

# Example of article review on lexical decision



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## Citation 8 -- “ Lexical Decision”

2. Goal of article: State the research questions and/or hypotheses being investigated (What are they trying to do?) (Four sentences to one paragraph)

The main objective of this study is to determine the mechanisms that underlie the retrieval model used in deciding whether successive pairs of strings presented to subjects are words. The researchers also wanted to determine the reaction times of the memory-accessing components when associated words and non-associated words are used on subjects.

3. List three (3) cognitive psychology terms important for the topic of the article, find their definitions or descriptions in any CogPsy textbook (give reference) and provide them here:

- Lexical decision task: An experiment that requires subjects to determine as fast as possible whether the pairs of words presented to them are words or not

2. Homograph: Word having one or two meanings.

3. Reasoning: A thinking process that involves making conclusions after examining a series of facts.

4. Describe ALL the dependent variables for the designated experiment:

- Provide an operational definition

Mean reaction time: The period between presenting subjects with a stimuli and giving a response.

Mean percentage error: The percentage of non-correct responses.

Mean reaction time was measured in mSec

Mean percentage error was measured in %

5. Describe ALL the independent variables for the designated experiment:

Top string: The string placed on the upper section.

Bottom string: The string placed on the lower section.

- List its levels

Level 1: The top string was a word while the bottom string was an associated word.

Level 2: The top string was a word while the bottom string was an unassociated word.

Level 3: The top string was a word while the bottom string was a non-word.

Level 4: The top string was a non-word while the bottom string was a word.

Level 5: The top string was a non-word while the bottom string was a non-word too.

Level 6: the top string was a word while the bottom string was an associated word.

Level 7: The top string was a word while the bottom string was an unassociated word.

Level 8: The top string was a non-word while the bottom string was a non-word too.

Level 9: The top string was a word while the bottom string was a non-word.

Level 10: The top string was a non-word while the bottom string was a word.

Analysis of variance (ANOVA)

- If there are more than one independent variable, state the factorial design

210 (Two by ten factorial design): Two independent variables each having ten

different levels.

6. Describe how the experiment was conducted, i. e., what was the

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procedure: (4-6 sentences)

The experiment was divided into two parts: experiment 1 and experiment 2. Experiment 1 involved seating the subjects in front of a dark screen, presenting a warning signal with the word ready inscribed on it, and then presenting both the top string and bottom string in white capital letters. The subjects would then press yes if both strings were letters, and no if otherwise. The reaction time was measured from the onset of the stimulus to the period when a response was given. After an interval of two seconds, the subject would then be informed whether their response is correct.

Experiment 2 was similar to experiment one, only that subjects were expected to press " same" if both strings were words or non-words, and " different" if otherwise.

7. Identify all the main effects and interactions (if the design is factorial). Make sure you state the main effect for EACH independent variable you named in (5):

- Provide the statistical statement (t- or F-statement)

Experiment 1

- Yes responses involving associated and nonassociated words  $F(1, 11) = 20.6, p < .001$ .

- No responses involving words and non-words  $F(1, 11) = 171.7, p < .001$

- No response for pairs of non words  $F(1, 11) = 2.0, p < .10$

- Error rates involving associated and non-associated words  $F(1, 11) = 2.1, p > .10$ .

- Error rates involving words and non-words when a word was displayed above  $F(1, 11) = 18.9, p < .005$ .

- Error rates involving words and non-words when a non-word was displayed

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on top  $F(1, 11) = 5.5, p < .05$ .

### Experiment 2

- Same responses for associated and non-associated words  $F(1, 11) = 42.6, p < .001$
- Same responses for pairs of non-words and pairs of un-associated words  $F(1, 11) = 40.7, p < .001$
- Different responses when the word displayed was non-word  $F(1, 11) = 7.3, p < .025$
- Error rate for associated and un-associated words  $F(1, 11) = 16.6, p < .01$
- Error rate of un-associated words and non-words  $F(1, 11) < 1.0$
- Error rate of words and non-words  $F(1, 11) < 1.0$
- Explain each statement in plain English

### Experiment 1

- Yes responses for associated words were significantly faster than for non-associated words
- No responses involving words were significantly faster than no responses for non-words
- No responses for pairs of non-words was not significantly faster when the non-word was displayed above
- The error rate of associated words did not differ significantly from the error rate of non-associated words
- Error rates involving strings of words and non-words was significantly greater when the word was placed on top
- Error rate for pairs of non-words was significantly less when the non-word was placed on top of the word

## Experiment 2

- Same responses for pairs of associated words was significantly faster than same responses for pairs of non-associated words
- Same responses for pairs of non-words was significantly slower than for pairs of associated words
- Different responses were significantly faster when the word displayed on top was a non-word
- The error rate for pairs of associated words was significantly less than for pairs of unassociated words
- There was no significant difference between error rates pairs of un-associated words and non-words
- For error rates involving words and non-words, there was no significant difference when either a word or a non-word was placed on top

### 8. Steps or conclusions suggested by the article (One paragraph):

#### a. How is each research question listed in (4) answered?

The mean reaction time is compared for pairs of associated words and for pairs of non-associated words. The mean reaction time is also compared when subjects are presented with pairs of words and pairs of non-words. The same process also applies when subjects are presented with the same pairs of strings and different pairs of strings. In the case of mean percent error, the percentage is compared for pairs of associated words and non-associated words, pairs of words and pairs of non-words, and pairs of same words and pairs of different words.

#### b. What do the data mean?

Results obtained indicate that lexical decisions depend on the pairs of strings

presented and the order of strings. When non-words and non-associated words are

placed on top, subjects find it difficult to make the decision.

9. If you wanted to study the Lexical Decision task, what kind of experiment would you run? Briefly describe it. (One-two paragraphs).

A simple lexical decision task would involve presenting pairs of strings to the subjects.

One of the strings would be placed on the top of the other. The subjects would be required to give a yes response when both the top and the bottom strings are words, and give a no response when otherwise. At first, subjects would be presented with strings of words and required to indicate their response using a yes or no answer. Later, subjects would be presented with strings of non-words and words and required to give a yes or no response. The reaction time for each response would be measured, and the results averaged to give the mean reaction. This would indicate how fast lexical decisions are made, and the factors that influence the decision.

- How could one apply the Lexical Decision task to education? (One-two paragraphs).

Lexical decision task would be more applicable in sensory training. Sensory training

requires individuals to use the five senses to correctly identify or differentiate stimuli.

With the right training, individuals can be trained to make the right decisions within the

short time possible, and with a high degree of accuracy. The training would

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also be

appropriate for young people in order to increase their literacy.

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