Building a Face Database to Study Racial Bias in Pain Perception

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Introduction

• We are interested in whether the racial disparities in pain care and pain management (e.g., Anderson et al., 2009) in the US might stem from a perceptual source.
• However, prior to this project, there was a lack of stimuli representing facial expressions of physical pain.
• Other available stimuli sets are small, relatively low quality, and lacking in racial diversity and variability of expressions (e.g., Simon et al., 2008).

Obtaining the Stimuli

• Stimuli were collected over 2 years at UD and NYU.
  • Participants (203 total; see below for demographics) received either course credit or $5 for their time.
• Photos taken 4 feet away in response to prompts; researchers took multiple images for each prompt using an iPhone 5S for the NYU set and a Nikon Coolpix L330 for the UD set.

Cleaning the Stimuli

• Both neutral and painful stimuli were cropped to the head and backgrounds were removed using Adobe Photoshop CC 2017. The image was cropped from chin to top of hair across all stimuli.
• Resolution and image size were equated across stimuli at 300 pixels/inch and 4 inches x 4 inches. Each face was centered and straightened on a 4 inch by 4 inch canvas.

Norming the Stimuli

Purpose: In order to be able to equate stimuli of different races on dimensions that might be relevant to pain perception, later this month, MTurkers will rate all 200 stimuli (a randomly assigned 25 targets per subject) on:
• Demographic features
  o Perceived age, gender, race/ethnicity, racial prototypicality
• Social evaluations
  o Attractiveness, dominance, masculine, feminine, intelligent, status, unusual, strong, baby-faced, competent, trustworthiness
• Emotional content
  o Sadness, disgust, surprise, threaten, happiness, anger, fear, physical pain

Procedure:
• Participants will see a randomized subset of 25 faces, with the social evaluation and emotional content subscales randomized within each question.
• Neutral stimuli will be rated on all three sets of judgments above; painful stimuli will only being rated on emotional content (including pain intensity).
• We will insert decoy faces expressing other emotions (e.g. happiness, sadness, fear, surprise) into the emotional content survey.

Future Directions

• Using the neutral and painful stimuli, we created morphs (Morpheus PhotoMorpher) which can be used in subsequent tasks designed to identify racial bias in pain perception.
• Specifically, we can examine how the threshold for perceiving pain on a face varies as a function of race.
• In an initial pilot, 77 UD participants viewed sets of Black & White morphs (8 sets each; 11 morphs per set) and rated pain intensity of each morph.

Database Demographics

Male Participants (N = 95)

Female Participants (N = 108)

Race Shifts the Threshold for Pain Perception (N = 77)

Definitely in pain

Black Faces

White Faces

Definitely not in pain

Neutral 10% 20% 30% 40% 50% 60% 70% 80% 90% Pain

Acknowledgments: We would like to acknowledge the contributions of following members in the Mende-Siedlecki Lab: R. Backer, L. Davis, D. DiMeola, M. Halkowski, A. Klysa, C. Martin, L. Owens, E. Pittman, D. Proulx, A. Schmidt, O. Stibolt, A. Wilford, & T. Williams.