The Role of Hemispheric Asymmetries in Race Categorization

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Abstract

Within this experiment, we attempted to combine two postulates, of each hemisphere promoting a different motivational outcome[1] and the baseline association towards Black faces being avoidance[2]. We predicted race categorization of racially ambiguous faces may correspond with hemispheric asymmetries for motivation. Our results did not strongly support our predictions, but lead us towards new investigation.

Introduction

- Generalization serves as an intrinsic mechanism for cognitive efficiency[3]
- Participants slow to approach and quick to avoid Black faces[2]
- Approach avoidance motivation is wired as a primal response[4]
- Left dorsolateral prefrontal cortex = approach, right dorsolateral prefrontal cortex = avoidance[5]
- Can we use hemispheric asymmetries to exacerbate or modulate negative motivational responses to Black faces?

Materials and Methods

- Direct RT + Media Lab used
- Selectively displayed a set of 40 racially ambiguous faces to the left (.17) or right (.83) side of the screen
- Images shown for 100ms
- Mask followed presentation of images
- Participants pressed "1" to indicate a black face, and "0" to indicate a white
- Location and keystroke counterbalanced
- AMP followed (measure of pro-Black bias)
- 2 visual field (R/L) x AMP score (continuous) design, with race categorization (# of faces labeled Black) as dependent measure

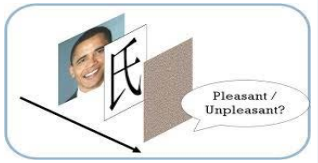


Figure 1: AMP Schematic[6]

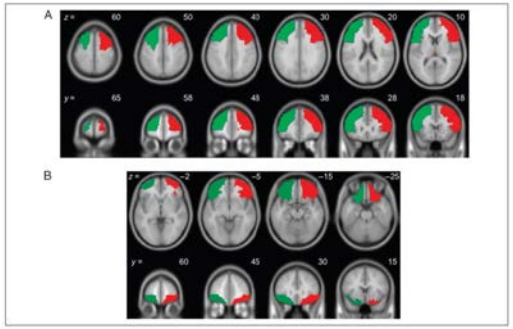
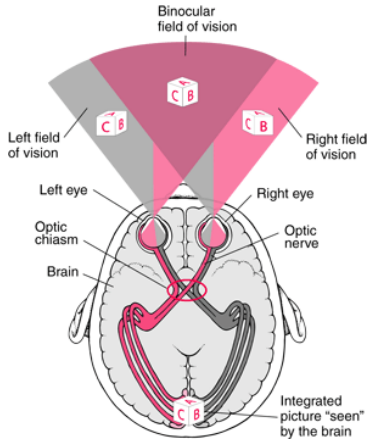


Figure 2 (top) depicts fMRI of dorsolateral prefrontal cortical activation, using 2 (approach/avoidance) x 2 (positive/negative stimuli) design[5]. Figure 3 (right) depicts contralateral nature of vision.[7]



Results

- ANCOVA analysis of co-variants
- Main effect of visual field on race categorization F (1, 40) = 2.784, p = .103
- Trending main effect shows:
  - Participants categorized more faces as Black when viewed in right (M = 7.26, SD = 4) than left (M = 7.00, SD= 3.51) visual field
- Interaction between AMP and visual field (p=0.72)

Discussion

- Results don't directly support prediction
- We predicted left visual field would exacerbate negative racial attitudes, opposite occurred
- As we presented faces to the right visual field and the AMP score increased, classification of the faces as Black decreased

Future Investigation

- Replicate experiment with population containing more typical racial attitudes
- Investigate a less perceptually variable quality, like evaluations of trustworthiness or real vs. fake smiles[4]

Figure 4: Real vs. Fake Smiles[8]

Works Cited

Berkman, Elliot T., and Matthew D. Lieberman. "Approaching the Bad and Avoiding the Good: Lateral Prefrontal Cortical Asymmetry Distinguishes between Action and Valence." Journal of Cognitive Neuroscience 22.9 (2010): 1970-979. Web. [5]
Chen, M., & Bargh, J. A. (1999). Consequences of Automatic Evaluation: Immediate Behavioral Predispositions to Approach or Avoid the Stimulus. Personality and Social Psychology Bulletin, 25(2), 215-224. doi:10.1177/0146167299025002007 [2]
Davidson, Richard J. "EMOTION AND AFFECTIVE STYLE: Hemispheric Substrates." Psychological Science 3.1 (1992): 39-43. Web [1]
Ghaida, Jamal A., Ayman G. Mustafa, and Saleh M. Banihani. "Ipsilaterality Serves Contralaterality: An Explanation for the Ipsilateral Pathways of the Retinal Fibers of the Binocular Vision." *Neurosciences* 20.4 (2015): 400–401.*PMC*. Web. 12 Apr. 2016.[7]
McLeod, S. A. (2008). Stereotypes. Retrieved from www.simplypsychology.org/katz-braly.html [3]
Patel-Wilson, Terin. "The Subtle Smile." Yale Scientific Magazine. Yale Scientific Magazine - Http://www.yalescientific.org, 18 Mar. 2012. [8]
Payne, B. Keith, Clara Michelle Cheng, Olesya Govorun, and Brandon D. Stewart. "An Inkblot for Attitudes: Affect Misattribution as Implicit Measurement." *Journal of Personality and Social Psychology* 89.3 (2005): 277-93. Web. [6]
Slepian, Michael L., Steven G. Young, and Eddie Harmon-Jones. "An Approach-avoidance Motivational Model of Trustworthiness Judgments." Motivation Science 3.1 (2017): 91- 97. Web. [4]