Method

Participants

The participants in this study were 24 (8 men, 16 women) undergraduate psychology students at San Jose State University. The median age of the participants was 22. The students were enrolled in an upper-division research methods course and participated in partial fulfillment of a course requirement.

Stimuli

The stimulus for each trial was either a face or a word. The faces were drawn from a set of 16 monochromatic images of faces of white individuals or a set of 16 monochromatic images of faces of black individuals. All of the faces were cropped vertically from mid-forehead to mid-mouth, and horizontally just between the temples. The words were drawn from a list of 16 "good" words (caress, freedom, health, love, peace, cheer, friend, heaven, loyal, pleasure, diamond, gentle, honest, lucky, rainbow, diploma) or 16 "bad" words (abuse, crash, murder, sickness, accident, death, grief, poison, stink, assault, disaster, hatred, pollute, tragedy, bomb, filth). All stimuli were vertically centered on the monitor screen against a light gray background. The word stimuli were presented in black in 18-point Courier New typeface.

Apparatus

The approximately 15-minute experiment was programmed using the computerized experiment-generating software, E-Prime (Psychology Software Tools, Inc., version 2.03). The computer used was a standard desktop PC. The monitor used was a Dell 24" monitor. The viewing distance was 72cm. The experiment was run with each participant alone in a well-lit individual testing laboratory. Responses were entered by the participant using two fingers of either their right or left hand via the "1" and "2" keys of the numeric keypad on a standard

computer keyboard.

Design

The experiment was a 2x2 within-subjects factorial design consisting of two blocked conditions (the match condition and the mismatch condition) counterbalanced across participants. As a result of the counterbalancing, either the "1" or "2" key mapping were the same for the whole experiment for either the white/black or the good/bad task.

Procedure

Each condition began with a practice block of 16 trials followed by an experimental block of 64 trials. For each condition, the participant was given instructions (in black 18-point Courier New typeface) to press the appropriate key upon being presented the stimulus. The key mapping for the match condition paired faces of white individuals with good words on one key, and faces of black individuals with bad words on the other key. In the mismatch condition, one key paired faces of white individuals with bad words, while the other key paired faces of black individuals with good words. The instructions remained on the screen until the participant pressed the spacebar.

Each trial began with a fixation cross (an asterisk in black 18-point Courier New typeface), presented on the screen for 1000ms before being replaced with the stimulus (i.e., word or face). The stimulus remained on the screen until either a response (i.e., pressing the '1' or '2' key) was made or the trial timed out (after 3000ms). Feedback of the participant's response, which consists of either "CORRECT" (in blue), "INCORRECT" (in red), or "NO RESPONSE" (in red), along with response time in milliseconds and average percent correct, then appears on the screen for 1500ms, followed by the fixation cross for the next trial.

Upon completion of the last block of trials, the program presented a goodbye message,

which remained until the participant pressed the spacebar.

Results

The data analyzed were mean individual response time and accuracy. Only correct responses were analyzed for the response time data, which were filtered between 100 ms and 2500 ms. Accuracy was measured for all trials. Prior to analyses, one participant was removed from the data for having an overall accuracy of less than 75%. Response time and accuracy were analyzed separately using a 2x2 repeated-measures factorial ANOVA.

Response Time

There was a significant main effect of match condition (match vs. mismatch); namely, the mean match response time (122ms) was faster than the mean mismatch response time (860ms) by 138ms, $F(1, 22) = 14.60$, $p = .001$. The main effect of task (face vs. word) was also significant; the mean face task response time (763ms) was faster than the mean word task response time (818ms) by 55ms, $F(1, 22) = 5.84$, $p = .024$ (see Figure 1). There was no evidence of an interaction between match condition and task, $F(1, 22) = 1.27$, ns.

Accuracy

The main effect of match condition (match vs. mismatch) accuracy was such that accuracy for the match condition (94.2%) was higher than accuracy for the mismatch condition (85.9%), $F(1, 22) = 13.69$, $p = .001$. The main effect of task (face vs. word) was such that accuracy for the word task (90.3%) was slightly higher than accuracy for the face task (89.7%), $F < 1$ (see Figure 2). There was no evidence of a significant interaction between the match condition and task, $F < 1$.

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