

Running head: EFFECT OF INTERFERENCE ON VERBAL REACTIONS

The Effect of Semantic Interference on Verbal Reaction Time

Skyler Kanegi

The University of Texas at Austin

Method

Participants

Twenty-seven psychology students (17 women, 10 men, M age = 22.11 years, age range: 18-55 years) at the University of Texas at Austin received partial course credit for their participation but were given the option of declining without penalty. All participants were capable of seeing and reading the words presented during the study.

Design

The present study used a two-way within-subjects design. The independent variable was the presence of semantic interference that contradicted ink color. The dependent variable was the response time for participants to serially name the ink color of each word presented to them.

Materials

Twenty words were printed in Times font on two 21-inch wide x 31.5-inch long posters, which were then taped 18 inches from the top of two identical doors in adjacent laboratory rooms at the University of Texas at Austin. Each word was one inch tall and two inches from the word below it. The words had been divided into two columns of ten words, spaced six inches apart.

The twenty-word list for the interfering condition was created by block randomizing four lists of five color words. Each block contained all five words in a different random order, and the four blocks were arranged so that no word followed itself consecutively between blocks.

Within each block, all five words were printed in an ink color different from their respective semantic concepts in such a way that no two words were the same color—ink color was determined through random assignment without replacement. Because the words provided interference for naming the ink color, they could never be printed in the same ink color as their semantic concept (e.g., the word “red” could never be printed in red ink), but each word was

printed exactly once in each of the four other colors. The words were colored in such a way that no ink color followed itself consecutively between blocks.

For the neutral condition, a neutral, non-color word with the same first letter, number of letters, and number of syllables was matched with each interfering word (red—rat, green—goose, black—brain, blue—boat, and yellow—yogurt). These words were then arranged in the same order and printed in the same ink color as the corresponding words on the interfering list (e.g., if “red” appeared in blue ink as the first word in block four on the interfering poster, “rat” appeared in blue ink as the first word in block four on the neutral poster).

Procedure

Participants were randomly assigned to a group (Group 1 or Group 2), and each group was randomly assigned an order of presentation of the two conditions. Group 1 started with the neutral condition (which was in Room N) while Group 2 started with the interfering condition (which was in Room I) to counterbalance for order effects. Participants from each group would enter their respective rooms one at a time.

When each participant entered the room, a poster had already been taped to the door, the back of which labeled the room as either N or I. A single experimenter, who was already in the room, read verbatim specific print instructions. The participant was told to turn toward the door he or she had just entered without looking up. As he or she heard the experimenter say “begin,” he or she was to look up at a poster on the door and, as quickly as possible, name the ink colors that the words on that poster were printed in, beginning with the left column, working top to bottom, and then doing the same with the right column. The experimenter clarified that the participant should not read the words on the poster, and the participant was given an opportunity to ask questions if he or she did not understand the instructions.

After reading the instructions, the experimenter told the participant to look up and begin, while simultaneously starting a stopwatch. When the participant had named the ink color of the last word, the experimenter stopped the watch and recorded the response time on a data sheet. The participant then became the new experimenter. This was repeated until all participants had participated in both rooms.

Results

The effect of semantic interference on verbal reaction time is illustrated in Figure 1, which shows the mean reaction time to serially name ink color in the interfering word condition ($M = 17.8404$) and the neutral word condition ($M = 15.1893$), respectively. To test the significance of this effect, the data were analyzed using a dependent samples t-test. This analysis revealed that, on average, participants took significantly more time to name the ink color in the interfering word condition than in the neutral word condition, $t(26) = 3.319, p < .01$.

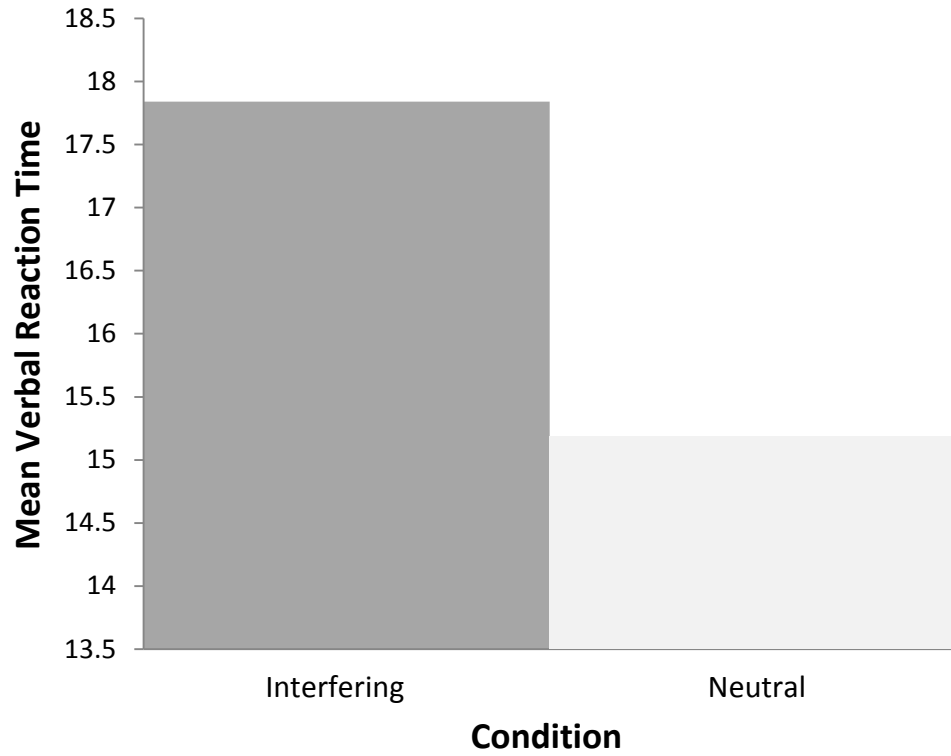


Figure 1. Mean verbal reaction time for each condition. The reaction time for the interfering condition was significantly greater than the reaction time for the neutral condition.