Word Priming Experiment

Lab Report

October 2025

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Introduction

Priming is a psychological phenomenon where earlier exposure to a stimulus affects the response to a latter stimulus without conscious awareness (Tulving & Schacter, 1990). In word completion and lexical decision tasks, priming represents implicit memory processes, whereby participants are able to recall or recognize words previously encountered more rapidly or accurately, even when not aware of the repetition (McNamara, 2005).

Word priming tasks are essential in the study of unconscious encoding—the automatic process by which information is stored and retrieved without conscious intention (Graf & Mandler, 1984). The experiment attempted to quantify the degree to which exposure to certain "study words" helped complete correct fragments of "test words." The priming score was therefore an operational measure of implicit memory strength.

Method

Participants

Four undergraduate students (Participant 01–04), aged 20, 19, 21 and 21 respectively. All 4 were females and all of them took part in the experiment voluntarily. All the participants had normal or corrected-to-normal vision and basic English proficiency.

Materials

The experiment was conducted on a HP windows 11 home laptop with a screen resolution of 1920 X 1020 pixels using Psychopy (version 2025.1.1) software where the experiment was ran. The stimuli were comprised of two lists of words:

A study list with fully formed words (e.g., book, police, cushion).

A test list with incomplete word fragments (e.g., b__k, p_li_e).

The experiment was done electronically with Microsoft Excel used for recording and input of data. Participants were presented with the study list followed by the test phase, where they tried to fill in the fragments.

Procedure

First, all participants learned the list of study words, and then after a brief delay, they were probed with the test words that included a mix of primed (old) and non-primed (new) items. They entered their completion for each word fragment in a textbox. Once data collection was complete, for every participant, the following scores were calculated, respectively:
Proportion of successfully completed primed words.
Proportion of successfully completed non-primed words.
Priming score (proportion of the primed hits) - (proportion of non-primed hits).

Results

The individual participant results are summarized in **Table 1** below.

Participant	Proportion of Primed Hits	Proportion of Non-Primed Hits	Priming Score	Interpretation
Participant 01	0.53	0.80	**–0.27**	Negative priming observed; prior exposure did not enhance recall accuracy.
Participant 02	1.00	0.80	**0.20**	Positive priming effect; exposure improved implicit recall performance.
Participant 03	0.73	0.80	**–0.07**	Slight inhibition; minimal priming observed.
Participant 04	0.80	1.00	**–0.20**	Negative priming; possible overfamiliarity or confusion with similar words.

Table 1. Priming results for all participants.

In short, only Participant 02 showed a clear positive priming effect, while the others showed neutral or negative priming. These findings suggest that priming effects can be very different between individuals based on attention, depth of encoding, or stimulus familiarity.

Discussion

The inconsistent results indicate that word priming does not all-alike enhance implicit recall in all
participants. In some circumstances, negative priming can be an effect of lexical interference items that are similar or inadequate encoding of study words (Neill & Valdes, 1992). Participant 02's strong positive priming effect supports the classical theory that repeated exposure results in improved retrieval and recognition of stimuli in a brief duration (Tulving & Schacter, 1990).

References

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