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COMMENTARY

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Default categorization of outgroup faces and the other race effect: Commentary on the special issue

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Abstract

This commentary addresses how studies examining the neurophysiological correlates of racial categorization can provide insight into the neurocognitive mechanisms of the other-race effect in recognition memory. Several articles in the special issue describe how event-related potentials (ERPs) have been used to examine processing of faces that vary according to race, some of which have concluded that larger ERP amplitudes elicited by other-race (relative to own-race) faces indicates less efficient visual processing of other-race faces. I describe findings from ERP studies of race categorization that suggest an alternative interpretation–that other-race faces elicit stronger categorization, which impedes individuation of other-race faces. Suggestions for future research are offered.

KEYWORDS

event-related potentials, other-race effect, racial categorization, social cognition

The articles in this special issue provide a diverse set of perspectives on the so-called 'other race effect' (ORE), the consistent tendency to better recognize faces that represent our own versus another racial group.[1] As described in the article by McKone et al. (2022), the ORE has several real-world implications, from misidentifying criminal suspects to confusing one racial outgroup member for another in everyday social interactions. This commentary discusses how cognitive neuroscience research on racial categorization can contribute to understanding mechanisms for the ORE.

Social categorization—the act of mentally placing people into distinct social groups, including those defined by race—has been described as a spontaneous and inevitable by-product of the cognitive system (Liberman et al., 2017). Studies using event-related potentials (ERPs) have demonstrated that racial categories are distinguished within 200 ms of perceiving a face, regardless of whether perceivers are instructed to categorize or even attend to faces (Ito & Tomelleri, 2017; Volpert-Esmond et al., 2017; Volpert-Esmond & Bartholow, 2019). Research on face processing frequently examines the amplitude of the N170 ERP, a negative voltage deflection at occipito-temporal scalp locations (when recording is

[1]Use of the word 'race' in this article does not imply any biological or genetic differences between groups of people (which do not exist), but rather refers to a psychological construct by which people are distinguished based on visual features, such as skin tone, facial physiognomy, and hair texture.

referenced to the average activity at all other scalp locations) peaking 140–190 ms after face onset. The same neural activation that produces the N170 emerges as a positive voltage deflection at central midline scalp locations—the vertex positive potential (VPP), also called the centro-parietal P2—when recording is referenced to the average activity at the mastoids (see Joyce & Rossion, 2005).[2]

Tüttenberg and Wiese's (2023) excellent review describes several reports of larger N170 amplitude to other—relative to own-race faces, as well as research showing that the magnitude of this target race effect in the N170 correlates with the magnitude of the ORE in recognition performance (Wiese et al., 2014). Given evidence linking the N170 to structural encoding of faces (Rossion & Jacques, 2012), Tüttenberg and Wiese argue that target race effects in the N170 reflect difficulty with or less efficient early-stage perceptual processing of other-race faces, resulting in poorer encoding during subsequent processing stages and, consequently, poorer recognition.

The literature examining effects of target race on the centro-parietal P2 provides a different interpretation, suggesting that larger P2 responses to racial outgroup than ingroup faces, a common finding in this literature (Ito & Senholzi, 2013), reflect greater attention to or extraction of racial category information from outgroup faces. This finding is consistent with research indicating that other-race faces elicit stronger category activation than same-race faces (Levin, 2000). Evidence supporting the category-activation interpretation of the P2 comes from studies showing that a larger P2 response to a given face, relative to a perceiver's own average P2 response, predicts both a shorter latency of the P3 ERP—known to reflect the efficiency of stimulus evaluation (Kutas et al., 1977)—and a faster reaction time to overtly categorize faces by race or gender (Volpert-Esmond & Bartholow, 2021).

Thus, rather than less efficient processing of other-race faces, effects of race on P2 amplitude—and, by extension, N170 amplitude—seemingly reflect *more efficient* extraction of racial category information for outgroup faces. Given that categorization is antithetical to individuation (Hugenberg et al., 2010), and that individuation is necessary for recognition, this alternative interpretation suggests a plausible mechanism for the ORE in recognition memory performance.

A different yet complementary take on ERP correlates of the ORE is offered in the article by Herzmann et al. (2022). These authors focus on a later and more sustained ERP, emerging approximately 400–1000 ms after face onset and known as the Difference due to Memory (Dm). These authors report evidence that, under natural encoding conditions (i.e., with no specific instructions), the Dm is larger for own-relative to other-race faces. Other work indicates that when participants are instructed to individuate faces, Dm effects are larger for other-than for own-race faces and the ORE in recognition performance is attenuated (Tüttenberg & Wiese, 2021), suggesting the Dm reflects engagement of cognitive processes necessary for individuation.

Considered together, research focusing on initial neural responses to faces (reflected in N170/VPP/centro-parietal P2 amplitude) and later, more sustained responses (reflected in Dm amplitude) point to (at least) two distinct neurocognitive mechanisms contributing to the ORE in recognition performance: (1) an early-stage, spontaneous tendency to extract more social category information from other-relative to own-race faces and (2) a subsequent, more sustained engagement of memory encoding processes that facilitate individuation and, under most circumstances, favour own-relative to other-race faces.

An important limitation in this literature is the relative dearth of studies examining the ORE and its neural correlates in non-White participants. A notable exception is the set of experiments reported by Simon et al. (2023), who tested the ORE among White, Asian, Black, and Latinx participants. Interestingly, rather than a recognition advantage for own-race faces, participants in these experiments demonstrated a recognition advantage for members of higher-status versus lower-status racial groups. Simon et al. argue that we attend to other people we perceive to be relevant to our outcomes, and that, in a broad sense, higher-status individuals can influence our outcomes via their material and social power. Simon et al. did not measure neurophysiological responses in their experiments, which would have allowed comparison

[2]Note that the P2/VPP discussed here is distinct from a different positivity, also called 'P2', that emerges after the N170 at occipito-temporal locations when an average reference is used and which tends to be larger for own—relative to other-race faces (see Wiese & Schweinberger, 2018).

of their findings with the other work reviewed here, nor did they directly manipulate the social status of different 'race' groups (e.g., by creating fictitious 'race' groups and varying their status). Future studies including such a manipulation could provide strong support for this intriguing alternative explanation of the ORE.

Future ERP-based examinations of the ORE would benefit from adopting advances in ERP data analytic approaches, especially analysis of trial-level data to isolate neural responses elicited by individual target faces (Volpert-Esmond et al., 2018, 2021). By disaggregating within—from between-person variability in ERP amplitudes, this approach can provide a more granular understanding of individual differences in the functional association between face-elicited neurocognitive responses and behaviour, including the ORE in recognition performance. Ultimately, such work could suggest targets for intervention to reduce the ORE in everyday situations.

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CONFLICT OF INTEREST STATEMENT

None.

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