

A perceptual basis for outgroup homogeneity (#3229)

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Created: 03/03/2017 07:15 AM (PT)

Public: 03/03/2017 07:25 AM (PT)

1) What's the main question being asked or hypothesis being tested in this study?

When animals encounter rewarding stimuli, they learn to identify that stimuli well. Conversely, if they encounter an aversive stimuli, they overgeneralize that negativity to similar stimuli which disrupts discriminating between stimuli. We are testing whether this learning mechanism plays a role in social perception. A positive group reputation should lead to better perceptual discrimination of individual group members relative to a negative reputation which may cause perceptual overgeneralization and the outgroup homogeneity effect. Critically, this valence difference in discrimination performance should be greatest when a discrimination task is difficult (such as when face pairs are perceptually similar).

2) Describe the key dependent variable(s) specifying how they will be measured.

The main measure is accuracy in a forced choice perceptual psychophysics task where participants must determine which of two faces are more similar to a target face. Accuracy for memory of group reputations will also be assessed.

3) How many and which conditions will participants be assigned to?

4 main conditions, each participant will learn about two groups whose members act positively or negatively (within subject) represented by two separate gaussian distributions from a continuous dimension derived from a computational model of faces which contain either wide or thin faces (within subject). Counterbalancing occurs between subjects, so one subject may learn that the wide-faced group is positive and the thin-faces group is negative while another participant will learn that the wide group is negative and the thin group is positive. This addresses a possible confound that the face shape and not the valence may drive the results. There is also a continuous within subject condition of perceptual similarity that manipulates the psychophysical difficulty of choosing between face pairs (from most similar to least: .2, .4, .6, .8, 1).

4) Specify exactly which analyses you will conduct to examine the main question/hypothesis.

Mixed effect logistic regression with varying intercept and slopes (valence, face type) within participant, the trial accuracy data from the psychophysics task as the dependent variable, and test the interaction between valence (categorical), face type (categorical), and perceptual similarity (continuous).

5) Any secondary analyses?

The valence difference may also change depending on how dissimilar the face pairs are from the target face. The further the face pairs are from the target face, the more difficult the task, and possibly the greater the valence difference.

6) How many observations will be collected or what will determine sample size? No need to justify decision, but be precise about exactly how the number will be determined.

We ran a simulation-based power analysis using the results of a pilot version. 320 trials will be collected per subject (30 trials per perceptual similarity condition (5) x 2 valence = 300 perceptual discrimination trials, and 20 memory trials). The power analysis indicated that we need around 60 participants per counterbalance group for 80% power on the slope difference between positive and negative. We will instead collect 70 per group to buffer for inaccuracies in the assumptions of the power analysis.

7) Anything else you would like to pre-register? (e.g., data exclusions, variables collected for exploratory purposes, unusual analyses planned?)

Incomplete data due to unforeseen errors will be excluded. An exploratory drift diffusion analysis may be conducted to examine the decisional components of this perceptual bias.

8) Have any data been collected for this study already?

No, no data have been collected for this study yet