
EXPLORING THE EFFECT OF LINGUISTIC VARIABLES ON THE RECALL TASK

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ABSTRACT

Recall is the process of re-accessing a sensory experience or events which an individual would have confronted in the past. In lay man terms it is referred to as remembering. Recall abilities are influenced by many subject related, stimulus related and linguistic related variables. Not many researchers have investigated the influence of linguistic variables on recall. 30 participants in the age range of 18-25 years were enrolled for the study. Short words versus long words, nouns versus verbs, concrete words versus abstract words and semantically related words versus unrelated words were used as stimulus. Better performance was seen on short over long words and nouns over verbs reflecting that the syllable length and word type would influence recall. The performance was better for concrete over abstract words, semantically related word list compared to unrelated words depicting that the recall abilities would vary as a function of linguistic variables.

Keywords: Word Length, Word Type, Concreteness, Semantic Relatedness.

1. INTRODUCTION

Recall or retrieval of memory is the last stage in the memory process. Recall in memory refers to the process of re-accessing a sensory experience or events which an individual would have confronted in the past. Human long-term memory consists of many thousand traces of words, pictures, episodes, and other types of information and hence retrieving or recalling this information is challenging. Recall tested in a clinical scenario is called bound recall task as an individual is expected recall only those items presented as test stimuli.

There are three different types of recall namely free recall, serial recall and cued recall and each of this can be recalled in two ways/patterns depending on time duration given: immediate and delayed. a. Immediate recall: The ability to recall events or objects immediately after it is learnt. Here the recall period starts immediately after the final item in the presented list. b. Delayed recall: The ability to recall events or objects after given period following learning. Here, a short distraction period is interpolated amidst the final item in the list and the initiation of the recall period. c. Free recall: The ability to recall events or objects without any cues in any order. Here, the participants are presented with list items that need to be remembered, one at a time. After the presentation of the entire list, the participants are asked to recall items in any order that he or she prefers and hence called free recall task. d. Cued recall: The ability to recall events or objects when partial information or cues relating to the target is given. Here cues are given during the experiment to help in the recall. If the link between the cue and the target word is stronger, then recall would be improved. e. Serial recall: The ability to recall events or objects in a serial order. The ability to store items in memory in an order and recall them later is important in the use of language. Serial-order recall helps us in remembering the order of events in our lives, our autobiographical memories etc. The ability to recall is also

governed by certain factors like attention, motivation, linguistic abilities etc. These factors determine how well an individual can recall.

Linguistic variables are known to influence recall abilities significantly. Some of the linguistic factors considered for earlier studies include word length: short words versus long words, concreteness versus abstractness, image ability of the target words, semantically related versus semantically unrelated words (2) etc. An earlier study investigated the effect of word length on recall in English and reported that the recall was better for long words compared to short words and he attributed better recall for long words to redundancy while a study (4) reported contradicting findings, she reported recall to be better for short words and the reason quoted in defence was word simplicity. A study (3) focussed on the effect of word concreteness on recall and reported that the recall would better for concrete words. The effect of semantic relatedness between the target words on recall was reported by Smith (5). However, the task used was not bound recall and stimulus used was emotional versus non emotional words.

Need for the study- Very few studies have studied the effect of linguistic variables on recall. The effect of these linguistic variables is studied through discrete studies and all these studies would have been carried out on different participants and the results of such studies may not be readily applicable owing to variability. The present study is an attempt to study the effect of these variables on a single set of participants.

Aim- To study the effect of linguistic variables on recall.

Objectives:

- To study the effect of word length on recall
- To study the effect of word type on recall
- To study the effect of concreteness on recall
- To study the effect of semantic relatedness on recall

2.METHOD AND MATERIALS

Participant details: The total number of participants considered for the study was 40 (20 males and 20 females) in the age range of 18-25 years with no communicative, sensory, psychological problems were enrolled for the study. All the participants were proficient English speakers (near to balanced bilingual speakers). The effect of linguistic variables like word length (short versus long), word type (nouns versus verbs), concreteness (concrete versus abstract and semantic relatedness (semantically related versus unrelated) were probed in the current study.

Materials: Recall was tested by using a total of 24 stimuli sets presented in English. Each set comprised of 8 words (strings). 3 stimulus sets were formed for short word lists (2 syllables), 3 for long words (5 syllables) while 3 stimuli set each formed for nouns and verbs. 3 separate stimulus sets were framed for concrete and abstract words respectively. Similarly, 3 separate stimulus sets were configured for semantically related and unrelated words respectively. Thus, the total number of stimulus sets accounted to 24. Each set comprised of 8 words (strings) regardless of the stimulus considered i.e., the string length was kept uniform across the stimuli. The order of presentation of the stimulus sets was randomised

Procedure: The participants were asked to pay attention and listen and then asked to recall all the items in the same order of presentation (serial order recall task). The stimuli were presented

through head phones. Recorded voice was used for stimuli presentation. Each word recollected in the same order was given a score of 1 thus the maximum score for each set was 8 and for the whole task, the maximum score under each stimulus set was 24 (3*8). The scores obtained for each participant were computed and analysed for each of the stimulus types.

3.RESULTS AND DISCUSSION

The scores obtained by the participants on the bound recall was analysed for 3 stimulus sets categorised under short words versus long words, nouns versus verbs, concrete words versus abstract words, semantically related versus semantically unrelated words. The maximum score for each stimulus set was 8 as three such stimulus sets was used for each condition (listed above), the maximum score accounted to 24.

The mean score of the participants for short words was 17 while the mean score for long words was 12. Further in order to verify if there was any significant difference between the two stimuli, Wilcoxon's signed rank test was used (as the data did not abide properties of normal distribution), the Z score obtained was 5.11 and corresponding p value ($p < 0.05$) showed significant difference. Very few researchers have probed the effect of word length on bound recall abilities. The findings of the present study showed that the recall abilities were better for shorter words compared to longer words. This finding was seen in consonance with the findings of earlier study (4). The author of this study attributed better recall for shorter words to word simplicity. Contradicting findings was reported by Naessar (3) who reported better recall of longer words over shorter words. This differential effect was attributed to redundancy. Generally, it can be inferred that word length would influence recall and recall would be better for shorter words compared to longer words.

For noun word list, the mean score was 16 whereas for verb word list, the mean score was 12. In order to verify statistical significance, Wilcoxon's signed test was used, the Z score obtained was 4.12 and corresponding p value ($p < 0.05$) showed significant difference. Recall abilities for nouns and verbs has not probed by many researchers. However, it is universally agreed that nouns are linguistically simpler compared to verbs. Pertaining to recall, statistically significant difference was seen for nouns and verbs. Higher mean values were obtained for nouns compared to verbs showing that the simple words would recalled better compared to complex words

The mean scores of the participants for concrete and abstract words were 13 and 12 respectively. The Z score obtained on Wilcoxon's signed rank test was 2.68 and corresponding p value ($p < 0.05$) showed no significant difference. Thus, there was no difference seen for concrete and abstract words.

In the same way mean scores for sEach word recollected in the same order was given a score of 1 thus the maximum score for each set was 8 and for the whole task, the maximumemantically related and unrelated words were computed. The mean scores for semantically related and un related words was 17 and 14. The Z score obtained on Wilcoxon's signed rank test was 3.66 and corresponding p value ($p < 0.05$) showed significant difference. The findings showed that the recall abilities were better for semantically related words compared to unrelated words. This finding is in consonance with the findings of Smith (4). Recall abilities would be better for semantically related over unrelated words as the participants will be able to re-collect the words by associating the words or by categorising the words. There is more room for word association and categorisation in semantically related words compared to unrelated words, this would have facilitated recall.

In summary the median score suggested better scores for short over long words, nouns over verbs, concrete over abstract words and semantically related words over semantically unrelated words. However statistically significant difference was seen for long versus short words, nouns versus verbs and semantically related versus unrelated words. The results signify the role of linguistic complexity (evident for short versus long words and nouns versus verbs) and linguistic redundancy (evident from the better performance of semantically related word list over semantically unrelated words).

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