaneously.

Moreover, our findings indicate that interacting with someone who is racially ambiguous and without any racial label leads to just as much cognitive depletion as interacting with someone who is labeled as Black, and that participants feel they have the same amount in common with both of those individuals as well. Learning that someone is biracial, however, reduces that cognitive depletion significantly, freeing cognitive resources and improving interaction outcomes (e.g., Apfelbaum, Sommers, & Norton, 2008), which Study 2 shows may be due in part to greater perceived similarity. These studies therefore identify two possible reasons why perceptions of and interactions with racially ambiguous others are strained and two pathways that can improve these interactions. Results from Study 2 also pose the question of whether an interaction between a White individual and a biracial Black/White individual should be considered an *interracial* or *intraracial* interaction—or something in between. Researchers might need to redefine some of these commonly used terms due to our new racial demographic.

Additionally, our design was such that biracial individuals directly disclosed their racial background to their interaction partner through a demographic form (or through a written label in Study 2). Other research has shown that acknowledgement of a stigma can lead to more positive interpersonal outcomes (e.g., Davis, 1961; Griffith & Hebl, 2002; Hebl & Kleck, 2006), and although we found some positive outcomes from disclosing a Black identity, disclosing a biracial identity lead to more positive outcomes overall. On the other hand, one study has shown that disclosing a biracial person's racial identity makes that biracial individual more likely to receive negative evaluations from others (Sanchez & Bonam, 2009), though that study did not measure any actual behavioral outcomes stemming from this disclosure. Future work should further investigate whether it matters if biracial individuals choose to disclose their identity on their own accord and whether the way in which that disclosure occurs affects interaction outcomes.

Future work should also extend this research to include non-White perceivers. The interracial interaction literature to date has primarily focused on interactions between White and Black individuals (Richeson & Sommers, 2016; Toosi et al., 2012). We chose to start this new line of

research focusing on racial ambiguity within actual interracial interactions with White individuals since they are a well-studied group within the interracial interaction literature. However, some work has shown that racial minorities view racially ambiguous individuals differently than White individuals (Pauker et al., 2009; Willadsen-Jensen & Ito, 2008). Moreover, racial minorities also have different concerns within interracial settings compared to White individuals, such as concern about being the target of prejudice (Mendoza-Denton, Downey, Purdie, Davis, & Pietrzak, 2002, Shelton, Richeson, & Salvatore, 2005; Shelton, Richeson, Salvatore, & Trawalter, 2005). Thus, future work should recruit non-White individuals to test the generalizability of these effects. We also did not have a comparison group who interacted with monoracial, unambiguous-appearing Black individuals, so it is still unclear whether an interaction with a racially ambiguous individual whose race remains unknown is more, less, or equally as stressful as an interaction with an unambiguous Black individual. We did show that the monoracial label "Black" leads to more negative outcomes compared to a "biracial Black/White" label, but with other work showing that more Afrocentric racial minorities experience higher levels of prejudice (e.g., Maddox & Gray, 2002), it is important to continue to examine the intersections of phenotypicality and racial identity in various social settings.

Relatedly, the confederates used in this study were reflective only of the Black/White racially ambiguous population. Although work comparing perceptions of biracial Black/White to biracial Asian/White individuals is limited, existing work indicates that biracial Asian/White individuals are viewed more positively and as more similar to White individuals than biracial Black/White individuals (e.g., Ho, Sidanius, Levin, & Banaji, 2011; Lee & Bean, 2004). This suggests interactions with biracial Asian/White individuals may be more positive overall compared to interacting with biracial Black/White individuals. We chose to focus on Black/White racially ambiguous individuals because they reflect the largest reported biracial demographic on the U.S. Census and because of the unique history between White and Black individuals in the U.S. However, future work should continue to explore the possible differences in interactions with a wider spectrum of biracial and racially ambiguous individuals.

Finally, the present set of results still leaves us with the question of what process or pathway actually leads to improving social interactions with ambiguous others. Here, we show that a biracial Black/White racial label not only resolves ambiguity, but also seems to improve social interaction outcomes for a White perceiver. However, a Black racial label resolves that same ambiguity, but results in worse interaction outcomes for a White perceiver. To further complicate this picture, interaction outcomes were similarly negative when racial ambiguity was not resolved at all. Other work demonstrating that disclosing one's sexual orientation to someone else who is not of the same sexual orientation also improves social interactions (Everly et al., 2012). This suggests it is not necessarily *only* a common ingroup identity that betters interactions with ambiguous others, but that there may be multiple pathways or a combination of pathways regarding identity disclosure and the type of identity that influences social interaction trajectories. Thus, future research regarding whether any type of biracial label resolves racial ambiguity equally (i.e., utilizing a biracial Black/Latino label or biracial Black/Asian label) could help disambiguate what types of identity disclosure improve versus hinder social interaction outcomes more broadly. For example, would disclosing a different common identity such as one's religious identity also improve a social interaction with an ambiguous other? Future work should therefore directly compare these types of outcomes across various social domains to pinpoint which effects are universal or specific to particular social categories.

4. Conclusions

In sum, these studies expand the current interracial interaction literature to include interactions with racially ambiguous individuals.

When participants did not know their partner's racial background, those interactions were more taxing, and the biracial confederate also perceived more negativity. We build on past research showing that ambiguity causes confusion and leads perceivers to attempt to resolve the perceptual or cognitive uncertainty they experience (Chen & Hamilton, 2012; Gilbert, 2006; Peery & Bodenhausen, 2008; Remedios & Chasteen, 2013; Sorrentino et al., 2001), but extends that research to include real-life behavioral outcomes. Here we show that perceived similarity with biracial individuals may lead to more positive interaction outcomes for a White perceiver.

Historically, race has been used to define social hierarchies, primarily to determine who is White and who is not—because this determination had legal and social consequences, with rights and privileges granted to White individuals over non-White individuals. Although there were racially ambiguous biracial individuals earlier in our history, today's rising multiracial population and increasing overall racial diversity is leading people to begin grappling with racial ambiguity and racial labels. With variations in skin tone and other group markers making race much more complicated to define, it is clear that researchers need to include more variable populations within their studies. It is now more important than ever for research to pinpoint how interactions with racially ambiguous and racially-mixed individuals proceed, and what contexts may affect those outcomes. In fact, it may be that the continued importance of race, combined with the rigid racial categorization that still prevails, contributed to the negative interaction outcomes seen in the present studies—not knowing the racial background of a racially ambiguous interaction partner predicted heightened anxiety and increased cognitive depletion. Therefore, it is essential to continue studying not only how multiracial individuals are treated, but how exposure to them affects outside perceivers as well.

Appendix A. Appendix

Drawing examples from a participant in the Biracial- and Race-Unspecified condition.

Biracial-Specified Condition   Confederate   Race-Unspecified Condition

Appendix B. Online supplementary materials

Supplementary materials to this article can be found online at https://doi.org/10.1016/j.jesp.2018.03.003.

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