Racial bias in pain perception predicts disparities in treatment, independent of stimulus effects

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Introduction

- The pain of Black Americans is systematically under-diagnosed and under-treated (Anderson et al., 2009; Green et al., 2003) in the United States
- Explicit stereotypes/prejudices underscore such disparities (Hoffman et al., 2016; Trawalter et al., 2012), while other work suggests a perceptual source
- White perceivers show robust racial bias in the visual perception of pain, which predicts bias in treatment (Mende-Siedlecki et al., under revision)

Research motivation: To examine the robustness of our proposed perceptual pathway, we attempted to rule out potential stimulus confounds related to pain tolerance and experience, by using (1) objectively-equated computer-generated stimuli, and (2) subjectively-balanced photographic stimuli, allowing us to apply a more conservative test of our hypotheses

Methods & Procedure

Participants
- Study 1: 124 White MTurkers (75 female, $M_{age} = 35.81, SD_{age} = 11.22$)
- Study 2: 129 White MTurkers (70 female, $M_{age} = 36.03, SD_{age} = 10.60$)

Pain Rating Phase
- In Study 1, participants saw 11 FaceGen morphs for each target, proceeding from neutral to pain, and made Yes/No judgments of whether each face was in pain (a "Yes" response advanced the task to the next target)
- Study 2 used an identical procedure with photos of real individuals posing painful expressions

Treatment Recommendations
- Participants saw ambiguously painful expressions (50%/50% morphs) of two Black and two White targets from the previous task and determined how much of a non-narcotic analgesic cream each should receive (0 to 20g)

Social Evaluations
- Participants made evaluations of these four targets along 12 dimensions (7-point Likert-type scales; 1 = not at all; 7 = extremely; e.g., "How much does this face look like it’s in physical pain?")

Demographics, Feeling Thermometers, and False Beliefs
- Participants completed 1) demographics, 2) feeling thermometers describing warmth (0 = very cold, 100 = very warm) towards ten social groups, including Blacks and Whites, from which we calculated explicit anti-Black bias, and 3) a measure of false beliefs about biological differences between Blacks and Whites (Hoffman et al., 2016)

Results

Racial bias in thresholds for pain perception
- We observed a main effect of race on participants’ threshold for pain perception ($p < .001$; $\eta_p^2 = .03$): participants prescribed more analgesic to White targets, versus Black targets (Figure 3 in S1; Figure 5 in S2)

Racial bias in treatment recommendations
- We observed a main effect of race on participants’ treatment recommendations ($p < .001$; $\eta_p^2 = .04$): participants prescribed more analgesics to White targets, versus Black targets (Figure 3 in S1; Figure 5 in S2)

Bias in pain perception predicts bias in treatment recommendations
- Comparatively higher thresholds for perceiving pain on Black faces were associated with comparatively less analgesic prescribed to Black targets ($p < .001$; $\eta_p^2 = .05$; Figure 6; $p > .05$; $\eta_p^2 = .01$; Figure 7)

This relationship held in a multiple regression controlling for explicit anti-Black bias, bias in strength and status judgments, and false beliefs ($p > .05$; $\eta_p^2 = .12$; $SE = 3.02, [122] = 4.02, p < .001$; $SE = 8.54, SE = 2.53, [128] = 3.88, p < .001$)

Discussion & Future Directions

- Taken together, these results replicated and extended our previous work on racial biases in pain perception and care
- Not only was racial bias in pain perception associated with bias in subsequent treatment recommendations (independent of explicit prejudice and stereotypes that are relevant to judgments of pain experience and pain tolerance), but this relationship was even observed when completely controlling for differences in facial structure and expression intensity across Black and White targets

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Discussion - taken together, these results replicated and extended our previous work on racial biases in pain perception and care. Not only was racial bias in pain perception associated with bias in subsequent treatment recommendations (independent of explicit prejudice and stereotypes that are relevant to judgments of pain experience and pain tolerance), but this relationship was even observed when completely controlling for differences in facial structure and expression intensity across Black and White targets.