

## **SOCIAL BELONGING MOTIVATES CATEGORIZATION OF RACIALLY AMBIGUOUS FACES**

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Categorizing racially ambiguous individuals is multifaceted, and the current work proposes social-motivational factors also exert considerable influence on how racial ambiguity is perceived, directing the resolution of ambiguity in a manner that is functionally beneficial to the perceiver. Four studies tested two motivations related to social belonging: belonging needs and racial identification. Greater need to belong and racial identification (Study 1), and two types of social belonging threats—social exclusion (Studies 2a and 2b) and racial identity threat (Study 3)—predicted more categorizations of racially ambiguous Black/White faces as Black, with White participants more likely to categorize ambiguous faces as outgroup members (i.e., Black; Studies 1, 2a, 2b, and 3) and Black participants more likely to categorize ambiguous faces as ingroup members (Study 2b). Results also demonstrated that self-affirmation mitigated this motivated categorization for Whites (Study 3), illustrating the malleability of social categorization and its dependency on serving self-relevant goals.

*Keywords:* racially ambiguous, categorization, face perception, motivation

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When social categories are obvious, categorization processes are relatively straightforward. Much less is known, however, about social categorization and its downstream consequences when categories, such as race, are ambiguous (Pauker et al., 2009; Shih & Sanchez, 2005). Within the United States, the multiracial population is projected to be the fastest growing population in the next 40 years (U.S. Census Bureau, 2009). As the increasing prevalence of multiracial individuals blurs traditional boundaries of race, it is clear that a more nuanced understanding of racial categorization is becoming increasingly important for theoretical as well as practical reasons. The present series of studies examines two overlapping social motivations that may shape racially ambiguous face categorization: belonging needs and racial identification.

### CATEGORIZATION OF RACIALLY AMBIGUOUS TARGETS

The process of racial categorization is multifaceted, involving both lower-level perceptual processing and higher-order social cognitive influences that continuously interact to determine how we ultimately racially categorize a face (Freeman & Ambady, 2011). When it comes to perceptual processing, specific features available in a person's face (e.g., how racially prototypical do they appear with regard to skin-tone and other features; Blair, Judd, Sadler, & Jenkins, 2002; Maddox & Gray, 2002; Stepanova & Strube, 2012) influence racial categorization. Exposure to one particular racial ingroup can also lead to biased selective attention toward facial features that distinguish outgroups from that ingroup (e.g., Halberstadt, Sherman, & Sherman, 2011; Levin, 2000; Webster, Kaping, Mizokami, & Duhamel, 2004).

As faces become more racially ambiguous (i.e., have a mixture of racial features and appear not prototypically White or Black), they become harder to categorize—participants take longer and have more difficulty making these categorizations (Blascovich, Wyer, Swart, & Kibler, 1997; Chen & Hamilton, 2012; Freeman, Pauker, Apfelbaum, & Ambady, 2010). This would be expected from an account of categorization that stems from lower-level perceptual processing—as the features for any one category become less clear, categorization should become more difficult. In order to help resolve this visual ambiguity during social categorization, heuristics are often employed. In fact, historically, one common categorization heuristic was the *one-drop rule* whereby one drop of “Black blood” identified a mixed-race individual as Black, which White slave owners used to consign thousands of multiracial individuals to slavery (Davis, 1991). However, in the present day, a number of higher-order social cognitive factors are known to influence racial categorization, especially as faces become more racially ambiguous (e.g., Freeman & Ambady, 2011; Pauker, Rule, & Ambady, 2010; Slepian, Weisbuch, Pauker, Bastian, & Ambady, 2014). For example, those who identify strongly with their ethnic/racial ingroup tend to categorize more racially ambiguous faces as outgroup members (Castano, Yzerbyt, Bourguignon, & Seron, 2002; E. Knowles & Peng, 2005) or people rely on other cues, such as the stereotypicality of clothing (Freeman, Penner, Saperstein, Scheutz, & Ambady, 2011) to help guide racial categorization.

Recent research has highlighted how a number of different social motivations can influence racial categorization of ambiguous and multiracial targets, including physical threat (Miller, Maner, & Becker, 2010), economic scarcity (Krosch & Amodio, 2014; Rodenheffer, Hill, & Lord, 2012), essentialism (Chao, Hong, & Chiu, 2013; Plaks, Malahy, Sedlins, & Shoda, 2012), and ideological motives (Gaither, 2015; Krosch, Berntsen, Amodio, Jost, & Van Bavel, 2013; Kteily, Cotterill, Sidanius, Sheehy-Skeffington, & Bergh, 2014). Here, we expand on this prior research and examine the impact of two related social motives—belonging needs and racial identification—on the categorization of racially ambiguous targets.

### BELONGING NEEDS AND SOCIAL CATEGORIZATIONS

Social belonging comprises a fundamental human need, perhaps second only to physical survival needs, such as food, shelter, and protection against physical threat (Baumeister & Leary, 1995). Group membership in a social category such as race is one avenue through which people could fulfill belonging needs, although strength of identification with a particular social group and the extent to which race is a salient and meaningful social category should moderate these effects (e.g., Brewer, 1991). Particularly when social belonging is tenuous, people may lean more on social bonds that they perceive they can trust. For example, those who experience threats to their social belonging react not by strengthening bonds with anyone that crosses their path, but rather by strengthening bonds *selectively* with those whom they believe will provide a realistic opportunity for social connection (Maner, DeWall, Baumeister, & Schaller, 2007). In an intergroup context, this translates into ingroup-favoring bonds (Navarrete, Kurzban, Fessler, & Kirkpatrick, 2004).

Indeed, work has shown that belonging needs direct attention toward ingroup faces and group differentiating cues, helping individuals to focus on those most likely to afford affiliation and fulfill belonging needs (Sacco, Wirth, Hugenberg, Chen, & Williams, 2011; Van Bavel, Swencionis, O'Connor, & Cunningham, 2012). Threats to belonging, such as experiencing social rejection, also lead to greater activation of important group identities as a social resource (e.g., Branscombe, 1998, 2004; M. Knowles & Gardner, 2008; Tajfel & Turner, 1986; Williams, 2007). Thus, general belonging needs can activate specific group-relevant needs, focusing the individual on selective affiliation with, and protection of a salient ingroup. In other words, general belonging needs are intricately tied with the needs of important ingroups, and may motivate individuals to protect or maintain a positive view of their ingroup.

### RACIAL INGROUP IDENTIFICATION AND SOCIAL CATEGORIZATIONS

It is known that individuals derive value and an important sense of belonging from social identification (Brewer, 1991; Correll & Park, 2005; Tajfel & Turner,

1986). However, individuals face a constant tension between a need for social connection and a need for group distinctiveness in any social group (Brewer, 1991). Thus, an optimal social group is one that provides social belonging and connection with others, but still maintains clear and distinct boundaries between ingroup and outgroup members (Brewer, 2007). In the case of racial identification, this may lead individuals to be selective about whom they include into their ingroup. For example, those with a strong racial/ethnic identification tend to over-exclude ethnically ambiguous faces from the ingroup (Castano et al., 2002), consistent with a motivation to “protect” their group from dilution and to maintain distinct boundaries between the ingroup and outgroup. However, this research has been conducted with a majority group population, and it is unclear whether highly identified minority participants would respond in the same way. It is possible that high status or majority groups would focus to a greater extent on protecting their group boundaries compared to lower status or minority groups, a suggestion that we consider more below.

#### BELONGING-MOTIVATED SOCIAL CATEGORIZATION

Current work on social belonging demonstrates two broad patterns of results that represent a general tension between a desire to protect one’s group and a desire to create social connections. Specifically, some work finds that those whose belonging has been threatened (i.e., through social exclusion) become hesitant to forge new bonds and even act negatively toward novel group members as a way to protect themselves from future exclusion (e.g., Beck, Emery, & Greenberg, 1985; Twenge, Baumeister, Tice, & Stucke, 2001; Twenge & Campbell, 2003). In contrast, other work finds that those whose belonging has been threatened exhibit increased affiliation and behavior that supports new social bonds, such as increased attunement to social cues (e.g., Gardner, Pickett & Brewer, 2000; Gardner, Pickett, Jefferis, & Knowles, 2005; Lakin, Chartrand, & Arkin 2008; Maner et al., 2007). Consistent with the self-protective line of reasoning and bolstered by work that finds belonging needs focus attention on group differentiating cues (Sacco et al., 2011), we predict that those high in the need to belong or whose belonging has been threatened should be less likely to accept racially ambiguous targets into their racial ingroup, as a way to protect their group (and the self, which derives value from that group).

However, we predict that this categorization outcome will be unique to White majority race participants, who occupy a high status position in the racial hierarchy in the United States. White, majority group members should have a greater desire to maintain their group’s status and position than minority group members (e.g., Pratto, Sidanius, & Levin, 2006). Optimal distinctiveness theory (Brewer, 1991; Leonardelli, Pickett, & Brewer, 2010) also posits that majority and minority group members should respond differently to belonging threats. Majority group members already belong to a large group that meets inclusion needs, so activating a threat to belonging should lead to greater differentiation between the ingroup

and outgroup. The majority group gains value (both in terms of social identity and protection of resources) by keeping group membership relatively selective.

Minority group members, on the other hand, already possess some level of distinctiveness and may gain value by increasing inclusion (Leonardelli et al., 2010). Therefore, the more value individuals place in social belonging—whether that may be belonging more generally or belonging linked toward a specific ingroup such as race—may result in differential categorization of racially ambiguous group members for high status, majority group members and low status, minority group members. Specifically, high status, majority group members might be more likely to be exclusive and exclude racially ambiguous group members from their ingroup, whereas low status group members might be more inclusive and include racially ambiguous group members into their ingroup (Kurzban & Leary, 2001).

## THE CURRENT RESEARCH

In sum, belonging needs may activate selective social affiliation with ingroup members (Van Bavel et al., 2012), but how individuals meet this goal may vary based on their place within the status hierarchy (which covaries with majority/minority group membership in the U.S.). Members of the dominant social group (i.e., White individuals) high in social belonging needs should be more motivated to police the boundaries of relevant social groups and exclude unclear group members compared to those low in social belonging needs. Therefore, first we tested the hypothesis that social motives related to maintaining belonging, both generally and toward one's racial ingroup, will bias racial categorization toward greater exclusion from the ingroup for White, majority group members.

Study 1 examined both proposed social motivations: White individuals' general need to belong and identification with their racial ingroup. White individuals who derive more value from affiliating with others (i.e., those with higher need to belong and greater racial identification) should have a greater motivation to protect that salient social identity and thus should exhibit more biased categorization of racially ambiguous others as outgroup members. We also examined whether these two motivations independently predicted racial categorization.

Study 2a examined one of these motivations specifically—we directly threatened White participants' general need to belong through manipulating social exclusion in a lab setting. We predicted that this threat to social belonging would enhance the need to assert the bounded nature of a salient social identity and motivate individuals to adopt a more exclusive group boundary as measured through biased racial categorizations of racially ambiguous targets. Study 2b conceptually replicated Study 2a with a different measure of social exclusion and extended these findings to Black participants to examine whether minority group members exhibited more inclusive racial categorizations of racially ambiguous targets.

Finally, in Study 3 we directly threatened the other proposed social motivation—racial identification. We also explored whether biased racial categorizations could be mitigated if the need to restore self-integrity was removed. Therefore, in Study

3, we threatened White participants' racial ingroup identity but also ameliorated this threat for some participants through a self-affirmation task. We predicted that threatening participants' racial identity should prompt motivation to protect their ingroup and lead to biased racial categorizations, but that such biased categorization should not occur when this threat (and thus the related motivation) was ameliorated.

### **STUDY 1: NEED TO BELONG AND RACIAL IDENTIFICATION PREDICT BIASED SOCIAL CATEGORIZATION**

Past work has examined how individual differences in motivations tied to protecting social belonging with the ingroup explain the categorization processes of ambiguous targets (Blascovich et al., 1997; Castano et al., 2002; Pettigrew, Allport, & Barnett, 1958). For instance, in one study, participants categorized group-ambiguous faces as Northern Italian or Southern Italian, and those participants who highly identified with their racial/ethnic ingroup applied more stringent group boundaries during categorization and categorized faces more often as belonging to the outgroup (Castano et al., 2002). In other words, the individuals who gain more value from ingroup affiliation tend to exhibit more investment in protecting the ingroup from potential non-group members through excluding those who have any visual cues associated with the outgroup. Here we aim to replicate this relationship between racial identification and exclusion of racially ambiguous targets from the ingroup and also examine whether those who gain value from social affiliation in general—those high in belonging needs—also exhibit exclusionary tendencies when categorizing racially ambiguous others.

We argue that the greater a person's identification with their racial ingroup and the greater their need to belong, the more investment they should have in protecting belonging and the social boundaries associated with a salient ingroup. Specifically, we predict that White perceivers with a high need to belong, or a high racial ingroup identification will be motivated to exclude "risky" racially ambiguous targets from their racial ingroup by categorizing more Black/White racially ambiguous faces as Black.

### **METHOD**

Sixty-five native U.S. White participants were recruited through Amazon's Mechanical Turk (see Buhrmester, Kwang, & Gosling, 2011). An a priori exclusion-criterion was used, such that those who were suspicious that the categorization task (i.e., how many faces they rated as Black) was measuring participants' endorsement of racial biases were excluded from the sample. Three participants from the original sample were excluded resulting in a final sample of 62 participants (47% female,  $M_{age} = 33.72$ ,  $SD = 13.57$ ). Participants first completed the Need to Belong Scale (Leary, Kelly, Cottrell, & Schreindorfer, 2007), which includes ten items that assess respondents' belonging needs (i.e., "I want others to accept me," or "I need

to feel that there are people I can turn to in times of need"). Participants provided their responses on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Three items were reverse scored and an average was calculated for each participant with higher scores indicating a greater need to belong ( $\alpha = .72$ ). Participants also completed the four-item identity subscale from the Collective Self-Esteem Scale (CSE; Luthanen & Crocker, 1992) with a racial identity focus (i.e., "Your racial identity is an important reflection of who you are") using the same 7-point scale. Two items were reverse scored and an average was calculated for each participant with higher scores indicating a higher racial identity ( $\alpha = .88$ ). To avoid carryover effects stemming from a racial categorization task, these variables were always completed before the categorization task.

Next, participants completed a categorization task comprised of 20 computer-generated racially ambiguous Black/White faces (10 female), all of which were previously pretested for racial ambiguity, distinctiveness, prototypicality, depicted neutral expressions, and attractiveness (see Pauker et al., 2009). All images were in color, cropped to an oval shape to display only the face (ears were partially visible but no hair was visible), and were adjusted to uniform size and resolution ( $275 \times 360$  pixels; see Appendix for examples). Participants completed a dichotomous categorization task and were asked to categorize these faces as either White or Black as quickly as possible. Lastly, participants were probed for study suspicions.

## RESULTS AND DISCUSSION

First, all predictors were mean-centered (Aiken & West, 1991). We regressed the number of racially ambiguous faces categorized as Black on participants' need to belong, racial identification, and their interaction. The overall model was significant,  $F(3, 58) = 3.32$ ,  $R^2 = .15$ ,  $p = .026$ . The interaction was not significant ( $p = .62$ ). As expected, White participants' need to belong scores predicted how many racially ambiguous faces ( $M = 54\%$ ,  $SD = 20\%$ ) were categorized as Black,  $\beta = .24$ ,  $t(58) = 1.93$ ,  $p = .058$ . Additionally, White participants' level of racial identification also independently predicted the number of faces that were categorized as Black,  $\beta = .25$ ,  $t(58) = 1.96$ ,  $p = .055$  (see Table 1 for all zero-order correlations), though both of these effects were marginal. Therefore, both a greater need to belong and higher levels of racial identification were independently marginally associated with categorizing ambiguous faces more often as Black (the racial outgroup) for White, majority group members.

This finding is consistent with the *ingroup overexclusion hypothesis*, whereby highly group-identified individuals are motivated to protect their group memberships by avoiding "contamination" from outgroup members (Castano et al., 2002; Leyens & Yzerbyt, 1992; Yzerbyt, Leyens, & Bellour, 1995). This finding is also consistent with our hypothesis regarding social belonging needs—that general belonging needs would be associated with a heightened motivation to protect belonging for White, majority group members, through exercising selectivity when it came to categorizing racially ambiguous targets. However, Study 1 only provides cor-

**TABLE 1. Study 1 Zero-order Correlations**

	<i>M (SD)</i>	<b>1</b>	<b>2</b>	<b>3</b>
1. Number of Black Faces	54% (20%)	—	—	—
2. Need to Belong Score	4.20 (.84)	0.26*	—	—
3. CSE Racial Identification	2.96 (1.44)	0.29*	0.10	—

Note. \* $p < .05$ , Need to Belong and CSE scores were averaged from 7-point scales.

relational evidence for the link between belonging motivation, racial identification and social categorization, and we may not have had sufficient power to detect these effects. Therefore, in pursuit of converging and causal evidence for the role of social belonging motivation in influencing social categorization, Studies 2a and 2b examined whether a situationally induced threat to social belonging would also influence ambiguous categorization and Study 3 examined whether threatening racial ingroup identity would do the same.

## **STUDY 2A: SOCIAL EXCLUSION ENHANCES BIASED SOCIAL CATEGORIZATION FOR WHITES**

Social exclusion threatens the core need of social belonging to a group (Williams, 2007) and motivates individuals to try to repair and restore that sense of belonging (Cacioppo & Hawkley, 2009). Prior research has highlighted that social rejection causes individuals to become more sensitive to social affiliation cues and more accurate in reading those social cues (Gardner, Pickett, & Brewer, 2000; Pickett & Gardner, 2005; Pickett, Gardner, & Knowles, 2004). However, this sensitivity to social cues appears to be selective toward high opportunity social affiliations (i.e., the ingroup; Maner et al., 2007; Van Bavel et al., 2012). Thus, the nature of the social target under consideration and whether he or she represents a promising possibility for renewed affiliation is key in deciding to include that member in the ingroup.

Relatedly, social exclusion directs individuals to foster ingroup favoring bonds (Navarette et al., 2004) and activates important ingroup identities as a social resource (M. Knowles & Gardner, 2008). Therefore, as discussed earlier, while one might predict that social exclusion would lead to greater inclusion of anyone into the ingroup to increase opportunity for social affiliation, recent research predicts a specific pattern: those who experience social exclusion may activate a preferred affiliation with ingroup members and attention to group differentiating cues, which may ironically lead to more exclusivity for dominant group members when faced with unclear group members who do not represent a clear, beneficial opportunity for affiliation. Therefore, we predict that an experimental manipulation of social exclusion compared to a manipulation of inclusion will lead to more racial exclusion in the form of White participants more often categorizing racially ambiguous others into the outgroup.



## METHOD

Seventy-five White undergraduates participated in exchange for partial course credit. Eleven participants were excluded ( $n = 9$ , knew about Cyberball;  $n = 2$ , suspicious of categorization task) from the original sample resulting in a final sample of 64 participants (64% female;  $M_{\text{age}} = 18.58$ ,  $SD = 1.27$ ). They were told that they were going to play *Cyberball* (Williams & Jarvis, 2006), a ball-tossing game, with three other online players, all of whom were actually preprogrammed confederates. These confederates were depicted as the default players in the original programmed game and therefore, no racial or gender information was provided about them. The study ostensibly examined “the effects of practicing mental visualization on task performance,” and participants were randomly assigned to be either socially included (receiving the ball on one third of all tosses) or socially excluded (receiving the ball twice in the beginning of the game, but never again; see Williams & Jarvis, 2006). Afterward, participants completed the same need to belong ( $\alpha = .83$ ) and racial identity CSE ( $\alpha = .75$ ) scales from Study 1 in addition to answering four questions about their mood using a 1 (*not at all*) to 7 (*very much*) scale (e.g., “I feel happy”; “I feel positive”; “I feel angry”; “I feel negative”) to see if mood was associated with categorization outcomes. These items were paired and averaged with higher scores reflecting a more positive mood ( $\alpha = .81$ ) or more negative mood ( $\alpha = .85$ ). Mood was included as additional variable, since social exclusion has been shown to induce a more negative mood (e.g., Twenge et al., 2001; Williams, Cheung, & Choi, 2000). Subsequently, participants then completed the same racial-categorization task from Study 1 and were probed for suspicions.

## RESULTS AND DISCUSSION

We first examined whether social exclusion influenced need to belong, and indeed, participants reported a significantly higher need to belong following social exclusion ( $M = 5.25$ ,  $SD = .92$ ) compared to inclusion ( $M = 4.83$ ,  $SD = .73$ ),  $t(62) = 2.03$ ,  $p = .047$ ,  $r = .25$ . Racial identity CSE scores, however, did not differ by condition,  $t(62) = 1.23$ ,  $p = .22$ . As predicted, social exclusion caused White participants to categorize racially ambiguous Black/White faces more often as members of the Black racial outgroup ( $M = 43\%$ ,  $SD = 12\%$ ) than did social inclusion ( $M = 33\%$ ,  $SD = 19\%$ ),  $t(62) = 2.25$ ,  $p = .028$ ,  $r = .28$ . Regarding mood, as expected, participants who were socially included also felt significantly more positive ( $M = 4.43$ ,  $SD = 1.16$ ) than those who were excluded ( $M = 2.82$ ,  $SD = 1.15$ ),  $t(62) = 5.53$ ,  $p < .001$ ,  $r = .58$ . Additionally, participants who were excluded felt significantly more negative ( $M = 3.82$ ,  $SD = 1.61$ ) than those who were included ( $M = 2.00$ ,  $SD = 1.11$ ),  $t(62) = 5.34$ ,  $p < .001$ ,  $r = .56$ . However, neither positive mood,  $\beta = .06$ ,  $t(62) = .51$ ,  $p = .61$ , nor negative mood,  $\beta = .18$ ,  $t(62) = 1.51$ ,  $p = .14$ , predicted categorizing faces more often as Black, indicating that mood—either feeling happy or angry—was not likely to be driving the racial categorization effects.

Our findings are consistent with the hypothesis that social exclusion leads to an increased motivation to *selectively* affiliate. As a consequence, this selective affiliation fosters exclusion of those who do not provide a clear opportunity for affiliation (i.e., ambiguous group members). Therefore, these results build on past work showing that social belonging motives may not only attune White individuals to signals that demarcate ingroup and outgroup members (Sacco et al., 2011), but they also appear to influence categorization. The manipulation of social exclusion only seemed to threaten participants' general need to belong, however, and not their levels of racial identification, despite findings from Study 1 that highlighted that higher levels of racial identification may also influence categorization of racially ambiguous targets. Thus, racial identification may influence racial categorizations independently of social belonging.

A viable alternative hypothesis for these findings is perhaps social exclusion makes people feel more concerned about future rejection, which in turn may have caused the increase in categorizing ambiguous faces more often as the outgroup. Study 2b tests this alternative hypothesis through examining a lower status, minority group. As stated earlier, under belonging threat, high status, majority individuals should want to maintain the status quo of their position in society and focus on achieving group distinctiveness, whereas low status, minority individuals may want to strengthen the value of the ingroup through focusing on inclusion and increasing the number of group members (Leonardelli et al., 2010; Pratto et al., 2006). This would lead to high status, majority members excluding more racially ambiguous group members and low status, minority members including more racially ambiguous group members when they are socially excluded compared to included. If instead social exclusion activates a concern about future rejection, this should result in increased outgroup categorizations for both majority and minority members. Study 2b therefore examines ambiguous race categorization outcomes after social exclusion for both high status, majority White and low status, minority Black individuals.

## **STUDY 2B: SOCIAL EXCLUSION EFFECTS ON WHITE AND BLACK INDIVIDUALS**

Previous research has found that minority perceivers (e.g., Asian and Black individuals) also tend to categorize White-Black racially ambiguous faces as Black, similar to White participants (Ho, Sidanius, Levin, & Banaji, 2011). While this study did not include enough Black participants to actually examine Black participants' racial categorizations separately, these results provide preliminary evidence that Black participants may be more inclusive in their categorizations of racially ambiguous targets than White participants. Thus, we predicted that White participants whose belonging is threatened through social exclusion would again show an increase in categorizing ambiguous faces as the outgroup (i.e., Black). However, we predicted that socially excluded Black participants would instead categorize more ambiguous faces as ingroup members (i.e., Black) compared to those who

were socially included. Additionally, since Study 2a did not have a control condition to compare categorization outcomes to baseline levels, this study also added a control condition.

## METHOD

Using Amazon's Mechanical Turk, White ( $N = 160$ ) and Black participants ( $N = 153$ ) were randomly assigned to one of three conditions. To ensure that all participants actually underwent the experimental manipulation, an a priori exclusion criterion was applied to participants who did not write at least one full sentence in response to the survey prompt resulting in 4 ( $n = 3$  White,  $n = 1$  Black) participant exclusions (see Oppenheimer, Meyvis, & Davidenko, 2009 for support in ensuring manipulations are valid for all participants). An additional 7 Black participants were excluded who self-identified as being biracial or Hispanic. No participants were suspicious of the categorization task. This resulted in a final sample of 157 White participants (50% female,  $M_{\text{age}} = 34.42$ ,  $SD = 12.04$ ) and 145 Black participants (63% female,  $M_{\text{age}} = 31.86$ ,  $SD = 10.38$ ).

In two conditions, participants were asked to write about a time that they were either socially included or socially excluded. Specifically, the prompt asked them to reflect on how they felt while being socially included/excluded by others and to recall details about the experience. In the control condition, participants were asked to write about their average day and average "life experiences." Afterward, participants completed the same need to belong scale (Whites  $\alpha = .87$ ; Blacks  $\alpha = .84$ ) and racial identity CSE scale (Whites  $\alpha = .78$ ; Blacks  $\alpha = .65$ ) from the previous studies and the same questions about their mood from Study 2b (positive mood: Whites  $\alpha = .95$ , Blacks  $\alpha = .92$ ; negative mood: Whites  $\alpha = .82$ , Blacks  $\alpha = .76$ ). Subsequently, participants completed the same racial-categorization task from the previous studies and were probed for suspicions.

## RESULTS AND DISCUSSION

A 2 (race of participant: White, Black)  $\times$  3 (condition: Inclusion, Exclusion, Control) ANOVA revealed no interaction between participant race and condition ( $p = .96$ ), nor was there a main effect of participant race ( $p = .10$ ) on the categorization of racially ambiguous faces as Black. However, as expected, there was a main effect of condition on the categorization of racially ambiguous faces as Black,  $F(2, 296) = 6.95$ ,  $p = .001$ ,  $\eta_p^2 = .045$ . Simple  $t$ -tests showed social exclusion caused both White and Black participants to categorize significantly more racially ambiguous faces as Black ( $M = 65\%$ ,  $SD = 21\%$ ) compared to socially included ( $M = 56\%$ ,  $SD = 20\%$ ),  $t(192) = 2.99$ ,  $p = .003$ ,  $r = .21$ , and control participants ( $M = 55\%$ ,  $SD = 21\%$ ),  $t(208) = 3.36$ ,  $p = .001$ ,  $r = .23$ . There were no differences between socially included and control participants on ambiguous categorization outcomes,  $t(299) = .27$ ,  $p = .78$ .

Lastly, there were no main effects of condition for needing to belong, racial identity CSE scores, or positive and negative mood (all  $F_s < 2.21$ , all  $p_s > .11$ ).

While there was no interaction with participant race, we examine the results by participant race for the interested reader. Simple  $t$ -tests showed social exclusion caused White participants to categorize racially ambiguous faces significantly more often as members of the Black racial outgroup ( $M = 62\%$ ,  $SD = 21\%$ ) compared to socially included ( $M = 54\%$ ,  $SD = 17\%$ ),  $t(100) = 2.12$ ,  $p = .036$ ,  $r = .21$ , and control participants ( $M = 53\%$ ,  $SD = 17\%$ ),  $t(107) = 2.63$ ,  $p = .010$ ,  $r = .25$ . There were no differences between socially included and control participants on ambiguous categorization outcomes,  $t(101) = .45$ ,  $p = .66$ . For Black participants, simple  $t$ -tests showed social exclusion led to categorizing racially ambiguous faces significantly more often as members of the Black racial ingroup ( $M = 67\%$ ,  $SD = 20\%$ ) compared to socially included ( $M = 57\%$ ,  $SD = 23\%$ ),  $t(90) = 2.12$ ,  $p = .037$ ,  $r = .22$ , and control participants ( $M = 57\%$ ,  $SD = 24\%$ ),  $t(99) = 2.20$ ,  $p = .030$ ,  $r = .22$ . There were no differences between socially included and control participants on ambiguous categorization outcomes,  $t(95) = .02$ ,  $p = .98$ .

These results combined with those from Study 2a highlight that social exclusion strengthened the boundary between ingroup and outgroup for Whites and relaxed the boundary for Blacks, whereby White individuals excluded more racially ambiguous individuals from their ingroup and Black individuals included more racially ambiguous individuals as their ingroup. Although we do not have empirical data to speak specifically to the mechanism behind these categorization processes, we show that high status White individuals under belonging threat chose to respond with exclusion and lower status Black individuals under threat chose to respond with inclusion—both processes resulting in increased Black categorizations. These results are in line with social dominance theory and optimal distinctiveness theory in that high status group members under threat should protect their high status position by excluding unclear group members whereas low status group members should focus on inclusion, which may also increase their numerical power (Leonardelli et al., 2010; Pratto et al., 2006). Results did not support the contention that social exclusion would lead to categorizing racially ambiguous faces as outgroup by all participants in order to avoid future rejection. And again, the social exclusion manipulation did not affect participants' strength of racial identification. While general social belonging and racial identity overlap conceptually, they may serve as independent social motivations that impact categorization differentially for both White and Black individuals. Therefore, Study 3 investigated whether specifically threatening White individual's racial identity specifically also influences the categorization of racially ambiguous targets.

### **STUDY 3: RACIAL IDENTITY THREAT AND THE AMELIORATION OF THREAT**

Study 1 demonstrated that a high need to belong and high levels of racial identification both were marginally related to increased Black categorizations. Studies 2a

and 2b showed that threatening participants' need to belong through an exclusion manipulation also biased categorizations of racially ambiguous targets but did not measurably affect racial identification. Combined, these studies suggest that social belonging for White participants is associated with strengthening the boundaries between one's ingroup and outgroup, but Study 1 suggests another social motivation, namely racial identification, appears to matter as well. Therefore, Study 3 offered two main innovations: (1) we specifically threatened the other social motivation noted in Study 1—participants' racial identity; and (2) we examined whether, relative to this threat, we could mitigate biased categorization by restoring participants' threatened group image through self-affirmation.

Past work has shown that thinking about how one's group may have received unfair advantages over other groups negatively affects group identification for White individuals, and this consequently increases a need to maintain the group's high status position as a way to counteract the group threat (Branscombe, 1998, 2004; Tajfel & Turner, 1986; Turner & Brown, 1978). Therefore, we predicted that threatening White individuals' racial identity in this manner would prompt motivation to restore a sense of belonging with their high-status group by excluding racially ambiguous individuals. Further, we predicted this effect would be eliminated when followed by self-affirmation, which assuages threat related to self- and group-integrity (Sherman & Cohen, 2006). When the threat (and thus the motivation to restore belonging) has been alleviated, biased racial categorization should not occur. Since self-affirmation often works when under threat (e.g., Heine & Lehman, 1997), we included a control condition without induced threat or affirmation to determine the direction of the biased categorization effect. Although one could argue that not all Whites necessarily identify strongly with their racial ingroup, most are aware that they are in fact White, therefore making racial identity threats, such as asking them about benefitting from White privilege, still effective despite varying levels of actual racial identification (Branscombe, Schmitt, & Schiffhauer, 2007; Schmitt & Branscombe, 2002).

## METHOD

Using Amazon's Mechanical Turk, 135 U.S. native White Americans were randomly assigned to one of three conditions. To ensure that all participants actually underwent the experimental manipulation, an a priori exclusion criterion was applied to participants who did not write at least one full sentence in response to the survey prompt (White privilege or control prompt) resulting in 22 participant exclusions (see Oppenheimer et al., 2009 for support in ensuring manipulations are valid for all participants). No participants were suspicious of the categorization task. This resulted in a final sample of 113 participants (58% female,  $M_{\text{age}} = 35.64$ ,  $SD = 13.12$ ).

In two conditions, using methods adapted from Branscombe et al. (2007), participants were asked to write about the ways that they have benefited because of their racial background (i.e., being White). This prompt specifically highlights how

individual participants may have unfairly benefited from their racial background and thus may not deserve their high-status group membership. Subsequent to this racial identity threat, half of these participants completed a self-affirmation task. Participants were asked to rank six values by personal importance and then write about why the highest-ranked item was important to them (Fein & Spencer, 1997; Steele, 1988). In the control condition, participants received no racial identity threat, or self-affirmation task, and instead, like in Study 2b, asked to briefly write about their “life experiences.” After each of these tasks, participants then completed the same racial-categorization task as in Studies 1 and 2. Since levels of White guilt have been associated with White privilege beliefs and discrimination toward Blacks, participants also completed the White Guilt Scale (Swim & Miller, 1999), which includes five items that assess respondents’ current levels of guilt (i.e., “White people have certain advantages that minorities do not have in this society”). Participants provided their responses on a 7-point scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). One item was reverse scored and an average was calculated for each participant with higher scores indicating higher levels of White guilt ( $\alpha = .87$ ). Lastly, participants were again probed for suspicions.

## RESULTS AND DISCUSSION

A one-way ANOVA revealed significant variation among conditions,  $F(2, 110) = 3.22, p = .044, \eta_p^2 = .06$ . Planned contrasts showed that the racial identity threat caused White participants to categorize racially ambiguous Black/White faces more often as members of the Black racial outgroup ( $M = 59\%, SD = 14\%$ ) in comparison to those who completed the self-affirmation task ( $M = 50\%, SD = 20\%$ ),  $t(110) = 2.32, p = .02, r = .22$ , and to those in the control condition ( $M = 54\%, SD = 16\%$ ),  $t(110) = 2.02, p = .046, r = .19$ ; participants in the self-affirmation condition and the control condition did not differ in their categorization,  $t(110) = 0.50, p = .62$ . There was no variation among conditions for levels of White guilt,  $F(2, 109) = .03, p = .97$  (planned contrasts all  $ts < .21$ , all  $ps > .83$ ), nor did White guilt scores correlate with the number of faces categorized as Black,  $r = -.06, p = .52$ .<sup>1</sup>

These findings are consistent with the hypothesis that threatening a specific source of social belonging—racial identity—can lead to enhanced group protection that results in excluding more racially ambiguous individuals from the ingroup. Yet such biased racial categorization is not inevitable. A simple self-affirmation brought categorization back to control levels. These findings are consistent with predictions made by social identity theory, wherein high status groups endorse more negative perceptions of lower status groups when their high status is threatened (Hornsey, Spears, Cremers, & Hogg, 2003; Tajfel & Turner, 1986; Turner & Brown, 1978). One might predict that levels of White guilt linked to ideas of privilege may strongly motivate someone to avoid unfairly applying this guilt onto racial minorities by erring toward identifying ambiguous targets as outgroup members. However, since we found no differences across conditions regarding

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1. One participant skipped the White guilt scale questions resulting in one less degree of freedom for this analysis.

levels of White guilt in the present study, we argue that these categorization outcomes were due to motivation stemming from threat to White individuals' privileged status specifically which led to their adoption of more stringent boundaries between the ingroup and outgroup. Removing this threat eliminated such over-exclusion, illustrating the malleability of social categorization and its reliance on fulfilling self-relevant goals.

## META-ANALYSIS

Following procedures outlined in Rosenthal (1991) for combining effect sizes, we performed a meta-analysis of the main effects across the current article (i.e., associations between threat, need to belong, and racial identification with categorization of racially ambiguous targets as Black). A meta-analysis was conducted on these four effects (one effect per study, taking the fisher inverse of the average [fisher-transformed] zero-order correlations per the two Study 1 effects; comparing to control conditions in Studies 2b and 3, and only White participants in Study 2b). This meta-analysis yielded an overall effect size of  $r = .263$  (sample-size weighted  $r = .266$ ), a significance level of  $p < .0001$ , and a fail-safe  $N$  of 25 unsupportive studies that would be needed to change the combined significance level to nonsignificant.

## GENERAL DISCUSSION

The growing multiracial population challenges traditional notions of race and poses obstacles for perceivers accustomed to utilizing monoracial categories. Here, four studies demonstrated that social belonging needs—derived from either chronic need to belong, racial identification, or from external social threat—may serve to activate selective affiliation with a salient ingroup and encourage either more stringent or more inclusive boundaries, depending on the group's status (i.e., high status, majority or low status, minority). White, high status participants with a higher need to belong and higher levels of racial identification excluded marginally more people with unclear group membership from the ingroup (Study 1). This therefore highlights two pathways that affect ambiguous race categorization for individuals who value affiliation with others. However, both pathways caused White participants to police the boundaries of their ingroup by maintaining clear distinctions between who is Black and who is White (Studies 2a, 2b, and 3). Black participants also engaged in self-serving biases but categorized ambiguous faces more often as the ingroup (Study 2b). More specifically, situationally induced threats to general social belonging (Studies 2a and 2b) and to racial identity (Study 3), also impacted where group boundaries were drawn, demonstrating a causal link between belonging motives—both general belonging and specific racial group belonging—and biased categorization of racially ambiguous faces. Finally, a meta-analysis demonstrated a reliable relationship between need to belong, racial identification, and threat with categorizing racially ambiguous faces as Black.

This work integrates distinct literatures on racial categorization, the influence of social motives on social perception, and social belonging to demonstrate that in addition to perceptual and cognitive determinants of racial categorization, the process of racial categorization is self-motivated as well. Additionally, our results suggest that social belonging motives in general can bias categorization of racially ambiguous people for both majority and minority individuals, with potential downstream consequences for how racially ambiguous individuals are treated during social interactions. Once race is perceived it is known to directly affect real-world outcomes such as criminal trial outcomes, policing tactics, and sentencing (e.g., Sommers & Marotta, 2014) and health outcomes including the type of care and diagnoses patients receive (e.g., van Ryn & Burke, 2000; van Ryn et al., 2011). Therefore, the present findings reveal how certain contexts can promote and mitigate biased racial categorization, supporting the need for future work to identify additional pathways toward social inclusion.

Furthermore, these findings highlight some of the moderating contexts that affect racial categorizations particularly as racial categories become more ambiguous. Although the current results are consistent with the mechanisms we theorize from integrating the aforementioned literatures, we do not have empirical data concerning the specific underlying mechanisms involved in how racial ambiguity is resolved. The current studies do make clear that two different motivations exert a considerable influence on racial categorization and underscore how categorizations are often biased in a self-serving manner. These findings also corroborate findings from a growing body of work that show how a variety of social motivations can impact racial categorizations of racially ambiguous targets (e.g., Chao, Hong, & Chiu, 2013; Krosch & Amodio, 2014; Maner, Miller, Moss, Leo, & Plant, 2012). We do not mean to suggest, however, that biased racial categorizations are only due to social motivation; past research has certainly demonstrated conditions when biased racial categorizations are explained by cognitive accounts (e.g., Halberstadt et al., 2011). Instead, we propose that any explanation for a racial categorization must be a nuanced one in which both cognitive and social-motivational factors are considered.

One alternative explanation for our results could be that our manipulations (for example, social exclusion in Studies 2a and 2b) influenced participants' mood, which could cause these same categorization outcomes. However, Study 1's correlational design, which simply measured need to belong without inducing any manipulation that could affect participants' mood, still was associated with these biased racial categorizations. Furthermore, Study 2a showed that participants' feelings of positivity and negativity did not independently predict ambiguous categorization outcomes and in Study 2b mood did not differ after writing about social exclusion or inclusion, suggesting that the observed effects are not likely a byproduct of mood.

It is also important to note that the present studies only examine categorization for racially ambiguous Black/White faces as either White or Black. We selected

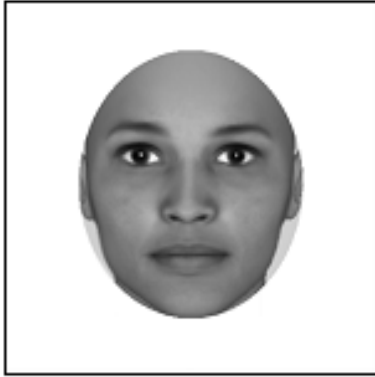


these groups because of the specific history of Black–White relations in the United States, which consequently makes Black individuals a highly salient racial category. We also explicitly chose a dichotomous categorization task to map most clearly onto past work on racially ambiguous categorization (e.g., Castano et al., 2002; Chao et al., 2013; Ho et al., 2011). Recent work, however, has argued for the importance of including a multiracial category when examining categorization of racially ambiguous individuals (Chen & Hamilton, 2012). While Chen and Hamilton (2012) found that the category of multiracial is relatively cognitively inaccessible to the average perceiver, future research should examine how social motivations impact categorization when a multiracial category is present. Additionally, other research has shown that the boundary for categorizing faces as White or as minority depends largely on the current racial hierarchy in the U.S., such that people often need significantly more information or evidence to categorize a Black/White biracial individual as White compared to an Asian/White biracial individual (Ho et al., 2011). On the basis of these findings, it is entirely possible that the current results might be less pronounced if we examined Asian/White ambiguous face categorization outcomes—a question worthy of future empirical assessment. Relatedly, future research should examine whether social belonging or other motivations impact people’s reliance on specific subsets of features over others when making their racial categorizations. Finally, it’s important to note that these results may be specific to the intergroup context of the U.S. While we do not know if these results would replicate in contexts outside of the U.S. where race may be either a less salient social identity or defined differently, we do believe that the processes involved—social belonging biasing social categorizations when group membership is ambiguous—should apply more broadly.

In sum, the boundaries created by the mere act of categorizing another individual matter a great deal. Our results are consistent with a social belonging motivated explanation by pinpointing the effect of not only individual differences related to maintaining social belonging on racial categorization, such as one’s general need to belong and level of racial ingroup identification, but context-specific (i.e., threats to belonging and racial identity) and racial group membership differences as well. Additionally, these studies highlight that belonging motives drive individuals to seek out selective affiliation, whereby individuals who experience threats to their social belonging react by choosing who to let in the ingroup (see also Maner et al., 2007; Navarrete et al., 2004). With the multiracial population rapidly growing, exploring the factors that impact the psychological boundaries of group membership will ultimately help illuminate how this understudied population is perceived by and functions within society.

## APPENDIX. FEMALE AND MALE STIMULI EXAMPLES

(note: stimuli were shown in color during the study)



## REFERENCES

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Baumeister, R. F., & Leary, M. R. (1995). The need to belong: Desire for interpersonal attachments as a fundamental human motivation. *Psychological Bulletin*, *117*, 497-529. doi: 10.1037/0033-2909.117.3.497
- Beck, A. T., Emery, G., & Greenberg, R. L. (1985). *Anxiety disorders and phobias: A cognitive perspective*. New York: Basic Books.
- Blair, I. V., Judd, C. M., Sadler, M. S., & Jenkins, C. (2002). The role of Afrocentric features in person perception: Judging by features and categories. *Journal of Personality and Social Psychology*, *83*, 5-25. doi: 10.1037/0022-3514.83.1.5
- Blascovich, J., Wyer, N. A., Swart, L. A., & Kibler, J. L. (1997). Racism and racial categorization. *Journal of Personality and Social Psychology*, *72*, 1364-1372. doi: 10.1037/0022-3514.72.6.1364
- Branscombe, N. R. (1998). Thinking about one's gender group's privileges or disadvantages: Consequences for well-being in women and men. *British Journal of Social Psychology*, *37*, 167-184. doi: 10.1111/j.2044-8309.1998.tb01163.x
- Branscombe, N. R. (2004). A social psychological process perspective on collective guilt. In N. R. Branscombe & B. Doosje (Eds.), *Collective guilt: International perspectives* (pp. 320-334). New York: Cambridge University Press.
- Branscombe, N. R., Schmitt, M. T., & Schiffhauer, K. (2007). Racial attitudes in response to thoughts of White privilege. *European Journal of Social Psychology*, *37*, 203-215. doi: 10.1002/ejsp.348
- Brewer, M. B. (1991). The social self: On being the same and different at the same time. *Personality and Social Psychology Bulletin*, *17*, 475-482. doi: 10.1177/0146167291175001
- Brewer, M. (2007). The importance of being we: Human nature and intergroup relations. *American Psychologist*, *62*, 728-738. doi: 10.1037/0003-066X.62.8.728
- Buhrmester, M. D., Kwang, T., & Gosling, S. D. (2011). Amazon's Mechanical Turk: A new source of inexpensive, yet high-quality data? *Perspectives on Psychological Science*, *6*, 3-5. doi: 10.1177/1745691610393980

- Cacioppo, J. T., & Hawkey, L. C. (2009). Perceived social isolation and cognition. *Trends in Cognitive Sciences*, *13*, 447-454. doi: 10.1016/j.tics.2009.06.005
- Castano, E., Yzerbyt, V., Bourguignon, D., & Seron, E. (2002). Who may enter? The impact of ingroup identification on ingroup/outgroup categorization. *Journal of Experimental Social Psychology*, *38*, 315-322. doi: 10.1006/jesp.2001.1512
- Chao, M. M., Hong, Y., & Chiu, C. (2013). Essentializing race: Its implication on racial categorization. *Journal of Personality and Social Psychology*, *104*, 619-634. doi: 10.1037/a0031332
- Chen, J. M., & Hamilton, D. L. (2012). Natural ambiguities: Racial categorization of multiracial individuals. *Journal of Experimental Social Psychology*, *48*, 152-164. doi: 10.1016/j.jesp.2011.10.005
- Correll, J., & Park, B. (2005). A model of the ingroup as a social resource. *Personality and Social Psychology Review*, *9*, 341-359. doi: 10.1207/s15327957pspr0904\_4
- Davis, F. J. (1991). *Who is Black? One nation's definition*. University Park, PA: Pennsylvania State University Press.
- Fein, S., & Spencer, S. J. (1997). Prejudice as self-image maintenance: Affirming the self through derogating others. *Journal of Personality and Social Psychology*, *73*, 31-44. doi: 10.1037/0022-3514.73.1.31
- Freeman, J. B., & Ambady, N. (2011). A dynamic interactive theory of person construal. *Psychological Review*, *118*, 247-279. doi: 10.1037/a0022327
- Freeman, J. B., Pauker, K., Apfelbaum, E. P., & Ambady, N. (2010). Continuous dynamics in the real-time perception of race. *Journal of Experimental Social Psychology*, *46*, 179-185. doi: 10.1016/j.jesp.2009.10.002
- Freeman, J. B., Penner, A. M., Saperstein, A., Scheutz, M., & Ambady, N. (2011). Looking the part: Social status cues shape race perception. *PLoS ONE*, *6*, e25107. doi: 10.1371/journal.pone.0025107
- Gaither, S. E. (2015). "Mixed" results: Multiracial research and identity explorations. *Current Directions in Psychological Science*, *24*, 114-119. doi: 10.1177/0963721414558115
- Gardner, W. L., Pickett, C. L., & Brewer, M. B. (2000). Social exclusion and selective memory: How the need to belong influences memory for social events. *Personality and Social Psychology Bulletin*, *26*, 486-496. doi: 10.1177/0146167200266007
- Gardner, W. L., Pickett, C. L., Jefferis, V., & Knowles, M. (2005). On the outside looking in: Loneliness and social monitoring. *Personality and Social Psychology Bulletin*, *31*, 1549-1560. doi: 10.1177/0146167205277208
- Halberstadt, J., Sherman, S. J., & Sherman, J. W. (2011). Why Barack Obama is Black: A cognitive account of hypodescent. *Psychological Science*, *22*, 29-33. doi: 10.1177/0956797610390383
- Heine, S. J., & Lehman, D. R. (1997). Culture, dissonance, and self-affirmation. *Personality and Social Psychology Bulletin*, *23*, 389-400. doi: 10.1177/0146167297234005
- Ho, A. K., Sidanius, J., Levin, D. T., & Banaji, M. R. (2011). Evidence for hypodescent and racial hierarchy in the categorization and perception of biracial individuals. *Journal of Personality and Social Psychology*, *100*, 492-506. doi: 10.1037/a0021562
- Hornsey, M. J., Spears, R., Cremers, I., & Hogg, M. A. (2003). Relations between high and low power groups: The importance of legitimacy. *Personality and Social Psychology Bulletin*, *29*, 219-227. doi: 10.1177/0146167202239047
- Knowles, E., & Peng, K. (2005). White selves: Conceptualizing and measuring a dominant-group identity. *Journal of Personality and Social Psychology*, *89*, 223-241. doi: 10.1037/0022-3514.89.2.223
- Knowles, M. L., & Gardner, W. L. (2008). Benefits of group membership: The activation and amplification of group identities in response to social rejection. *Personality and Social Psychology Bulletin*, *34*, 1200-1213. doi: 10.1177/0146167208320062
- Krosch, A. R., & Amodio, D. M. (2014). Economic scarcity alters the perception of race. *Proceedings of the National Academy of Sciences*, *111*, 9079-9084. doi: 10.1073/pnas.1404448111
- Krosch, A. R., Berntsen, L., Amodio, D. M., Jost, J. T., & Van Bavel, J. J. (2013). On the ideology of hypodescent: Political conservatism predicts categorization of racially ambiguous faces as Black. *Journal of Experimental Social Psychology*, *48*, 1196-1203. doi: 10.1016/j.jesp.2013.05.009

- Kteily, N. S., Cotterill, S., Sidanius, J., Sheehy-Skeffington, J., & Bergh, R. (2014). "Not one of us": Predictors and consequences of denying ingroup characteristics to ambiguous targets. *Personality and Social Psychology Bulletin*, *40*, 1231-1247. doi: 10.1177/0146167214539708
- Kurzban, R., & Leary, M. R. (2001). Evolutionary origins of stigmatization: The functions of social exclusion. *Psychological Bulletin*, *27*, 187-208. doi: 10.1037/0033-2909.127.2.187
- Lakin, J. L., Chartrand, T. L., & Arkin, R. A. (2008). I am too just like you: Nonconscious mimicry as an automatic behavioral response to social exclusion. *Psychological Science*, *19*, 816-822. doi: 10.1111/j.1467-9280.2008.02162.x
- Leary, M. R., Kelly, K. M., Cottrell, C. A., & Schreindorfer, L. S. (2007). Individual differences in the need to belong: Mapping the nomological network. Unpublished manuscript, Duke University.
- Leonardelli, G. J., Pickett, C. L., & Brewer, M. B. (2010). Optimal distinctiveness theory: A framework for social identity, social cognition, and intergroup relations. *Advances in Experimental Social Psychology*, *43*, 63-113. doi: 10.1016/S0065-2601(10)43002-6
- Levin, D. T. (2000). Race as a visual feature: Using visual search and perceptual discrimination tasks to understand face categories and the cross-race recognition deficit. *Journal of Experimental Psychology: General*, *129*, 559-574. doi: 10.1037/0096-3445.129.4.559
- Leyens, J., & Yzerbyt, V. Y. (1992). The ingroup overexclusion effect: Impact of valence and confirmation on stereotypical information search. *European Journal of Social Psychology*, *22*, 549-569. doi: 10.1002/ejsp.2420220604
- Luthanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin*, *18*, 302-318. doi: 10.1177/0146167292183006
- Maddox, K. B., & Gray, S. (2002). Cognitive representations of African Americans: Re-exploring the role of skin tone. *Personality and Social Psychological Bulletin*, *28*, 250-259. doi: 10.1177/0146167202282010
- Maner, J. K., DeWall, N. C., Baumeister, R. F., & Schaller, M. (2007). Does social exclusion motivate interpersonal reconnection? Resolving the "porcupine problem." *Journal of Personality and Social Psychology*, *92*, 42-55. doi: 10.1037/0022-3514.92.1.42
- Maner, J. K., Miller, S. L., Moss, J. H., Leo, J. L., & Plant, E. A. (2012). Motivated social categorization: Fundamental motives enhance people's sensitivity to basic social categories. *Journal of Personality and Social Psychology*, *103*, 70-83. doi:10.1037/a0028172
- Miller, S. L., Maner, J. K., & Becker, D. V. (2010). Self-protective biases in group categorization: Threat cues shape the psychological boundary between "us" and "them." *Journal of Personality and Social Psychology*, *99*, 62-77. doi: 10.1037/a0018086
- Navarrete, C. D., Kurzban, R., Fessler, D. M. T., & Kirkpatrick, L. A. (2004). Anxiety and intergroup bias: Terror management or coalitional psychology? *Group Processes and Intergroup Relations*, *7*, 370-397. doi: 10.1177/1368430204046144
- Oppenheimer, D. M., Meyvis, T., & Davidenko, N. (2009). Instructional manipulation checks: Detecting satisficing to increase statistical power. *Journal of Experimental Social Psychology*, *45*, 867-872. doi: 10.1016/j.jesp.2009.03.009
- Pauker, K., Rule, N. O., & Ambady, N. (2010). Ambiguity and social perception. In E. Balcetis & G. D. Lassiter (Eds.), *The social psychology of visual perception* (pp. 13-29). New York: Psychology Press.
- Pauker, K., Weisbuch, M., Ambady, N., Sommers, S. R., Adams, R. B., Jr., & Ivcevic, Z. (2009). Not so black and white: Memory for ambiguous group members. *Journal of Personality and Social Psychology*, *96*, 795-810. doi: 10.1037/a0013265
- Pettigrew, T. F., Allport, G. W., & Barnett, E. O. (1958). Bionocular resolution and perception of race in South Africa. *British Journal of Psychology*, *49*, 265-278. doi: 10.1111/j.2044-8295.1958.tb00665.x
- Pickett, C. L., & Gardner, W. L. (2005). The social monitoring system: Enhanced sensitivity to social cues as an adaptive response to social exclusion. In K. D. Williams, J. P. Forgas, & W. von Hippel (Eds.), *The social outcast: Ostracism, social exclusion, rejection, and bullying* (pp. 213-226). New York: Psychology Press.

- Pickett, C. L., Gardner, W. L., & Knowles, M. (2004). Getting a cue: The need to belong and enhanced sensitivity to social cues. *Personality and Social Psychology Bulletin*, *30*, 1095-107. doi: 10.1177/0146167203262085
- Plaks, J. E., Malahy, L. W., Sedlins, M., & Shoda, Y. (2012). Folk beliefs about human genetic variation predict discrete versus continuous racial categorization and evaluative bias. *Social Psychological and Personality Science*, *3*, 31-39. doi: 10.1177/1948550611408118
- Pratto, F., Sidanius, J., & Levin, S. (2006). Social dominance theory and the dynamics of intergroup relations: Taking stock and looking forward. *European Review of Social Psychology*, *17*, 271-320. doi: 10.1080/10463280601055772
- Rosenthal, R. (1991). *Meta-analytic procedures for social research*. Newbury Park, CA: Sage.
- Sacco, D. F., Wirth, J. H., Hugenberg, K., Chen, Z., & Williams, K. D. (2011). The world in Black and White: Ostracism enhances the categorical perception of social information. *Journal of Experimental Social Psychology*, *47*, 836-842. doi: 10.1016/j.jesp.2011.03.001
- Schmitt, M. T., & Branscombe, N. R. (2002). The meaning and consequences of perceived discrimination in disadvantaged and privileged social groups. *European Review of Social Psychology*, *12*, 167-199. doi: 10.1080/14792772143000058
- Sherman, D. K., & Cohen, G. L. (2006). The psychology of self-defense: Self-affirmation theory. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 38, pp.183-242). San Diego, CA: Academic.
- Shih, M. J., & Sanchez, D. T. (2005). Perspectives and research on the positive and negative implications of having multiple racial identities. *Psychological Bulletin*, *131*, 569-591. doi: 10.1037/0033-2909.131.4.569
- Slepian, M. L., Weisbuch, M., Pauker, K., Bastian, B., & Ambady, N. (2014). Fluid movement and fluid social cognition: Bodily movement influences essentialist thought. *Personality and Social Psychology Bulletin*, *40*, 111-120. doi: 10.1177/0146167213506467
- Sommers, S. R., & Marotta, S. A. (2014). Racial disparities in legal outcomes on policing, charging decisions, and criminal trial proceedings. *Policy Insights from the Behavioral and Brain Sciences*, *1*, 103-111. doi: 10.1177/2372732214548431
- Steele, C. M. (1988). The psychology of self-affirmation: Sustaining the integrity of the self. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 21, pp. 261-302). New York: Academic.
- Stepanova, E. V., & Strube, M. J. (2012). What's in a face? The role of skin tone, facial physiognomy, and color presentation mode of facial primes in affective priming effects. *The Journal of Social Psychology*, *152*, 212-227. doi: 10.1080/00224545.2011.597797
- Swim, J. K., & Miller, D. L. (1999). White guilt: Its antecedents and consequences for attitudes toward affirmative action. *Personality and Social Psychology Bulletin*, *25*, 500-514. doi: 10.1177/0146167299025004008
- Tajfel, H., & Turner, J. C. (1986). The social identity theory of intergroup conflict. In S. Worchel & W. G. Austin (Eds.), *Psychology of intergroup relations* (pp. 23-45). Mahwah, NJ: Erlbaum.
- Twenge, J. M., Baumeister, R. F., Tice, D. M., & Stucke, T. S. (2001). If you can't join them, beat them: Effects of social exclusion on aggressive behavior. *Journal of Personality and Social Psychology*, *81*, 1058-1069. doi: 10.1037/0022-3514.81.6.1058
- Twenge, J. M., & Campbell, W. K. (2003). "Isn't it fun to get the respect that we're going to deserve?" Narcissism, social rejection, and aggression. *Personality and Social Psychology Bulletin*, *29*, 261-272. doi: 10.1177/0146167202239051
- Turner, J. C., & Brown, R. (1978). Social status, cognitive and intergroup relations. In H. Tajfel (Ed.), *Differentiation between social groups* (pp. 201-234). London: Academic.
- U.S. Census Bureau. (2009). Projected change in population size by race and Hispanic origin for the United States: 2000 to 2050 [data set]. *United States Census 2000*. Retrieved from: <http://www.census.gov/population/www/projections/2009cnmsSumTabs.html>
- Van Bavel, J. J., Swencionis, J. K., O'Connor, R. C., & Cunningham, W. A. (2012). Moti-

- vated social memory: Belonging needs moderate the own-group bias in face recognition. *Journal of Experimental Social Psychology*, 48, 707-713. doi: 10.1016/j.jesp.2012.01.006
- van Ryn, M., Burgess, D., Dovidio, J., Phelan, S., Saha, S., Malat, J., Griffin, J., Fu, S., & Perry, S. (2011). The impact of racism on clinician cognition, behavior, and clinical decision making. *Du Bois Review*, 8, 199-218. doi: 10.1017/S1742058X11000191
- Van Ryn, M., & Burke, J. (2000). The effect of patient race and socio-economic status on physicians' perceptions of patients. *Social Science and Medicine*, 50, 813-828. doi: 10.1016/S0277-9536(99)00338-X
- Webster, M. A., Kaping, D., Mizokami, Y., & Duhamel, P. (2004). Adaptation to natural facial categories. *Nature*, 428, 557-561. doi: 10.1038/nature02420
- Williams, K. D. (2007). Ostracism. *Annual Review of Psychology*, 58, 425-452. doi: 10.1146/annurev.psych.58.110405.085641
- Williams, K. D., Cheung, C. K., & Choi, W. (2000). Cyberostracism: Effects of being ignored over the Internet. *Journal of Personality and Social Psychology*, 79, 748-762. doi: 10.1037/0022-3514.79.5.748
- Williams, K. D., & Jarvis, B. (2006). Cyberball: A program for use in research on interpersonal ostracism and acceptance. *Behavior Research Methods*, 38, 174-180. doi: 10.3758/BF03192765
- Yzerbyt, V. Y., Leyens, J.-P., & Bellour, F. (1995). The ingroup overexclusion effect: Identity concerns in decisions about group membership. *European Journal of Social Psychology*, 25, 1-16. doi: 10.1002/ejsp.2420250102