The Group Mind: The Pervasive Influence of Social Identity on Cognition

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Abstract Humans evolved in social groups and are adapted for group living. In this chapter, we review recent behavioral, physiological, and neuroscience research that provides the psychological and neural architecture for collectively shared representations of the world – the "group mind." We describe how collective identities structure a wide range of human cognitive processes, from rapid evaluation and face memory to mental state attribution and representations of physical distance. This research underscores how psychological and neural processes underlying human cognition are context-dependent, dynamic, and flexibly shaped by motivational states, rather than inevitable, reflexive, and fixed.

The Group Mind

> Man is by nature a social animal; an individual who is unsocial naturally and not accidentally is either beneath our notice or more than human. Society is something that precedes the individual. – Aristotle, *Politics*

The concept of a "group mind" is often used by biologists to describe the collective behavior of hyper-social organisms or by philosophers and sociologists to describe a sense of collective consciousness among humans. A precursor of the concept is found in the entomologist William Morton Wheeler's observation that seemingly independent individuals can cooperate so closely as to become indistinguishable from a single organism (1911). Although the concept of a unified "group mind" has largely been discarded by psychologists and cognitive scientists, there is good reason to believe that group-level concerns have shaped and continue to shape various aspects of human cognition (Brewer 2004; Caporael 1997; Correll and Park 2005; Wilson and Sober 1994). Indeed, decades of research suggest that people

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form groups quickly and flexibly and favor in-group members even under rather arbitrary premises, all of which points to the value humans place on social identity and the context-dependent process of identification (Tajfel et al. 1971).

Self-categorization theory explains the emergence of group-level psychological processes in terms of the functioning of the self-concept (Turner et al. 1994). Self-categorization involves the activation of psychological connections between the self and some class of stimuli at the personal (i.e., defining oneself as unique from others) or the collective (i.e., defining oneself in terms of similar characteristics to one's social group) level (Turner et al. 1987). Further, self-categorization is "inherently variable, fluid, and context dependent" (Turner et al. 1994). According to this perspective, reality is always perceived and interpreted through the lens of one's current and socially defined self, which makes all cognition necessarily social (Turner et al. 1994).

Our research capitalizes on the fact that social context can activate different social identities and different aspects of any given social identity to examine the effects of group-level identification on cognition. In this chapter, we review recent behavioral, physiological, and neuroscience research that provides a biological and psychological basis for collectively shared representations of the world – the "group mind." We describe how social identities structure a wide range of human cognitive processes, from rapid evaluation and face memory to mental state attribution and representations of physical distance. Finally, we highlight how psychological and neural processes underlying person perception are context-dependent, dynamic, and shaped by self-representation, rather than inevitable, reflexive, and fixed (Packer and Van Bavel unpublished manuscript; Van Bavel and Cunningham 2011).

To examine the impact of self-categorization on ostensibly automatic components of the person perception network, we took a multi-level approach, variably termed social neuroscience, social cognitive neuroscience, or the social brain sciences (Adolphs 1999; Cacioppo et al. 2000; Ochsner and Lieberman 2001). This approach is based on the assumption that complex social phenomena are best understood by combining social and biological theories and methods (Cunningham and Van Bavel 2009; Van Bavel and Cunningham 2009b). Ultimately, understanding social perception and evaluation across multiple levels of analysis offers the promise of generating more general, process-oriented theories of self and social categorization, developing a functional understanding of the biological systems that underlie social perception and evaluation, and developing interventions for social issues like prejudice and discrimination.

Social Identity and Cognition

Over the past few decades, dual process and systems models have emerged as the dominant paradigm for understanding human cognition, especially social cognition. In general, these models characterize the unconscious and conscious mind as discrete processes or systems: System 1 is reflexive, automatic, fast, affective, and associative, and System 2 is deliberative, controlled, slow, cognitive, and propositional (e.g., Chaiken and Trope 1999; Kahneman 2003). In the context of social cognition, dual process models assume that people initially perceive targets in terms of their membership in a social category (e.g., age, gender, race), relying on stereotypes about the category to inform their evaluations and judgments. However, people with the motivation and opportunity to suppress their initial, biased impulses can individuate people to avoid applying stereotypes (Brewer 1988; e.g., Devine 1989; Fazio et al. 1995; Fiske and Neuberg 1990; Greenwald and Banaji 1995).

Although these models have motivated considerable research, advances in neuroscience suggest that the human evaluative system is more widely distributed and dynamic than initially assumed by many dual process models (see Cunningham et al. 2007; Freeman and Ambady 2011; Van Bavel et al. 2012b). Instead of construing automatic and controlled processes as dichotomous or independent stages of the perceptual and evaluative processing stream, we argue that dynamic aspects of self-categorization – such as identifying with an arbitrary group – can shape ostensibly automatic aspects of cognition (Van Bavel and Cunningham 2011). Different social identities change how people rapidly and reflexively construe and evaluate stimuli in their environment. When a specific self-categorization becomes salient, one may in turn be more likely to categorize others as friends or foes on the basis of this activated identity. Thus, cognitive and neural processes reflect a combination of bottom-up visual cues (e.g., skin color) and top-down social motives (e.g., group affiliation; see Fig. 1).

Minimal Group Identities Override Racial Biases

To examine the top-down influence of social identity on cognition, we have studied the effect of seemingly trivial social identities on ostensibly automatic racial biases stemming from years of exposure to racial stereotypes (see Van Bavel et al. in press, for a recent review). Specifically, we have conducted several experiments in which we assigned participants to one of two mixed-race arbitary groups (e.g., the Lions or Tigers teams) with an equal number of Black and White males in each group. Participants in these experiments were then given a few minutes to memorize the group membership of these faces before we assessed their attitudes (Van Bavel and Cunningham 2009a), attention (Brosch and Van Bavel 2012), memory (Van Bavel and Cunningham 2012; Van Bavel et al. 2012a), and/or brain activity (Van Bavel et al. 2008, 2011). Assigning people to mixed-race groups allowed us to examine whether arbitrary group membership can override ostensibly automatic racial biases in memory and evaluation (Brewer 1988; Devine 1989; Ito and Urland 2005; Taylor et al. 1978).

In a pair of initial experiments, we examined the influence of a shared social identity on ostensibly automatic evaluations (Van Bavel and Cunningham 2009a)

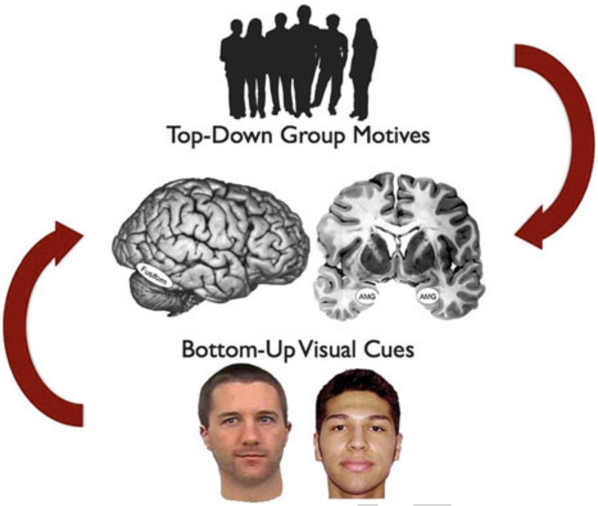

Fig. 1 Neural activity in the context of social cognition is a combination of bottom-up visual cues (e.g., race) and top-down social motives (e.g., group affiliation). AMG, amygdala

and amygdala activity (Van Bavel et al. 2008). We presented faces of in-group and out-group members for 150 milliseconds in a response-window priming task and examined the effects of these faces on valence judgments of positive and negative words (Cunningham et al. 2001; Draine and Greenwald 1998). This task allowed us to assess very rapid evaluations to faces on the basis of their group membership and race (as well as the interaction between these social categories). As predicted, participants who were assigned to a mixed-race group had positive evaluations of in-group members, regardless of the group members' race. Specifically, we found that group membership increased positivity toward Black in-group members relative to Black out-group members, eliminating the standard pattern of automatic racial bias when evaluating in-group members (Fazio et al. 1995). Thus, participants' evaluations reflected their current self-categorization with a minimal group, even when the in-group and out-group had no history of contact or conflict and when there was an orthogonal, visually salient social category (i.e., race) with strong stereotypic and evaluative associations.

Based on these results, we reasoned that these minimal social identities might also override the racial biases in neural activity observed in previous research (see Amodio and Lieberman 2009; Cunningham and Van Bavel 2009; Kubota et al. 2012 for reviews). Several previous papers on neural responses to race had observed a relationship between the amygdala – a small structure in the temporal lobe – and racial bias. The amygdala has been implicated in a host of social and affective processes (see Macrae and Quadflieg 2010; for a review see Phelps 2006), including fear conditioning (LeDoux 2000), processing negative stimuli (Cunningham et al. 2003; Hariri et al. 2002), and perceiving emotional faces (Whalen et al. 1998). Individual differences in amygdala activity in response to viewing Black compared to White faces are correlated with implicit measures of racial bias (Amodio et al. 2003; Cunningham et al. 2004; Phelps et al. 2000). These correlations between differential amygdala activity and implicit racial bias led researchers to interpret differences in amygdala activation in intergroup contexts largely as evidence of implicit negativity toward stigmatized groups (Harris and Fiske 2006; Krendl et al. 2006; Lieberman et al. 2005).

We examined whether amygdala activity would be sensitive to social identity in general, rather than race per se. Previous research suggested that the amygdala was sensitive to motivationally relevant stimuli rather than simply to negative stimuli (Anderson and Phelps 2001; Cunningham et al. 2008; Vuilleumier 2005; Whalen 1998). Therefore, we reasoned that amygdala activity would be greater for in-group members in a minimal group context, since in-group members help fulfill a number of important motives (e.g., economic, psychological, and evolutionary), regardless of race. Similar to our other experiments, we randomly assigned White participants to one of two minimal mixed-race groups, had them briefly learn the faces of individuals associated with each team, and then presented them with the same in-group and out-group faces during neuroimaging (Van Bavel et al. 2008). While they were in the scanner, participants categorized each face according to either group membership (Leopard or Tiger) or race (Black or White). As predicted, participants had greater amygdala activity to in-group members than out-group members, regardless of their race (see also Chiao et al. 2008). In-group biases in neural activity were not moderated by target race or categorization task (i.e., categorizing by team or by race), suggesting that these effects did not require explicit attention to group membership. Importantly, in-group biases in amygdala activity occurred within minutes of team assignment, in the absence of explicit group-based rewards or punishments, and independent of pre-existing attitudes, stereotypes, or extensive exposure to the groups. Further, the faces on each team were fully counterbalanced across participants, ensuring that any effects of group membership were due to self-categorization with the in-group and not to the visual properties of different face stimuli (e.g., attractiveness, luminance, symmetry, etc.).

Social Identity and Person Memory

In follow-up research we examined the effects of social identity on the own-race bias (ORB), one of the most robust and widely replicated phenomena in social categorization. According to the ORB, people are better at remembering those from their own race than those from other races because they have more extensive *perceptual expertise* with own-race faces (Malpass and Kravitz 1969). Although the ORB may appear to be a relatively innocuous bias, it can lead an eyewitness in a criminal case to misidentify a suspect from another race, leading to the conviction of an innocent person (Brigham and Ready 2005). Indeed, the majority of false convictions of criminals on death row are based on erroneous cross-race eye-witness misidentification (Scheck et al. 2000). Consistent with this perceptual expertise account, pervious functional magnetic resonance imaging (fMRI) research (Golby et al. 2001; see also Lieberman et al. 2005) reported a correlation between individual differences in the magnitude of ORB and activity in the fusiform face area (FFA), a sub-region of the fusiform gyrus located on the ventral surfaces of the temporal lobe and implicated in face perception (Kanwisher et al. 1997; Sergent et al. 1992) and visual expertise (see Palmeri and Gauthier 2004 for a review). This work suggested that extensive visual experience with own-race faces may have gradually tuned neurons in the FFA to make fine-grained discriminations between exemplars within a stimulus category (Tarr and Gauthier 2000).

We examined whether social identification with a minimal group would lead people to encode in-group members at a subordinate level and out-group members at a superordinate level, despite participants' limited exposure to members of both categories (Bernstein et al. 2007; Levin 1996, 2000; see also discussion of the outgoing homogeneity effect in Ostrom and Sedikides 1992; Sporer 2001). As predicted, we found greater activation within the bi-lateral fusiform gyri for in-group relative to out-group faces (Van Bavel et al. 2008). We replicated this pattern of in-group bias in the FFA (using a functionally localized sub-region of the fusiform gyri that is sensitive to faces) and found that relatively greater activity in the FFA mediates the effects of group membership on recognition memory, a behavioral index of individuation (Van Bavel et al. 2011). Specifically, we found a positive correlation between the FFA differences for in-group versus out-group faces and recognition memory differences for in-group versus out-group faces. Moreover, these effects were not moderated by race (neither was there a main effect of race; see also Hehman et al. 2010; Kinzler et al. 2009; Kurzban et al. 2001; Shriver et al. 2008). Taken together, these findings suggest that in-group members are more likely to be processed as individuals than out-group members, consistent with social cognitive models of person perception (Brewer 1988; Fiske and Neuberg 1990; Hugenberg et al. 2010; Sporer 2001) (Fig. 2). AU1

These results provide evidence that the FFA is sensitive to shifts in self-categorization, responding selectively to face stimuli imbued with psychological significance by virtue of their currently salient group membership and encoding the more motivationally relevant in-group faces at the subordinate level. It is important, however, to note that in-group bias is not inevitable either. In follow-up research, we found that superior memory for in-group compared to out-group members was only evident among participants who were highly identified with the in-group (Van Bavel and Cunningham 2012) or had a high need to belong (Van Bavel et al. 2012a). Further, enhanced memory for in-group members was mediated by enhanced attention to in-group members during the learning phase and could be reduced by assigning participants to a role (i.e., spy) that motivated their attention to out-group members (Van Bavel and Cunningham 2012). Thus, our research provides evidence that group membership can shape the *motivational relevance* of categories in a flexible and dynamic fashion even in the absence of long-term experience with the category.

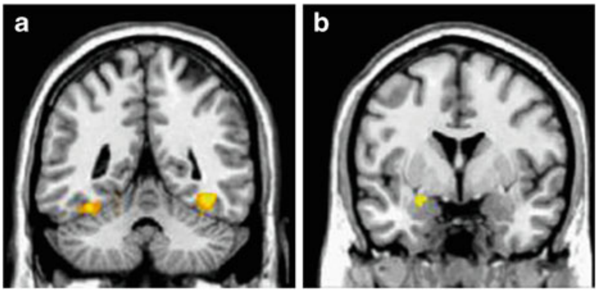

Fig. 2 Participants show greater activation in (**a**) fusiform gyri and (**b**) amygdala when viewing novel in-group members, regardless of race (Adapted from Van Bavel et al. 2008)

Social Identity Alters the Threshold for Mind Perception

The tendency to infer goals, thoughts, and feelings behind the faces of others – termed mind perception – is a reflexive and ubiquitous feature of human social cognition and influences the extent to which people see others as worthy of moral consideration (Gray et al. 2007). Recent work has suggested that people perceive minds behind faces using bottom-up, visual features. In particular, Looser and Wheatley (2010) asked participants to view faces along a spectrum of morphs between human faces and inanimate faces (e.g., dolls) and to indicate whether each had a mind (see Fig. 3). Results indicated that participants perceived minds categorically past a specific boundary threshold along the morph continuum and that this threshold was biased towards the human end of the spectrum (i.e., people only perceive minds with a high degree of humanness in the face). Other work using electroencephalography suggests that the brain differentiates between human and inanimate faces within a few hundred milliseconds of seeing a face (Wheatley et al. 2011) and that the brain's face perception network encodes the animacy of faces using visual features, allowing people to differentiate between humans and dolls (Looser et al. 2012). Together, this work suggests people are closely attuned to visual cues signifying a mind in a face.

We tested whether group membership could provide a top-down cue shaping the motivational relevance of minds behind faces. We reasoned that in-group members may be seen as more relevant targets for fulfilling social needs (Brewer 1988), which have been connected in past research to anthropomorphism and higher-level attribution of mind to others (Epley et al. 2007). However, in the case of threatening out-groups, it may be advantageous to consider the out-group's mental states and plans rather than to deny them a mind. We therefore hypothesized that collective identification with a group would ordinarily lead people to infer minds more readily for in-group faces but that out-group threat might enhance mind perception toward out-group faces.

In a series of experiments, we had participants view morphs between human and inanimate faces that were ostensibly based on in-group or out-group models across various group contexts (Hackel et al. unpublished manuscript). We asked participants to rate how much each face had a mind, and we examined each subject's Point of Subjective Equality, i.e., the point on the morph spectrum at which faces were

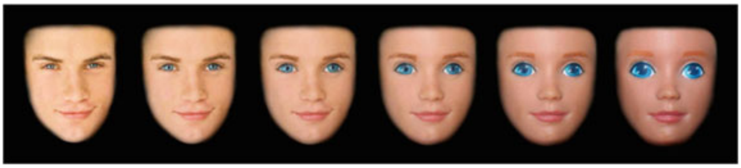

Fig. 3 Participants rated a series of morphs between human and inanimate faces (6 of 11 points along the morph spectrum shown here), letting us examine the threshold (i.e., the tipping point) at which they perceive the faces as having minds (Hackel et al. unpublished manuscript)

equally likely to be seen as having or lacking a mind, which can serve as a measure of threshold or tipping point for perceiving minds along the morph spectrum (Looser and Wheatley 2010). Even in minimal groups, participants had more lenient thresholds for perceiving minds in in-group faces. In other words, they needed less humanness in a face to judge it as having a mind. In further work using real-world groups based on university affiliation, we found that these effects were moderated by individual differences in *collective identification*, i.e., the extent to which people define themselves by and feel invested in the group (Leach et al. 2008). In particular, greater identification with one's group was associated with greater in-group bias in mind perception. However, we found that perceived out-group threat reversed this effect: Democrats and Republicans, two highly competitive political groups, who saw the other group as a threat to their own had more lenient thresholds for *out*-group mind perception.

These experiments suggest that inferring a mind behind a face depends not only on bottom-up visual cues to humanness but also on top-down identity motives. More specifically, functionally relevant motivations such as in-group identification and out-group threat can shape mind perception in opposing directions. In follow-up neuroimaging research, we tested whether group membership would differentially impact two dimensions of mind perception: *agency*, which refers to abilities such as thinking and planning, and *experience*, which refers to abilities such as feeling pleasure, pain, or emotion. Specifically, we hypothesized that people might be more ready to perceive experience in in-group members while still seeing agency in out-group members, especially for threatening groups. Indeed, we found that group membership impacted activation in the brain's theory of mind network when participants judged experience, but not agency, in faces (Hackel et al. unpublished manuscript). Altogether, this work suggests that mind perception is a dynamic process: the extent to which we consider others' minds may depend on the intergroup contexts in which we are situated.

Social Identity Shapes Distance Perception

We have also been exploring whether self-categorization with social groups may even shape basic representations of physical reality (Hastorf and Cantril 1954). Decades ago, the "New Look" in perception suggested that values and needs organize people's visual perception of the physical world (Bruner and Goodman 1947). Recent research has demonstrated the influence of motivational factors, including identity-related motives, on perception and representation of physical aspects of stimuli, such as spatial distance (Burris and Branscombe 2005; Proffitt 2006). In a similar vein, we have shown that social identity, identity threat, and degree of collective identification can shape the perception of physical distance (Xiao and Van Bavel 2012).

Specifically, locations signifying a threatening (vs. non-threatening) out-group were perceived as physically closer, particularly among those who strongly identify with their threatened in-group (Xiao and Van Bavel 2012). We tested this effect with various types of social identities, including professional sports team fandom, nationality, and university affiliation. In our experiments, Yankees fans, compared to those not identified with the Yankees, estimated Fenway Park – the stadium of their rival Red Sox – to be physically closer. Highly identified Americans who perceived Mexican immigration to be a threat to America estimated Mexico City to be particularly closer compared to those who did not highly identify with America or did not perceive Mexican immigration to be a threat (see Fig. 4). When we experimentally manipulated threat, highly identified New York University affiliates estimated Columbia University to be closer when Columbia was portrayed as a threat compared to when it was portrayed as of similar status (Xiao and Van Bavel 2012). Although this research has focused on distance *estimations*, it is nevertheless consistent with the notion that social identity may influence perception, and possibly basic sensation (Coppin et al. 2012).

Importantly, estimations of perceptual closeness induced by identity threat are by no means fixed and stable. We find that perceptual processes are flexibly shaped by other social constructs; perception of a strong intergroup barrier and intergroup forgiveness both eliminated the effects of identity threat on distance estimations. For example, we replicated the relationship between perceived threat from Mexican immigration and closeness in distance perception when Americans perceived the US-Mexico border to be weak. However, when we experimentally manipulated the security of the national border, this relationship was eliminated, suggesting that a strong intergroup barrier served as a psychological buffer against intergroup threat (Xiao and Van Bavel 2013). Further, manipulating the perceived closeness of a threatening out-group elicits discrimination towards members of this out-group (Xiao and Van Bavel 2013). In sum, this research suggests that various aspects of social identity and the intergroup context dynamically influence perceptual representations of physical reality and these representations may have important influences on real-world behavior.

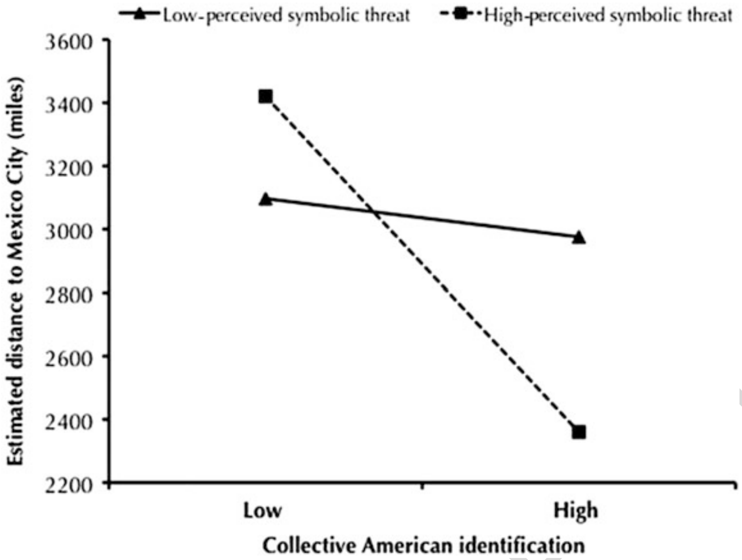

Fig. 4 Mean distance from New York City to Mexico City estimated by participants who reported varying degrees of symbolic threat from Mexican immigrants, as a function of the strength of their collective American identity. Perceived symbolic threat from Mexican immigrants predicted estimated distance to Mexico City for high-identifiers but not for low-identifiers (Xiao and Van Bavel 2012)

Discussion

Our research, using a combination of social, cognitive, and neuroscience techniques, sheds new light on the powerful influences of flexible social identification on cognition. Even rapidly and arbitrarily created social groups, which people have no prior knowledge about or contact with, can override the influences from existing social categories that often carry a great deal of societal and historical baggage, such as racial groups in America. The primary theoretical implication of our work is that social identities can have a profound impact on group members' representations of the social world (Hastorf and Cantril 1954). Although extensive research has investigated the societal and behavioral consequences of forming social groups to alleviate negative intergroup consequences and promote positive intergroup relations (e.g., Sherif and Sherif 1953; Tajfel and Turner 1979), little work has examined the influence of self-categorization on basic cognition. Our research suggests the influence of social identity is far more pervasive and may even penetrate some of the most automatic and basic cognitive processes (Van Bavel and Cunningham 2011).

In our view, one of the most arresting aspects of this research is that very brief exposure to arbitrary intergroup alliances was sufficient to elicit identification with an arbitrary group and make this a more potent social category than race, which is a category marked by years of exposure and associated with relatively stable stereotypes and attitudes. Membership in an arbitrary group was sufficient to increase preferences for in-group members in terms of evaluation (Van Bavel and Cunningham 2009a), memory (Van Bavel and Cunningham 2012; Van Bavel et al. 2012a) and neural activity in the amygdala (Van Bavel et al. 2008) and FFA (Van Bavel et al. 2011). Thus, while visually salient categories like race trigger rapid bottom-up processing due to low-level visual input (e.g., physiognomic features) and stereotypic associations within the first few hundred milliseconds of perceptual processing (Ito and Urland 2003), this does not mean they are automatic or inevitable. As we discuss above, a psychologically salient social identity can exert a top-down influence on these processes and attenuate ostensibly automatic racial biases. These findings introduce the possibility that transient aspects of self-categorization can override visually salient and socially important categories – including those with which people have extensive experiencperhaps before these social categories even begin to influence the perceptual and evaluative system (see also Cunningham et al. 2012).

Although we have acquired extensive evidence that membership in a mixed-race group can override racial bias, we are not suggesting that people in these experiments were genuinely colorblind. It seems likely that race, like any physical or psychological property, may be represented in the brain even when it is silent on a specific mental process or task. Indeed, we have recent evidence that race may be encoded in the visual system, even when it does not produce the standard biases reported above (Kaul et al. 2012; Ratner et al. 2012). As we noted above, our previous work suggests that the fusiform gyri are sensitive to salient group membership but not race. However, when we re-analyzed the data using Multivariate Pattern Analysis, a technique that can identify distributed representations in the absence of mean-level activation differences between Black and White faces, we found that patterns of neural activity within early visual cortex and a face-sensitive sub-region of the fusiform gyri could decode the race of faces above chance. In other words, *patterns* of activation within the fusiform encode race even when *mean* activation is driven by other motivationally relevant group memberships. Therefore, the human visual system may still *encode* skin color and physiognomic features that allow them to distinguish between Black and White faces, even when other more motivationally salient social categorizations override racial *bias* on specific outcomes.

Our approach offers new perspectives to social psychology and cognitive neuroscience. By bringing a cognitive neuroscience approach to social psychology, we can explore specific cognitive and neural processes that underlying the abstract process of self-categorization and the construct of social identity. Considering the emerging literature in cognitive neuroscience has also encouraged us to re-evaluate the distinction between automatic and controlled processing and suggested that a strict dissociation between these processes is unlikely to be grounded in brain structure or function (Cunningham et al. 2007; Van Bavel et al. 2012b). Our work suggests that salient identities and mindsets brought to bear on a situation determine later supposedly "automatic" reactions. Top-down influences on cognition and emotion need not emerge only after unavoidable automatic responses, controlling these responses through strategies like suppression or reappraisal. Rather, top-down influences may be able to change which responses become active in the first place through a form of *pre-appraisal*, thus influencing cognitive, evaluative, and affective outcomes.

Meanwhile, by bringing social psychological theories to cognitive neuroscience, our research underscores the flexibility of the person perception network and the power of self-categorization and social identity to shape supposedly "bottom-up" neural processing. The social cognitive neuroscience perspective highlights the "power of the situation" to influence even basic cognitive processes (Cacioppo et al. 2000; Lieberman 2005; Zaki and Ochsner 2011), suggesting that even basic cognitive processes must be considered within the social identity contexts in which they are situated (Turner et al. 1994).

Conclusion

In his classic book, "The Group Mind" (1921), William McDougall noted that psychology in the nineteenth century had studied the human mind without consideration of the social context. In contrast, he argued that individual psychology could not be understood in the absence of collective social process and that groups have a collective mental life that is not merely the sum of the mental lives of individuals. Our research demonstrates how social groups structure individual cognition across several levels of analysis, providing a cognitive and neural basis for a "group mind." In this way, social identities provide a set of expectations and goals that can elicit a common perceptual and evaluative framework across multiple group members, leading to shared representations and a framework for collective action. In other words, Aristotle was right: humans are highly social animals and our social context shapes our self-representation and, consequently, cognition.

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