A Social Identity Approach to Person Memory : Group Membership, Collective Identification, and Social Role Shape Attention and Memory

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A Social Identity Approach to Person Memory: Group Membership, Collective Identification, and Social Role Shape Attention and Memory

Jay J. Van Bavel[1] and William A. Cunningham[2]

Abstract

Evidence indicates that superior memory for own-group versus other-group faces (termed *own-group bias*) occurs because of social categorization: People are more likely to encode own-group members as individuals. The authors show that aspects of the perceiver's social identity shape social attention and memory over and above mere categorization. In three experiments, participants were assigned to a mixed-race minimal group and showed own-group bias toward this minimal group, regardless of race. Own-group bias was mediated by attention toward own-group faces during encoding (Experiment 1). Furthermore, participants who were highly identified with their minimal group had the largest own-group bias (Experiment 2). However, social affordances attenuated own-group bias—Memory for other-group faces was heightened among participants who were assigned to a role (i.e., spy) that required attention toward other-group members (Experiment 3). This research suggests that social identity may provide novel insights into person memory.

Keywords

intergroup, categorization, social identity, identification, attention, memory

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Nearly a century of research has examined how social categories alter the way people perceive the social world. One of the most robust phenomena in social perception is the finding that people are better at remembering people from their own race than those from other races (Feingold, 1914)—termed the *cross-race effect, same-race bias*, or *own-race bias* (ORB). The ORB has been shown across a range of ethnic groups and paradigms (Meissner & Brigham, 2001; Ng & Lindsay, 1994) and can cause an eyewitness to misidentify a suspect of another race, leading to a wrongful conviction of an innocent person (Brigham & Ready, 2005). Indeed, approximately 36% of wrongful convictions are due to erroneous cross-race eyewitness identification in which Caucasian witnesses misidentify minority defendants (Scheck, Neufeld, & Dwyer, 2000). Although the ORB has traditionally been explained in terms of perceptual expertise, recent research suggests that social categorization and motivational factors may play a role (Hugenberg, Young, Bernstein, & Sacco, 2010; Sporer, 2001; Van Bavel, Swencionis, O'Connor, & Cunningham, 2012). The current research extends these models by providing evidence that aspects of the *perceiver's* social identity, including the salience and significance of their social group and their role within the group (Tajfel & Turner, 1979; Turner, Oakes, Haslam, & McGarty, 1994), shape person memory over and above mere categorization.

According to perceptual expertise theories, people are experts at identifying own-race relative to other-race faces due to their extensive exposure to own-race individuals, including family, friends, and acquaintances, and this perceptual learning causes ORB (Malpass & Kravitz, 1969; see Meissner & Brigham, 2001, for a review). Although studies have shown that lifelong experience with own-race faces is associated with the ORB (Sangrigoli, Pallier, Argenti, Ventureyra, & de Schonen, 2005), interracial contact (a proxy for expertise) can only explain 2% of the ORB (Meissner & Brigham, 2001).

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Recently, social categorization has displaced perceptual expertise as the dominant explanation for ORB. Sporer (2001) argued that categorizing others as own-group versus other-group members may alter the depth or type of processing they receive, such that own-race faces are processed as individuals and other-race faces are processed as interchangeable representatives of a social category (see also Hugenberg et al., 2010; Levin, 1996, 2000). As such, the influence of categorization on memory extends beyond race (e.g., Rule, Ambady, Adams, & Macrae, 2007; Shutts & Kinzler, 2007; Wright & Sladden, 2003). Indeed, people have superior memory for own-group faces in the context of arbitrary groups (Bernstein, Young, & Hugenberg, 2007). For instance, White participants who were randomly assigned to the "green" or "red" team had superior memory for White faces who were putatively members of their own group. Thus, mere categorization into groups may be sufficient to produce the own-group memory bias (see also Judd & Park, 1988; Ostrom & Sedikides, 1992)—especially among people with a high need to belong (Van Bavel et al., 2012).

Categorizing people into groups may even override the effects of longstanding, visually salient social categories like race. For example, Shriver, Young, Hugenberg, Bernstein, and Lanter (2008) showed White participants pictures of Black and White faces who were ostensibly students at their university or another university. Participants' memory for own-race faces was impaired for other-group compared with own-group members. In a similar study, Hehman, Maniab, and Gaertner (2010) presented mixed-race groups of faces simultaneously during a learning task. When the faces were grouped by race (i.e., Black faces in one corner of the computer and White faces in the opposite corner), participants had superior recognition for own-race faces. In contrast, when the faces were grouped by university affiliation (i.e., University of Delaware faces in one corner of the computer screen and James Madison University faces in the opposite corner), participants had superior memory for own-university faces, regardless of their race. A series of recent neuroimaging studies in our lab suggests that membership in a minimal group may also override racial bias in components of the face-processing network, including the amygdala (Van Bavel, Packer, & Cunningham, 2008) and Fusiform Face Area (Van Bavel, Packer, & Cunningham, 2011). Thus, when race is unrelated to group membership, other salient social categories may drive social perception (Kurzban, Tooby, & Cosmides, 2001; Sidanius & Pratto, 1999) and evaluation (Van Bavel & Cunningham, 2009). Moreover, theories of self- and social categorization suggest that the social identity of the perceiver (and not just the target) can influence person memory.

A Social Identity Framework

The work on social categorization indicates the power of social identities to shape social cognition (see Hastorf & Cantril, 1954; Turner et al., 1994; Van Bavel & Cunningham, 2011). However, social identities entail not only an individual's knowledge that they *belong to a certain group* but also the *value or significance* of this group, their *relationship to the group and its members*, and the associations they have with the group and its members (Tajfel, 1982). This article examines social memory using a social identity framework that extends the social categorization approach and provides several novel predictions in the domain of person memory (see also J. P. Wilson & Hugenberg, 2010). Specifically, we examine whether other aspects of social identity moderate own-group bias, including the significance or value of that identity and the relationship of an individual to other members in their group (i.e., social role). We also examine attention during encoding as a potential mediator between social identity and memory.

Significance. People vary in the extent to which they identify with different groups, and the psychological significance of these collective identities can moderate their attitudes and behaviors toward own-group and other-group members (see Ellemers, Spears, & Doosje, 1999, for a review). Therefore, the effects of social categorization on behavior may be moderated by the significance of one's social identity (Ashmore, Deaux, & McLaughlin-Volpe, 2004). This identity approach is consistent with models of person perception (Brewer, 1988; Fiske & Neuberg, 1990), in which motivation provokes deeper encoding. For example, Brewer (1988) suggests that when others are relevant (e.g., own-group members), people will process them as individuals rather than interchangeable exemplars of a social category (Ruscher & Fiske, 1990; Ruscher, Fiske, Miki, & Van Manen, 1991). Thus, the significance of an identity may motivate biases in social perception, including more in-depth processing of own-group members. Thus, participants with the strongest identification with their minimal group should show the largest own-group biases in memory.

Social role. Group members attain status by providing value to their groups (Anderson & Kilduff, 2009). Research on social exchange theory (Blau, 1964) and selective investment theory (Brown & Brown, 2006) suggests that individuals pursue status by enhancing the apparent value they provide to their group. Thus, successfully fulfilling a role may be an important means to cementing one's status within a group (Harkins & Petty, 1982). People have different roles within a social group, which prescribe different patterns of behavior (Stryker, 1968; Stryker & Burke, 2000). For example, two equally patriotic members of the military can serve their country in radically different ways—whereas a soldier might dress in the colors of their country, a spy might dress like the enemy. Thus, social roles within groups afford people different means to fulfill their goals (see also Zebrowitz, 2006). If a person believes that own-group members are more likely to allocate rewards and/or punishments, they will generally pay attention to own-group members. However, if their role suggests they should attend to other-group members (as in the case of the spy), they will pay more attention to other-group members. As such, social roles may moderate the effects of self-categorization on person memory. Furthermore, people's perceived ability to make unique contributions to their group might moderate the effects of social role.

Current Research

In three experiments, we assigned participants to minimal groups and examined their memory for own- and other-group members. Specifically, participants were assigned to one of two mixed-race groups, allowing us to examine the effect of race and group membership on face memory, before completing a three-phase face recognition paradigm. Participants were initially assigned to one of two mixed-race groups. During phase one, participants observed faces from both groups. During phase two, participants completed a filler task. During phase three, participants completed a face recognition task in which they saw a series of faces, some of which were seen in phase one and some of which were new. Participants reported whether each face was "old" or "new."

These experiments examined whether social identification with a minimal, mixed-race group would increase memory for own-group members and override the ORB. *Perceptual expertise* theories suggest that ORB may stem from perceptual expertise with own-race faces (Malpass & Kravitz, 1969), whereas social categorization theories suggest that ORB stems from categorizing faces into own-group and other-group members (Sporer, 2001). If participants' self-categorization shifts from a racial identity to a minimal group identity, they should have superior memory for own-group members—regardless of their race (Hehman et al., 2010; Van Bavel et al., 2008, 2011). Indeed, self-categorization with a group may increase the psychological significance of own-group members and heighten own-group bias. Therefore, we predicted superior memory for minimal own-group members, regardless of race (Experiments 1-3). However, multiple-categorizable targets are generally evaluated according to the most salient social category (Macrae, Bodenhausen, & Milne, 1995; Mitchell, Nosek, & Banaji, 2003; Mullen, Migdal, & Hewstone, 2001; Urban & Miller, 1998). Therefore, it remained possible that participants' extensive experience with own-race faces, combined with the visual salience of race, would lead to ORB. It was also possible that the effects of these categories would be additive or interactive (Crisp & Hewstone, 2007).

Although research suggests that social categorization may be central to own-group bias, there is still little work on the proximal mechanisms that mediate these biases (but see Hugenberg & Corneille, 2009; Van Bavel et al., 2011). For instance, own-group faces may elicit a search for individuating characteristics or receive sustained attention during the encoding phase, whereas other-group faces may be simply ignored (Rodin, 1987). Alternatively, own-group faces may receive deeper encoding, while other-group faces are processed superficially or activate category information (e.g., stereotypes) that impairs recognition (Sporer, 2001). We examined one potential mechanism for these biases: attention during encoding (Experiment 1). People direct attention toward important attitude objects (Roskos-Ewoldsen & Fazio, 1992). Therefore, we predicted that participants in minimal groups would allocate more sustained attention to own-group versus other-group members during learning and that attention would mediate subsequent biases in memory.

More importantly, we were interested in testing a social identity approach to memory. We predicted that the significance (Experiment 2) and social roles (Experiment 3) associated with a given social identity would moderate social memory. Going beyond the effects of social categorization, we predicted that other-group members might actually be encoded as individuals when prescribed by participants' social role. Taken together, these experiments sought to show that social identity can provide a framework for understanding attention and memory.

Experiment 1: Attention During Learning Mediates Own-Group Bias

Overview

Previous research suggests that self-categorization with a minimal group can lead to own-group bias (Bernstein et al., 2007). There is still little research, however, on the cognitive factors that mediate own-group memory bias. For instance, a recent article suggests that attention during encoding plays an important role in producing own-group biases in memory (Young, Bernstein, & Hugenberg, 2010). In two studies, Young and colleagues (2010) found that manipulations shown to moderate own-race and own-group biases affected memory when implemented prior to learning but did not alter memory when implemented after learning. Therefore, we predicted that individual differences in attention to own-group members during learning would mediate superior memory for own-group members.

Method

Participants. One hundred and forty one undergraduates (60 females; mean age = 19.5) successfully completed the experiment for credit. Eight participants were removed for failing to follow instructions (e.g., reporting membership in the wrong group).[1]

Procedure. Participants were brought into the lab in small groups and gave consent to participate in an experiment exploring how people learn about groups. Participants were randomly assigned to one of two groups: the Lions (n = 69) or Tigers (n = 72). There was no premise for group assignment—They were simply told they would be part of one of the groups. Participants were instructed to "please try to remember the faces from both groups!" Participants then completed a face learning task, a filler task, and a recognition memory task.

Learning task. The learning task was adapted from previous research (Van Bavel & Cunningham, 2009; Van Bavel et al., 2008, 2011). Participants learned about two mixed-race groups (i.e., Lions and Tigers): There were three Black and three White males in each group, thus making six members of the Lions and six members of the Tigers. Faces were randomly assigned to groups and counterbalanced to ensure that visual differences between groups could not account for the results. Participants were informed that they had 3 min to memorize the faces, and the faces from only one group would appear on the computer monitor at a time. Participants were instructed to hit a button to toggle between groups. The six faces from the Tigers were on screen until the participants hit the button, at which time the six faces from the Lions appeared (order counterbalanced). Participants were able to toggle back and forth between the faces from the two groups up to 34 times or until 3 min passed, whichever arrived first. A small clock was placed on the bottom of the computer monitor so participants could track time. Time spent attending to each group was recorded.

Filler task. Participants completed several personality questionnaires (e.g., the need for closure, need for cognition, political beliefs). The filler task took 5 to 10 min.

Memory task. To measure recognition memory, we had participants report whether they recognized the faces they saw during the learning task. Participants saw 24 faces (12 old faces and 12 new faces; half Black and half White) and were asked to indicate with a button press whether each face was one of the faces they saw during the learning task (*Yes* or *No*). There were no visual cues to group membership during the memory task. Faces were presented in random order. Response accuracy and latency were recorded. Responses that occurred in less than 300 ms were deleted prior to analysis (5/1,692 trials). These fast responses indicate responses initiated *prior* to perceiving the stimulus (anticipation; Greenwald, McGhee, & Schwartz, 1998). Including these responses did not substantively change the reported results in any experiment. We report the estimated proportion of accurate responses such that higher scores reflect greater accuracy (1.0 = perfect accuracy).[2]

Analysis. Analyses of recognition memory tasks generally focus on mean-level differences in accuracy. However, this approach reduces several trials to a single score for each participant, diminishing power and meaningful variance. We used multilevel modeling to analyze memory data because it allows for the analysis of individual trials and helps overcome violations of independence that occur as a result of correlated trials within participants (Goldstein, 1995). When the assumption of independence is not satisfied, ignoring dependency among trials can lead to invalid statistical conclusions, including the underestimation of standard errors and the overestimation of the significance of predictors (Cohen, Cohen, West, & Aiken, 2003). We created multilevel models with trials nested within participants to provide more appropriate estimates of regression parameters. Second-level variables such as individual difference measures were modeled at the second level and were specified as Level 2 predictors where appropriate (see Van Bavel & Cunningham, 2009). Multilevel models were implemented using SAS PROC MIXED (see Singer, 1998). We report fixed effects for cross-level interactions. There is no option to compute effect sizes for PROC MIXED, so all reported effect sizes are based on means computed at the participant level.

To assess whether group membership affected attention during the learning task, we conducted a 2 (Group: own-group, other-group, Level 2) repeated-measures analysis on time attending to each group. To assess whether group membership and race affected memory, we conducted a 2 (Group: own-group, other-group) × 2 (Race: Black, White) repeated-measures analysis on memory. To assess whether the relationship between group membership and memory was mediated by attentional bias during the learning task, we conducted a mediation analysis on mean-level memory for own-group compared with other-group faces (own-group − other-group).

Results

The effects of group on attention. Experiment 1 was designed to examine whether preferential attention to own-group members during the learning task would mediate superior memory for own-group members. We predicted and found that participants spent more time attending to own-group (M = 78.92s, SE = 2.10) than other-group (M = 69.60s, SE = 2.03) faces, $t(140) = 3.57$, $p < .01$, $d = .30$.

The effects of group and race on memory. Based on our previous research (Van Bavel et al., 2008, 2011), we predicted that participants would have superior memory for own-group members, regardless of their race. As predicted, participants had superior memory for own-group (M = 0.87, SE = 0.02) than other-group (M = 0.83, SE = 0.02) faces, $F(1, 140) = 4.35$, $p < .04$, $d = .18$. Moreover, there was no main effect of race, $F(1, 140) = 2.30$, $p > .13$, or a Group × Race interaction, $F(1, 140) = 0.66$, $p = .42$ (see Table 1 for means and standard deviations of these variables across experiments). The results suggest that intergroup memory is sensitive to the current self-categorization, regardless of race: Own-group members were remembered better than other-group members.

Mediation. We predicted that assignment to a group would increase attention to own-group members during learning, which would increase memory for own-group members. We computed an *attentional bias* score for each participant as a Level 2 predictor representing differential attention to own-group compared with other-group faces (total seconds spent attending to own-group minus seconds spent attending to other-group faces) during the learning task. Higher attentional bias scores reflected more time learning own-group

Table 1. Accuracy During the Recognition Memory Task

	Own-group		Other-group	
	M	*SE*	*M*	*SE*
Experiment 1				
White	.88	.02	.85	.02
Black	.87	.02	.81	.02
Experiment 2				
White	.85	.03	.76	.03
Black	.88	.03	.78	.03
Experiment 3				
White	.85	.03	.81	.03
Black	.83	.03	.77	.03

Note: Mean accuracy as a function of race and group membership in three experiments. Accuracy = the proportion of trials with correct response during the memory task (1.0 = perfect accuracy). The estimated least-squared means and standard errors (*SE*) from multilevel models are presented.

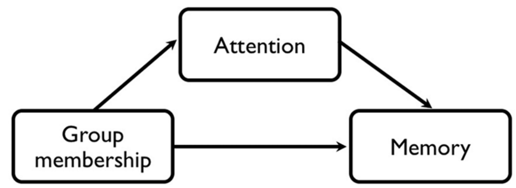

Figure 1. Mediation model showing that the indirect effect of group membership on memory was mediated by attention during the learning task (Experiment 1)
Note: The coefficient associated with attention toward own-group relative to other-group members significantly predicted memory for own-group relative to other-group members, while the direct effect of group membership on memory was no longer a significant predictor.

versus other-group faces. We tested mediation by analyzing the effect of group membership (own-group vs. other-group) on memory, with attentional bias (own-group minus other-group) during learning entered as the proposed mediator and our main effect (group membership: own-group versus other-group) entered as a covariate. Replicating the multilevel model reported above, there was a significant direct effect of group membership on memory (b = .044, $p < .05$). However, the effect of group membership on memory was significantly reduced to b = .027, $p = .21$ when statistically controlling for increases in attentional bias to own-group (versus other-group) members (Sobel $z = 2.45$, $p = .01$). We also used Preacher and Hayes' (2004) bootstrapping macro with 5,000 resamples to test the indirect effect of group membership on memory through attention. The indirect effect of group membership through attention was estimated to lie between .005 and .032 with 95% confidence interval. Because zero is not in the 95% confidence interval, the indirect effect is significantly different from zero at $p < .05$. As shown in Figure 1, these analyses provided convergent evidence that the observed own-group bias in memory was mediated by the corresponding own-group bias in attention during the learning task.

Discussion

As predicted, participants had superior memory for own-group members, regardless of their race. Participants also spent more time encoding own-group compared with other-group faces during the learning task. As predicted, this attentional bias mediated the effects of group membership on subsequent differences in memory. In other words, participants who selectively allocated more attention toward own-group members during learning had the strongest own-group memory bias. In Experiment 2, we examined whether the psychological significance of participants' group membership—termed *collective identification*—moderates own-group bias.

Experiment 2: Own-Group Bias Is Moderated by Collective Identification

Overview

People vary in how much they identify with different groups, and the significance of their identity is a powerful moderator of their attitudes and behaviors toward own-group and other-group members (Ellemers et al., 1999). Therefore, the effects of social categorization on memory should be moderated by the extent to which people value their currently salient social identity. This identity approach is consistent with social cognitive models of social perception (Brewer, 1988; Fiske & Neuberg, 1990), where motivation/relevance directs deeper encoding (or individuation). If these processes stem from motivated aspects of social identity, then participants with the strongest relative identification for the own-group compared with the other-group would show the greatest differential memory for own-group compared with other-group faces. However, if mere categorization is sufficient to increase own-group bias (Bernstein et al., 2007), the extent to which participants identify with the two groups should not moderate the effect of group membership on memory.

Method

Participants. Sixty-five White undergraduates (34 females; mean age = 19.1) successfully completed the experiment for credit. One participant was removed due to an inability to distinguish between any old versus new faces during the memory task.

Procedure. The method and procedure was similar to Experiment 1, with four differences: (a) participants completed a measure of their identification with their minimal group, (b) each group had eight members (i.e., 16 faces presented during learning), (c) participants were allowed to view faces from both groups on the monitor simultaneously during learning, (d) participants had 4 min to learn the faces. Participants were randomly assigned to one of two groups: the Blue (n = 35) or Yellow (n = 31) group. Participants then completed a learning task, a filler task, a memory task, and a measure of collective identification.

Learning task. Participants learned about two mixed-race groups (i.e., Blue and Yellow): There were four Black and four White males in each group. Participants spent 4 min memorizing the group membership of 16 faces simultaneously: eight members of the Blue group and eight members of the Yellow group. To make group membership visually salient, faces of members of the Blue and Yellow group were clustered on the left versus right side of the computer monitor, respectively (side was counterbalanced across participants), with the team name appearing above each group of faces. In this experiment, we used innocuous group names (Blue vs. Yellow group) to help minimize a sense of competition between the groups since perceivers individuate others—especially teammates—during competition (Ruscher et al., 1991; Ruscher & Fiske, 1990).

Memory task. To measure memory, we asked participants to report whether they recognized the faces they saw during the learning task. Participants saw 24 faces (16 old faces and 8 new faces; half Black and half White) and were asked to indicate with a button press whether each face was one of the faces they saw during the learning task (*Yes* or *No*). Faces were presented in random order. Response accuracy and latency were recorded. Responses that occurred in less than 300 ms were deleted prior to analysis (6/1,024 trials). We report the estimated proportion of accurate responses such that higher scores reflect greater accuracy (1.0 = perfect accuracy).

Collective identification. To measure collective identification, participants completed a questionnaire about their identification with their group and the other group using items commonly used in the social identity literature (Ashmore et al., 2004). Participants were asked whether they had been assigned to a group and then answered three questions related to how much they identified with their group and three questions related to how they identified with the other group: "I value being a member of the Blue (Yellow) group," "I am proud to be a member of the Blue (Yellow) group," and "Belonging to a member of the Blue (Yellow) group is an important part of my identity." Responses were given on a 6-point Likert-type scale, which ranged from 1 (*strongly disagree*) to 6 (*strongly agree*). Questions were presented in random order. The three items measuring identification with the own-group were added together, and the three items measuring identification with the other-group were added together.

Analysis. To assess whether group membership affected identification, we conducted a 2 (Group: own-group, other-group) repeated-measures analysis on identification. We then computed an identification score for each participant as a Level 2 predictor representing differential identification with the own-group compared with the other-group (own-group minus other-group) on the social identity measure. To assess whether group membership, race, and identification affected memory, we conducted a 2 (Group: own-group, other-group) × 2 (Race: Black, White) × Continuous (Identification, Level 2) mixed-model analysis on memory. Identification was mean centered.

Results

The effect of group on identification. The mere act of assigning people to groups is believed to increase identification with own-group members. We therefore predicted that participants would identify more strongly with their own-group than the other-group. As predicted, participants were more highly identified with their own-group (M = 9.36, SE = .56) than the other-group (M = 5.36, SE = .31), $t(63)$ = 6.80, p < .01 d = .91. Thus, categorization created differences in identification between groups.

The effects of group, race, and collective identification on memory. Replicating the results from Experiment 1, participants had better memory for own-group (M = .86, SE = .02) than other-group (M = .77, SE = .02) faces, $F(1, 62)$ = 11.50, p < .01, d = .42. Moreover, there was no effect of race, $F(1, 62)$ = 0.68, p = .41, or a Group × Race interaction, $F(1, 62)$ < 0.01, p = .98. These results showed that intergroup memory is sensitive to self-categorization and that group membership overrides the effects of race.

More importantly, we predicted that participants with the strongest relative identification with the own-group compared with the other-group would show the greatest differential memory for own-group compared with other-group faces. As predicted, the interaction of group membership and identification, $F(1, 762)$ = 8.79, p < .01, indicated that the effects of group membership on recognition were moderated by collective identification. As shown in Figure 2, participants who were more identified with the own-group than other-group (+1 SD from the mean) had superior memory for own-group than other-group faces, $F(1, 62)$ = 14.31, p < .01. In contrast, participants who were relatively less identified with the own-group than the other-group (−1 SD from the mean) had no difference in their memory for own-group than other-group faces, $F(1, 62)$ = 1.00, p < .32. This interaction was not qualified by a three-way interaction with race, $F(1, 762)$ = 1.39, p = .24, and there was no two-way interaction between race and identification, $F(1, 762)$ = 0.17, p = .68.

Discussion

This experiment provided evidence that own-group bias in memory is associated with social identity. As predicted, participants who were assigned to a minimal group had superior memory for own-group members, regardless of their race. More importantly, the effects of group membership on memory were moderated by the extent to which

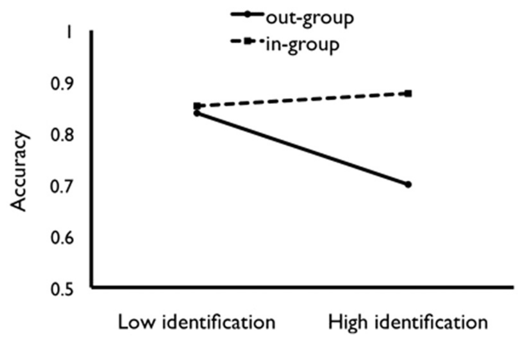

Figure 2. Mean accuracy to own-group and other-group faces as a function of differential identification with the own-group compared with the other-group (Experiment 2)
Note: Participants who were relatively more identified with the own-group than other-group (+1 *SD* from the mean) had superior memory for own-group than other-group faces, whereas participants who were relatively less identified with the own-group than the other-group (−1 *SD* from the mean) had similar memory for own-group and other-group faces. Accuracy = the proportion of trials with correct response during the memory task.

participants identified with their mixed-race group. Participants identified more with the own-group compared with the other-group, and individual differences in their collective identification with their group relative to the other-group were positively correlated with the extent to which they had superior memory for own-group faces. This pattern of results was evident despite the fact that this experiment differed in several ways from Experiment 1 (e.g., including 16 "old" and 8 "new" faces during the memory task). Moreover, these methodological details were constant across participants (whether or not they were high or low in collective identification), making it unlikely that these details could account for the predicted interaction. In sum, the results suggest that own-group biases in memory are not merely a product of categorization or competition but the extent to which participants identify with and value their group.

Experiment 3: Different Social Roles Increase Memory for Other-Group Faces

Overview

The first two experiments provided evidence that self-categorization with a group can lead to own-group memory bias, especially among participants who value their social identity. Although it is important to encode own-group members much of the time (see Allport, 1954), at other times, people may need to pay more attention to the out-group (e.g., Ackerman et al., 2006; Shriver & Hugenberg, 2010). In short, what is perceptually salient is shaped by goals (e.g., Cunningham, Van Bavel, & Johnsen, 2008). To examine this issue, we capitalized on the fact that people are motivated to make unique contributions to enhance the success of their groups (Packer, 2008), and these contributions are generally prescribed by their social role (Stryker, 1968; Stryker & Burke, 2000). People have different roles within a social group, and these roles prescribe and afford different patterns of behavior. Therefore, social roles that direct attention to other-group members may moderate own-group biases in memory—even among participants who value their group equally. Thus, when participants' role suggests they should encode other-group faces, they should exhibit superior memory for other-group faces than participants who do not have the same role.

Therefore, we randomly assigned participants to the role of the soldier or spy within their group. We expected that participants would have superior memory for own-group members, regardless of their race. More importantly, we predicted that participants' social role would moderate these effects, such that soldiers would show own-group memory bias, whereas spies would have reduced own-group memory bias because this role requires attention to other-group members. Specifically, we predicted that spies would have superior memory for other-group faces compared with soldiers. We also hypothesized that the motivation to contribute to the group would predict enhanced memory for other-group faces among spies.

Method

Participants. Seventy-six White undergraduates (40 females; mean age = 19.1) successfully completed the study for credit. Three participants were removed for failing to follow instructions (e.g., reporting membership in the wrong group/social role).[3]

Procedure. The method and procedure were similar to Experiment 2, with four differences: (a) participants were randomly assigned to one of two social roles (soldier versus spy), (b) participants reported their ability to make unique contributions to their group, and (c) to ensure the generality of the paradigm, faces were presented one-at-a-time during the learning task, and participants completed a different personality questionnaire during the filler task (i.e., the Positive and Negative Affect Schedule; Watson, Clark, & Tellegen, 1988). Participants were informed that they were in a study exploring how people learn about groups and were randomly assigned to one of two groups: the Moons (n = 40) or the Suns (n = 36). Participants were also randomly assigned to a soldier (n = 40) or a spy (n = 36) role. Participants then completed a brief learning task, a filler task, and a memory task. They also completed a measure of their ability to make unique contributions to their group and manipulation check items to determine whether the participants correctly understood their role.

Social role manipulation. Participants were assigned to one of two roles: a soldier or spy. Participants in the *soldier* condition read that "(p)eople serve many different roles in groups. For the purposes of the present study, you will be a soldier. Therefore, you will remain loyal to the Moons (or Suns) and your ultimate goal will be to serve the needs of your group." Participants in the *spy* condition read that "(p) eople serve many different roles in groups. For the purposes of the present study, you will be a spy. Therefore, you will remain loyal to the Moons (or Suns), but your ultimate goal will be to serve the needs of your group by infiltrating the Suns (or Moons)." There were no other differences between conditions.

Learning task. Faces were presented one-at-a-time on the computer monitor for 4 s with a label indicating whether the face was affiliated with the Moons or Suns. Participants learned about two mixed-race groups: There were six members of the Suns and six members of the Moons, with three Black males and three White males in each group.

Memory task. To measure memory, we had participants report whether they recognized the faces they saw during the learning task. Participants saw 24 faces (12 old faces and 12 new faces; half Black and half White) and were asked to indicate with a button press whether each face was one of the faces they saw during the learning task (*Yes* or *No*). Faces were presented in random order. Response accuracy and latency were recorded. No responses occurred in less than 300 ms. We report the estimated proportion of accurate responses such that higher scores reflect greater accuracy (1.0 = perfect accuracy).

Manipulation check. To ensure that participants correctly understood their role and which faces were own-group versus other-group members, we asked participants to report their group membership, role, and their ability to make unique contributions to the group. We asked participants to write the name of their own-group and the other-group. Three participants reversed the own-group and other-group and were removed from the analysis. We also asked participants to report their role in their group. Participants correctly reported their role as a soldier or spy (i.e., no spies reported being a soldier or vice versa). We asked participants "to what extent do you agree that you would be able to make a unique contribution to your group?" Responses were given on a 6-point Likert-type scale, which ranged from 1 (*strongly disagree*) to 6 (*strongly agree*).

Analysis. To assess whether self-categorization led to superior memory for own-group members and whether this was moderated by participants' role, we conducted a 2 (Group: own-group, other-group) × 2 (Race: Black, White) × 2 (Role: soldier, spy) mixed-model analysis on memory.

Results

The effects of group, race, and social role on memory. Following the results of the first two experiments, we predicted that participants would have superior memory for own-group members, regardless of their race. More importantly, we predicted that participants' role would moderate these effects, such that soldiers would show the standard pattern of own-group memory bias and spies would show the least own-group memory bias. Specifically, we predicted that spies would have superior memory for other-group faces compared with soldiers. Consistent with the previous experiments, there was a marginal effect of group, $F(1, 797) = 2.64$, $p = .10$, $d = .17$, such that participants had greater memory for own-group ($M = .84$, $SE = .02$) relative to other-group ($M = 0.79$, $SE = 0.02$) faces. There was also a main effect of social role, such that spies ($M = 0.85$, $SE = 0.02$) had superior memory *overall* relative to soldiers ($M = 0.78$, $SE = 0.02$), $F(1, 797) = 5.62$, $p < .02$, $d = .56$. More importantly, these effects were qualified by a marginal Group × Role interaction indicating that the effect of group membership was moderated by participants' role, $F(1, 797) = 2.64$, $p = .10$.

As shown in Figure 3, our a priori contrast indicated that spies had superior memory for other-group faces ($M = 0.85$, $SE = 0.04$) relative to soldiers ($M = 0.74$, $SE = 0.03$), $t(292) = 2.37$, $p < .01$, $d = .57$. In contrast, participants' role had no effect on memory for own-group faces, $t(292) = 0.89$, $p > .37$, $d = .21$.[4] Thus, when participants' role suggested that they should encode other-group faces, these participants had superior memory for other-group faces compared with participants who did not have the same role.

We also examined whether spies' perceived ability to make unique contributions to their group predicted heightened memory for other-group members. As predicted, spies' ability to make unique contributions was positively associated with memory for other-group members, $F(1, 145) = 4.47$, $p < .04$, $d = .38$, but not own-group members $F(1, 145) = 0.03$, $p = .86$, $d = -.03$. Thus, the effect of role on other-group memory was selectively predicted by participants' ability and/or motivation to contribute to their group.

Discussion

In Experiment 3, we directly manipulated the motivational relevance of other-group faces to see whether this would attenuate or reverse the own-group bias in memory observed in the first two experiments. As predicted, participants who were assigned a role (i.e., spy) that directed their attention to other-group members did not show the standard pattern of own-group bias. Instead, spies had superior memory for other-group faces compared with soldiers. Interestingly, role had a stronger influence on memory for other-group members and did not alter memory for own-group members.

We anticipated that roles would influence memory because people are motivated to make unique contributions to enhance the success of their groups. As predicted, the effects of role on other-group memory were predicted by participants' ability and/or motivation to contribute to their *own* group. Specifically, among spies, memory for other-group members was positively associated with their self-reported ability to make unique contributions. In contrast, memory for *own*-group members was not related to participants' ability to

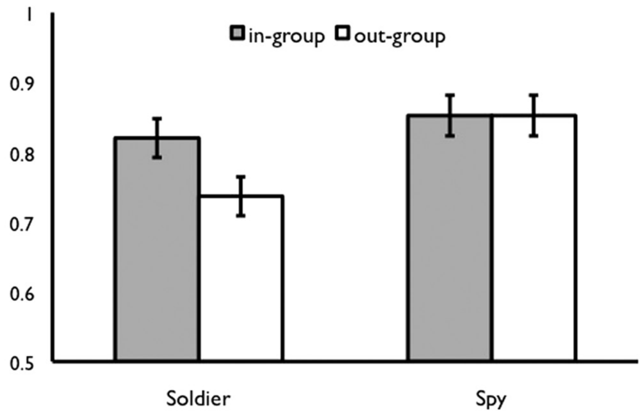

Figure 3. Mean accuracy to own-group and other-group faces as a function of social role (Experiment 3)

Note: Participants who were assigned the role of a soldier had superior memory for own-group than other-group faces, whereas participants who were assigned the role of a spy had similar memory for own-group and other-group faces. Accuracy = the proportion of trials with correct response during the memory task. Error bars reflect the estimated least squared standard errors.

make unique contributions in either condition. We think this may stem from the fact that the primary unique contribution of a spy is to attend to other-group members. Thus, the same group membership and level of social identity may produce very different effects depending on the means by which group members can contribute to their group.

General Discussion

The current research provides support for a social identity framework of person memory. All three experiments are consistent with the idea that social identities emerge rapidly under minimal conditions and can override biases that are built upon years of social exposure and perceptual expertise. More importantly, collective identification and social role moderate facial memory—even in a minimal group context. Much of the previous research in this area has focused on the influence of affective (see also Johnson & Fredrickson, 2005) and cognitive factors, including the effects of expertise and social categorization (e.g., Kinzler, Shutts, DeJesus, & Spelke, 2009; Rule, Garrett, & Ambady, 2010; Shutts & Kinzler, 2007), on social memory. However, the current research suggests that motivational factors may shape these biases (see also Hugenberg et al., 2010; Van Bavel et al., 2012).

We found that identification with a minimal mixed-race group can systematically alter social memory. People who were randomly assigned to a mixed-race group had superior memory for own-group members, regardless of race. Specifically, group membership increased memory for Black and White own-group members. To provide additional evidence that group membership can override ORB, we conducted a separate pilot study ($N = 100$) in which we randomly assigned White participants to one of two mixed-race groups or a control condition in which participants were not assigned to either group. Results indicated that participants in the racially diverse control condition had superior recognition memory for White ($M = .70$) than for Black ($M = 0.58$) faces ($p < .01$), replicating the standard pattern of ORB. However, recognition memory for White ($M = 0.69$) and Black ($M = 0.66$) faces was not significantly different among participants who were assigned to a group ($p > .14$). Thus, the ORB was attenuated among participants when a social identity was implicated (i.e., when the self was part of the group). Although these results do not imply that race is perceptually "erased" (see Ratner, Kaul, & Van Bavel, 2012), they are nevertheless consistent with research showing that shared group membership (e.g., Hehman et al., 2010; Van Bavel & Cunningham, 2009) and other contextual factors (e.g., Cunningham, Van Bavel, Arbuckle, Packer, & Waggoner, 2012; Kurzban et al., 2001) can override racial *bias*.

Moreover, in the current research, we showed that the effects of group membership on memory were moderated by collective identification with one's own-group. People identified more with their own-group compared with the other-group, and individual differences in collective identification with their own-group were positively correlated with memory for own-group relative to other-group faces. In other words, people who attributed the most significance to their group membership had the greatest own-group bias. These data suggest that mere categorization with a relatively unimportant group may *not* be sufficient to generate own-group bias, unless people identify with that group. More generally, these results suggest that the own-group bias in memory is not merely a product of categorization or competition but rather the extent to which people identify with and value their group membership.

It has been proposed that social categorization alters the allocation of attention (Rodin, 1987; Sporer, 2001). Therefore, we examined whether attention mediated the effects of self-categorization on social memory. As predicted, people selectively allocated attention toward own-group members during learning, and this preferential attention mediated subsequent biases in memory (see Young et al., 2010). This provides direct evidence of a proximal cognitive mechanism for own-group bias.

Previous research suggests that people are also motivated to make unique contributions to enhance the success of their groups (Packer, 2008) and that these contributions are generally prescribed by their social role (Stryker, 1968; Stryker & Burke, 2000). We therefore reasoned that people who were assigned a role that prescribed attention to other-group members would have superior memory for other-group members. As predicted, people who were assigned to the role of a soldier showed the standard pattern of own-group memory bias, whereas people who were assigned to the role of a spy showed no own-group memory bias. In addition, memory for other-group members was highest among spies who had the motivation and/or ability to make unique contributions to their own-group. Thus, the same group membership and level of social identity produced radically different effects on memory, depending on the means by which group members could contribute to their group.

A recent article also found evidence that social roles moderate attention, encoding mechanisms, and face memory (Ratcliff, Hugenberg, Shriver, & Bernstein, 2012). Although Ratclif and colleagues (2012) manipulated the perceived status of *targets*, they did not manipulate either the group membership of *targets* or the social role of the *perceivers*. Thus, Experiment 3 addresses how perceivers' role influences person memory in an intergroup context. Another important difference is that Experiment 3 manipulates the roles of both perceiver and target to demonstrate that social roles and motivation affect memory for *other*-group faces, and may also moderate own-group bias.

The Primacy of the In-Group?

The importance of own-group members for (intra)group cooperation, reproduction, and survival is well established (Correll & Park, 2005; D. S. Wilson & Sober, 1994). People who can accurately identify, value, and cooperate with own-group members enjoy numerous functional benefits, including the fulfillment of basic psychological needs (Allport, 1954). Consistent with previous minimal group research, which generally suggests a pattern of own-group bias in resource allocation (Brewer, 1979), we found evidence of own-group bias in intergroup memory, reflecting a preference for own-group relative to other-group members. However, we also identified conditions under which the standard pattern of own-group bias was attenuated. We showed evidence that people who were not highly identified with the own-group or were assigned to spy on the other-group had relatively similar memory for own-group and other-group members. It is worth noting, however, that these variables had a stronger effect on memory for other-group members.

Taken together, the current research provides evidence that motivation is an important mechanism for understanding intergroup memory (see also Pauker et al., 2009). We speculate that identity may alter the motivational relevance of different faces (Van Bavel et al., 2008). This interpretation is consistent with Sporer (2001) and models of social cognition (Brewer, 1988; Fiske & Neuberg, 1990), in which motivation/relevance alters the depth or type of processing allocated to a social target (see also Hugenberg & Sacco, 2008; Hugenberg et al., 2010; Levin, 1996, 2000). Social groups fulfill a variety of motivations (see Correll & Park, 2005), including the need to belong or maintain a sense of distinctiveness (Brewer, 1991). As such, individual and contextual differences in these motives should moderate the effects of group membership on memory—people likely attend more closely to members of groups that meet these goals (Van Bavel et al., 2012). Indeed, our research suggests that perceivers can successfully encode other-group members when these targets afford the opportunity to fulfill their goals (or roles).

Conclusion

Humans belong to many dynamic and overlapping social groups, and the importance of any given social category can shift between and within contexts. In such a complex and dynamic social world, a central challenge for adaptive human behavior is the flexible and appropriate categorization and evaluation of others. The current experiments suggest that people process the social (Hastorf & Cantril, 1954) and physical (Xiao & Van Bavel, 2012) world in a manner consistent with their social identity. However, person memory is modulated not only by social categorization but also by the psychological significance of that social category and the social role one occupies within that social category. A social identity framework provides a powerful lens for understanding the relationship between social categories and human cognition.

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Authors' Note

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Notes

1. This experiment was conducted near the end of the quarter, and several participants misunderstood group assignment and other instructions. The results were similar when these participants

were included, with the exception that a main effect of race emerged.

2. We did not provide visual cues to distinguish own-group from other-group members during the memory task because we wanted to examine whether social identities can override the effects of race—even in the absence of visual cues (in contrast to Kurzban, Tooby, & Cosmides, 2001). As such, there was no way to compute *false positives* on the dimension of group membership because there were no visual cues to group membership (i.e., "new" in-group and out-group faces) in the recognition task. For instance, if participants falsely believed that a "new" face was an "old" face, this false positive could not be attributed to either the in-group or the out-group. As such, we could not compute separate sensitivity scores for in-group versus out-group faces.
3. Results were similar when we included these participants.
4. Replicating the previous experiments, soldiers had superior memory for own-group (M = 0.82, SE = 0.03) compared with other-group (M = 0.74, SE = 0.03) faces, (p = .04, one-tailed). In contrast, spies had identical memory for own-group (M = 0.85, SE = 0.03) and other-group (M = 0.85, SE = 0.03) faces (p > .99). Furthermore, there was no main effect of race (p > .22) or interaction between race and group membership (p > .71).

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