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The social neuroscience of race-based and status-based prejudice

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The largely independent neuroscience literatures on race and status show increasingly that both constructs shape how we evaluate others. Following an overview and comparison of both literatures, we suggest that apparent differences in the brain regions supporting race-based and status-based evaluations may tap into distinct components of a common evaluative network. For example, perceiver motivations and/or category cues (e.g., perceptual vs. knowledge-based) can differ depending on whether one is processing race and/or status, ultimately recruiting distinct mechanisms within this common evaluative network. We emphasize the generalizability of this social neuroscience framework for dimensions beyond race and status and highlight how this framework raises new questions in the study of prejudice–reduction interventions.

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Introduction

Since Gordon Allport's seminal work on prejudice [1], racial bias has received considerable attention from social psychologists and neuroscientists. Notably, Allport identified other kinds of prejudice, including biases toward working-class individuals [1]. Such biases can contribute to individual [2] and institutional [3,4] discrimination, negatively impacting the safety and well-being of vulnerable groups [3,5]. As in the social psychological literature, neuroimaging investigations seldom consider both race and status biases [but see 6•,7•]. This is surprising because race is structurally and stereotypically linked with socioeconomic status (SES) [8,9]. In line with recent calls for greater intersectional research on perceived race and status [10,11••,12], we review and compare the largely parallel neuroimaging literatures on race-based and status-based evaluation. This is important because evaluative biases could be due to race or status or their combination. Moreover, a better understanding of the mechanisms underlying race-based and status-based evaluations is critical for predicting and diminishing bias. We argue that differences in perceiver motivation and the way race and status are conveyed may underlie apparent differences in their respective neural underpinnings. Ultimately, we propose that race-based and status-based evaluations recruit different components of a common social evaluation network (see Graphical Abstract).

Racial prejudice

Amygdala

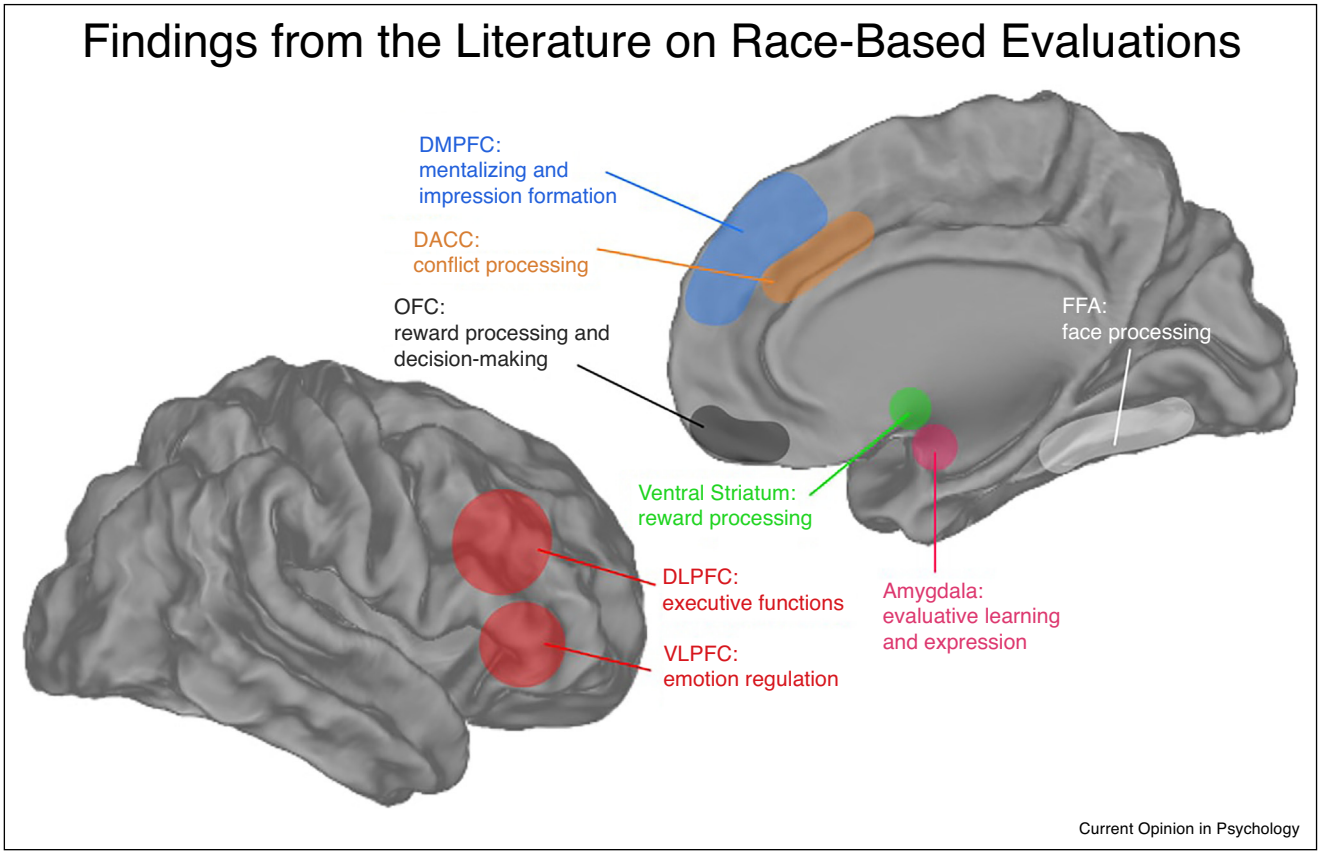
The amygdala is frequently reported in fMRI studies of race [13–17] (Figure 1). It comprises a small group of nuclei that are critical for the acquisition, storage, and expression of classical fear conditioning [18–20]. The amygdala also plays a broader role in rapidly detecting biologically relevant stimuli and in modulating attention and memory [21,22]. Race-based differences in amygdala response sometimes correlate with implicit (but not explicit) measures of racial bias [23].

Recent work has revealed considerable variability in the amygdala's sensitivity to race [24,25]. Indeed, preferential amygdala response is infrequently observed for Black faces when additional target information is made available (e.g., group membership or traits) [6•,26•,27]. Accordingly, our understanding of the amygdala's contribution to race-based evaluation is more complex and flexible than was previously thought. The current consensus suggests this region is not the main substrate of racial prejudice. Sensitivity to race in the amygdala (viz., Black > White) may reflect a number of factors from culturally learned associations (e.g., Black men = threat) [28,29] to the social threat of appearing prejudiced [6•,25]. Cultural associations in particular may vary across individuals depending on formative experiences. Consistent with this view, greater childhood interracial contact diminishes amygdala response to familiar (vs. unfamiliar) Black faces [30].

Control Network

Early work on the dorsal anterior cingulate cortex (DACC) implicated this region in detecting conflicts between prepotent and intentional response tendencies [31]. In recent years, new accounts of DACC function posit that this region is involved in computations of the expected value of engaging in cognitive control based on

Figure 1



Findings from the neuroimaging literature on race-based evaluations. The amygdala, OFC, and ventral striatum are thought to support race-related evaluations, decision making, and reward/salience, respectively. Activity in these regions is modulated by control signals originating from lateral prefrontal regions (DLPFC, VLPFC) that may facilitate regulation of racial bias. This process is also supported by DACC activity, which monitors for and regulates conflicts between egalitarian and biased responses. DMPFC is involved in the formation of individuated impressions. The FFA sometimes reflects race-based differences in face processing.

factors that include task difficulty, feedback, uncertainty, and reward [32]. In the race context, participants with greater implicit racial bias showed greater recruitment of brain regions supporting cognitive conflict and control for Black versus White targets (DACC, DLPFC — dorsolateral prefrontal cortex, VLPFC — ventrolateral prefrontal cortex) [33]. A recent study reveals implicit racial bias further enhances DACC activity for Black (vs. White) when faces are low in racial prototypicality (i.e., inconsistent with racial caricatures) [34•]. In the preceding studies, it is assumed that conflict arises from differences in the participants' implicit biases and their motivations to be and/or appear egalitarian. Consistently, race-based sensitivity in the DACC and other control-related regions is most reliably observed when stimuli are presented supraliminally [33,35–38] and when participants believe task responses indicate racial bias [36–38]. Research also finds that greater internal motivation to respond without prejudice may amplify cognitive conflict mechanisms [39–41], even when individuals are not explicitly instructed to control their racial bias [39].

Many studies showing race-based activation of the DACC also find a similar pattern in the DLPFC [33,42]. The DLPFC is involved in executive control of sensory and motor representations aligned with active goals [43] and in emotion regulation, modulating amygdala and striatum responses indirectly through connectivity with ventromedial prefrontal cortex (VMPFC) [44]. Recent work found that younger adults showed greater DLPFC activity when viewing Black (vs. White) faces than older adults (characterized by lower executive ability) [45]. Critically, individuals with greater executive ability (irrespective of age) showed greater DLPFC-amygdala connectivity when viewing Black (vs. White) faces. In summary, the DLPFC and DACC may work in concert in the motivated regulation of racial bias (or any other bias — see Graphical Abstract), with the DACC weighing conflicts between