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Spring 2022

How Study and Test Formats Impact Foreign Language Vocabulary Learning: Pictures vs. Words

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Recommended Citation

Pinzone, Marie, "How Study and Test Formats Impact Foreign Language Vocabulary Learning: Pictures vs. Words" (2022). *Celebration of Scholarship 2022*. 9.
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How Study and Test Formats Impact Foreign Language Vocabulary Learning:

Pictures vs. Words

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Introduction

Research Question: To what extent does the *Picture Superiority Effect* (PSE) obtain for foreign language (FL) learning?

Background: The *Revised Hierarchical Model* suggests FL vocabulary acquisition is mediated and enhanced by native language vocabulary knowledge (Kroll & Stewart, 1994). The PSE, based on Paivio's dual coding theory, holds that pictures are remembered better than words due to being encoded by both verbal and pictorial codes (Paivio & Csapo, 1973). Mixed evidence exists regarding whether the PSE obtains in FL vocabulary learning (Carpenter & Olson, 2012). Hockley (2008) found that the PSE for associative recognition occurs even when picture pairings are presented as words at test.

Current Study: The present study seeks to replicate and extend the investigation of the PSE for FL learning. Experiment 1 manipulated study modality only (picture vs. word). Experiment 2 manipulated both study (picture vs. word) and test (picture vs. word) modality.

Hypotheses: Foreign words studied with pictures were expected to be remembered better than foreign words studied with their English translations across both experiments. Additionally, in Experiment 2, an interaction was expected in which items studied and tested in the same modality (picture-picture or word-word) would be remembered better, and that items tested differently but studied as pictures (picture-word) would not be significantly impacted by the lack of congruity.

Method

Participants: 72 John Carroll University undergraduate students (25 in Experiment 1; 47 in Experiment 2)

Stimuli: One-syllable FL items taken from Lithuanian norms (Grimaldi, Pyc, & Rawson, 2010).



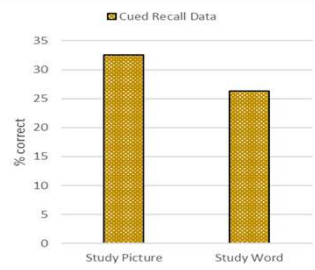
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Procedure:

- Fifty-six item pairs (28 picture-FL, 28 word-FL) studied by each participant, followed by a filler task.
- In Experiment 1, participants completed cued recall test, prompted by FL item.
- In Experiment 2, participants completed associative recognition test with half of the pairs (14 picture-FL, 14 word-FL) in the same modality as studied and half in incongruous modality. Half of these pairs were correctly-paired, half incorrectly-paired. Participants decided whether the pairing was "old" (correctly-paired) or "new" (incorrectly-paired).

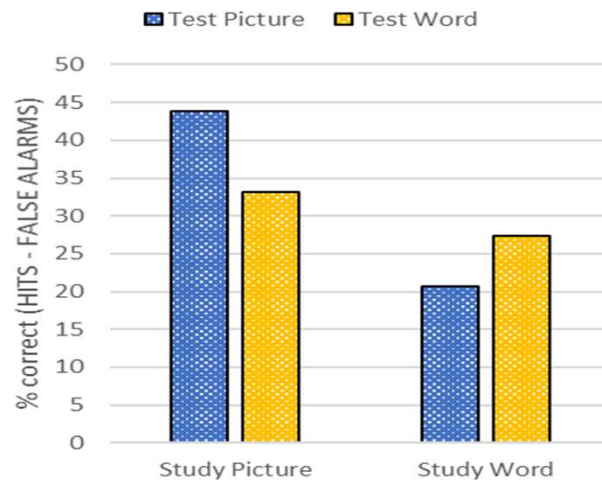
Experiment 1



All data were analyzed using IBM SPSS Statistics Version 28.0.0.0 (190).

Participants recalled FL items studied with pictures ($M = 32.57, SD = 21.24$) better than those studied with words ($M = 26.29, SD = 19.99; t(24) = 3.468, p < .002, d = .694$).

Experiment 2



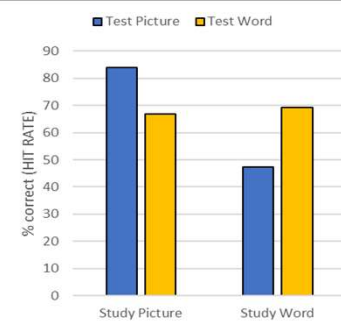
Corrected Recognition:

FL items studied with pictures ($M = 60.34, SD = 36.02$) were remembered better than those studied with words ($M = 24.02, SD = 33.92; F(1, 46) = 22.825, p < .001, \eta^2 < .332$). There was an interaction between study and test modality ($F(1, 46) = 5.825, p < .020, \eta^2 < .112$).

$PP > PW > WP$ and $PP > WW$

All pairwise comparison p-values < .047.

Experiment 2 (continued)



Hits: determined by when the correct answer is "old" (correctly-paired) and participants responded with "old" (correctly paired).

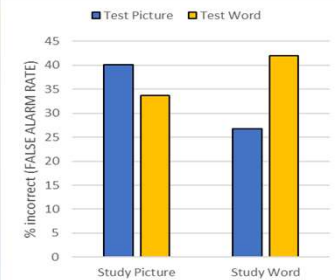
$PP > PW > WP$
 $WW > WP$

All pairwise p-values < .001.

False Alarms: determined by when the correct answer is "new" (incorrectly-paired) and participants responded with "old" (correctly paired).

$PP > PW > WP$
 $WW > WP$

All pairwise p-values < .041.



Conclusions

- Results indicate that the PSE does obtain for FL learning.
- Consistent with conclusions by Hockley (2008), the PSE seems to produce an encoding (not retrieval) advantage.
- In a classroom setting, studying translations or pictures may not matter much, **but if you would like to use the language in a more-natural setting**, studying with pictures may be the better approach.

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