Lab 1: Determining the Effects of Level of Processing and Word Type on Recall

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In a well-known study, Craik and Tulving (1975) introduced the notion of level of processing and how varying the depth with which a list of words is processed relates to the likelihood of later recall of that word list. The authors found that when an individual attended to the meaning of a word (i.e., deep procesing), recall was better than when an individual attended to the surface characteristics of the word (i.e., shallow processing).

In the present study, recall of both abstract and concrete words was tested as a function of level of processing (shallow versus deep). Congruent with past research, it was hypothesized that both types of words would be better recalled when paired with deep processing rather than shallow processing. It was also hypothesized that concrete words would be better recalled than abstract words, regardless of level of processing.

Method

Participants

A total of 94 adults (65 female, mean age = 21.3 years, SD = 3.5 years) were recruited to participate in the study. Each level of processing condition contained 47 participants. Participants were randomly assigned to one of the two level of processing conditions.

Materials

Twenty words, 10 abstract and 10 concrete, were used as stimulus words. The words were written on small pieces of paper and were then shuffled for randomness. A blank piece of copier paper was used to record the participants' responses.

Procedure

Each participant was given instructions that words would be presented orally to them, and they would need to answer "yes" or "no" based on the condition the participant was in. In the

deep level of processing condition, the participants would answer based on whether or not the word was something that they associated with their experiences in life, whereas the shallow level of processing condition asked the participants to answer whether or not a word had the letter "a" in it. They were then informed that after the presentation of the stimulus words, they would be given a number by the researcher and would be required to count backwards from that number by 3's until they were told to "Recall", at which time the participant was to record as many words as they could remember on to the blank paper.

Participants were presented with all 20 words in random order, and they were given time to answer appropriately for each condition. At the completion of this task, the participant began the distraction task of counting backwards. After 15 seconds, participants were then told to "Recall," and they wrote as many words as they could remember on their response paper. After 90 seconds, the participants were asked to stop and the responses were collected. The participants were then read a debriefing statement and thanked for their participation.

Results

The mean number of words recalled was analyzed via a 2 x 2 factorial analysis of variance (ANOVA), with a between-subjects factor of level of processing (shallow vs. deep; between subjects) and a within-subjects factor of word type (abstract vs. concrete; within subjects).

There was a significant main effect of level of processing, $F(1,92) = 53.83$, $p < 0.001$. Participants recalled more words in the deep processing condition ($M = 5.21$) compared to the shallow processing condition ($M = 3.31$). Additionally, there was a significant main effect of word type, $F(1,92) = 13.58$, $p = .0004$. Participants recalled more concrete words ($M = 4.69$)

than abstract words ($M = 3.83$). There was no interaction between level of processing and word type, $F(1,92) = 0.47$, $p = .4967$.

Discussion

The results support the hypothesized recall benefit of a deep versus a shallow level of processing for both types of words, while also supporting the hypothesized higher recall of concrete over abstract words. Also of interest was the lack of a significant interaction between the two conditions. The main effects of each independent variable coincide with the results found by previous researchers regarding level of processing and word type recall. The lack of a significant interaction between level of processing and word type indicates that, regardless of level of processing, the memory recall of concrete words is consistently higher than the recall of abstract words.

Potential limitations of this study include the relatively limited convenience sampling method for choosing participants. While this sample should provide adequate generalization to the college population, other groups may be excluded; the fact that most participants were seekers of higher education should be considered. Another possible limitation is both the valence (how negative or positive) and the arousal (how calming or exciting) of the different word types (Kensinger & Corkin, 2003). While these issues were not addressed in this study, different levels of arousal and valence have shown to affect word recall, and thus it would be of interest to control for this variable in subsequent studies.

In the continuing study of human memory, it is sometimes important to attempt to discover new interactions in order to expand our understanding of the topic. While this study did not discover a new interaction between level of processing and word type, it did find evidence to form the hypothesis that there is, in fact, no interaction between these two variables. Future

research can control for more variables and include other possible factors to more precisely refine this hypothesis, and ultimately determine if this is something that should be considered, or if it is something that can be set aside and other avenues explored.

References

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