

Original Paper

Role of Semantic Teaching in the Acquisition of New Words

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Abstract

Fast mapping refers to the acquisition of new words in children just by the virtue of mere exposure. With a minimal exposure the words are imbibed. This study was carried with the aim of comparing the fast mapping and slow mapping in typically developing children. A total of 20 children in the age range of 5-6 years were considered for the study and the participants were divided into two groups on random basis. Fast mapping and slow mapping methods were used to train the first and group respectively. In fast mapping, the participants were exposed to the label of the target word for 5 times. In slow mapping method, the semantic features related to the target word was taught to the participants. The number of words learnt by group 1 and group 2 children was computed on immediate naming task and delayed naming. Statistically there was no significant difference between number of words learnt on fast mapping and slow mapping as observed on Mann-Whitney U test. While there was significant difference between the two methods on delayed naming as proven by the same statistic. More number of words learnt through slow mapping suggested that it was effective in evoking learning.

Keywords

new word, learning, momentary learning, permanent learning

1. Introduction

Fast mapping is a described as mechanism through which children acquire new concepts just through a minimal exposure to it. It is thought a pivotal role in language acquisition. It provides a substantial explanation to the rapid growth of vocabulary in young children, especially the toddlers. Previous research in fast mapping has shown that children are able to retain a novel word for a substantial

amount of time after they are exposed to the word for the first time (Coutanche & Schill, 2014)

Children learn thousands of words by the time they reach six years of age. The vocabulary would comprise of a variety of words including nouns, verbs, adjectives etc. The question on whether these words are learnt formally has evoked a consensus that no formal strategies would be required for learning these words. This proves the fact that children are equipped with mechanisms which would accommodate the learning of these words. It can be speculated that a mere or a minimal exposure to words would facilitate new word learning (Coutanche & Schill, 2015). Since the words are in an automatic manner the term fast mapping is used to explain this phenomenon.

The context is assumed to play a major role in facilitating learning (Coutanche, 2015) Children tends to understand the context and try to relate the meaning of the word based on the context as a result the word would be learnt. However, there are studies which have proven that children are equipped with the ability to learn new words even from ambiguous contexts. Generalization is an important variable facilitating new word learning. Generalization would help children to extrapolate production for, example if a young child knows Tiger, the child would able to learn the words like lion, cheetah etc based on the similarities or differences with the word they already know (Tiger in this example). Thus, generalization would play a pivotal role in vocabulary development.

Referent selection is another major variable influencing new word learning. The referent selection would refer to the process of extracting a feature or a reference from a given new word. For example, if the child does not know the name of strawberry but knows the color the color would act as a referent in evoking learning. The other referents like size or predominant features would help children in registering information facilitating new word learning (Goshen & Melo, 2010)

Retention is another important variable influencing novel word learning. According to a study fast mapping and new word learning has been regarded two different aspects. The authors postulate that fast mapping deals with the process of extracting features and helping one to learn the label of a new word. This word has to be memorized or they should active retention for this word to be transferred to the vocabulary on a permanent basis (Greeve, Cooper, & Henson, 2018)

Word meaning association is another important variable affecting new word learning (Mervis & Bertand, 1994). Children must learn to associate the word with its meaning to learn the word. If the label is learnt but word meaning association has not been established, then it would be difficult for the word to be learnt on a permanent basis in other words the learning is considered to be momentary. In summary only when word meaning association takes place novel word learning would happen.

Various researches (Mervis & Bertinand, 1994; Wilkinson, Ross, & Diamond, 2003) have been conducted on this concept to analyse the cognitive process involved in vocabulary development and find out various factors affecting this mechanism. It is found out that fast mapping skill depends on the linguistic abilities of children. Some researchers are of the opinion that the learning evoked by fast mapping is momentary and may not be potent enough to promote lexical development. This led to the advent of an alternate mechanism called slow mapping' (Wilkinson, Ross, & Diamond, 2003).

Slow mapping can be defined as a process where children learn words in a meaningful environment associating them with its semantic features (Mervis & Bertinand, 1994; Wilkinson, Ross, & Diamond, 2003). The investigators agree to the notion that children learn novel words with a single exposure using fast mapping skills but it may not be sufficient for the development of the lexicon. To retain the words learnt through fast mapping, a subsequent extended slow mapping would be required for novel word learning. In their words vocabulary development is a continual process of fine-tuning the lexical system to enable increased accessibility to information. Hence slow learning would help in consolidation of information.

Majority of the studies conducted on novel word learning are based on fast mapping skills and there is a dearth of literature on slow mapping skills, Hence the present study is valuable in exploring the slow mapping abilities of children. It is also important to know which mechanism (fast mapping or slow mapping) enhances novel word learning process in children. The current study tries to examine the long-term effect of slow and fast mapping and thus tries to collate evidence on its role in lexical development. Hence the current study was carried out with the aim of investigating fast mapping and slow mapping abilities in typically developing children.

2. Method

Time of conduct of the current study: The current study was undertaken before the onset of Covid-19 where the pre-schools were operating

2.1 Participants

The sample size of the current study was 20. Equal number of males and females in the age range of 5 to 6 years were considered. Participants with the history of any communication, psychological and other sensory impairments were excluded from the study. The participants were divided into two groups (group 1 and group 2) on random basis.

2.2 Stimulus

The stimulus was derived from a fast-mapping study conducted by Deepak and Shyamala (2016). The stimuli consisted of 40 novel words. These words were checked for equal word length, phonological complexity and cultural aspects. They were presented in the visual mode in the form of coloured pictures (in visual mode) as well as in the auditory mode using the presentation software- Pawtoon.

2.3 Procedure

Baseline testing was carried out to ensure if the participants knew the word prior to the conduct of study. It was observed that none of the participants had exposure to these the novel words. Participants in group 1 were exposed to fast mapping while the participants in group 2 were exposed to slow mapping. Group 1 participants were presented with color picture of the items with its label for 5 times, while group 2 participants were presented with color pictures with its label like the previous method, however there were two differences. The first difference was that the label was presented for only one time and the other difference was that additional information regarding the lexical category, associated

word and a feature associated with the target word was presented here. Immediate naming and delayed naming task were administered on the participants. The immediate naming task was carried out after the training while the delayed naming task was carried out after a lapse of 5 days. Each correct response was given a score of 1 while a wrong response was given a score of 0. The maximum score was 40. The stimulus was randomized and presented to counteract order effect.

3. Result

The current study was carried out with the aim of comparing the number of words learnt on fast mapping and slow mapping. The participants considered for the study were divided into two groups of 10 participants each. The participants of the first group were trained through fast mapping while the participants of the second group were trained through the slow mapping method. Fast mapping method involved the mere exposure to the target label for 5 times while the slow mapping involved teaching the semantic properties of the target word. The number of words learnt post training were examined in two experimental conditions: immediate naming and delayed naming. Immediate naming task was done after the training while the delayed naming was conducted after a lapse of 5 days. The performance of group 1 and group 2 participants on immediate and delayed naming task was computed. On immediate naming task, the mean for group 1 participants was 32 while the mean was 34 for group 2. The median values followed the same direction as the mean. The mean and median values were slightly better for group 2 compared to group 1.

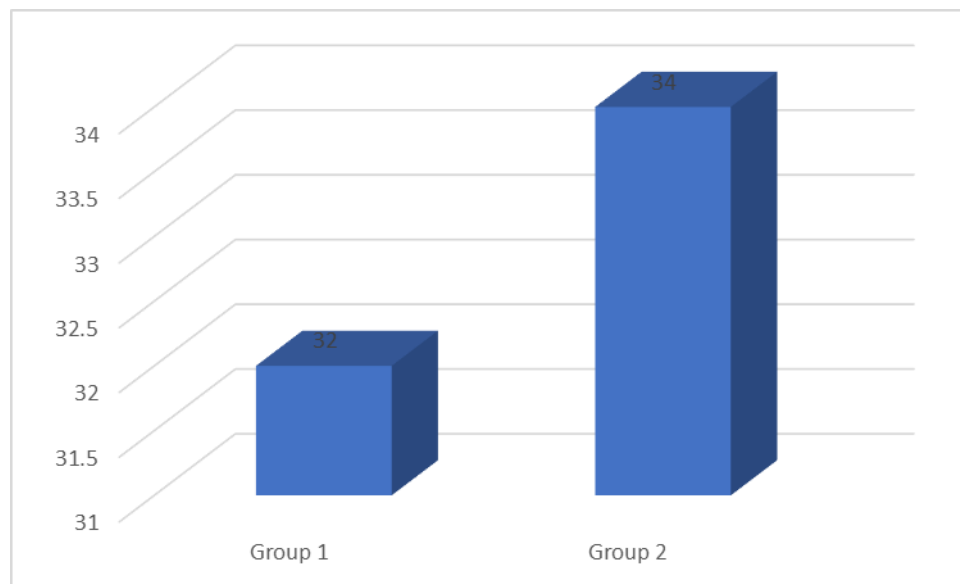


Figure 1. Comparing the Performance of Group 1 and Group 2 on Immediate Naming Task

On delayed naming task the mean values for both the groups were 24 and 31. The median values followed the same direction as the mean. The mean and median values were better for group 2 compared to group 1

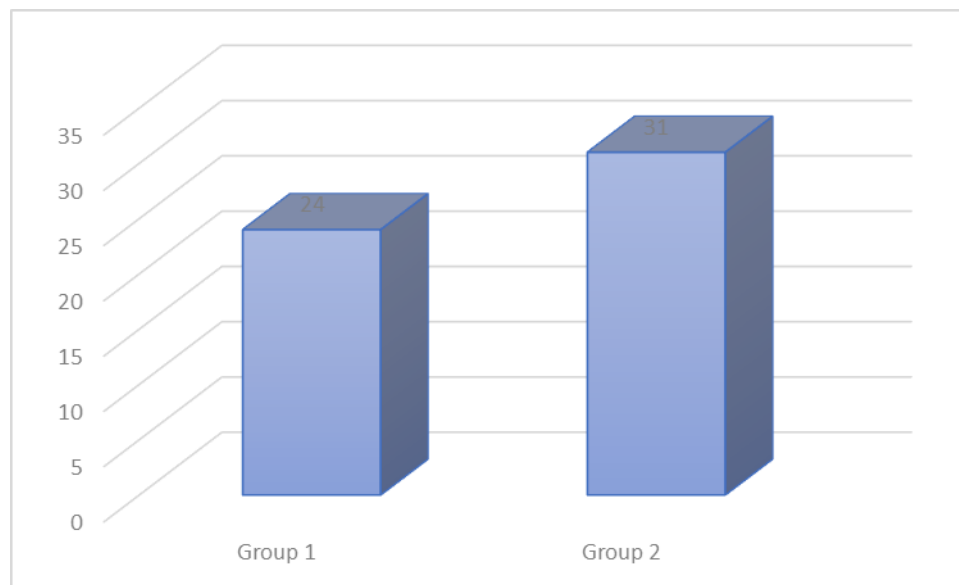


Figure 2. Comparing the Performance of Group 1 and Group 2 on Delayed Naming Task

The data was subjected to test of normality using Shapiro-Wilk's test and p value was <0.05 indicating that the data was non parametric. As the objective was to compare the performance of the two groups on immediate naming and delayed naming tasks, Mann Whitney U Test was used. The Z score obtained on comparing the median scores was 1.18 for immediate naming and 3.34 for delayed naming. The corresponding p values ($p < 0.05$) showed a significant difference between group 1 and group 2 on delayed naming task only.

In addition to the pre set objectives, the mean values on immediate naming and delayed naming task were compared for group1 and group 2. Wilcoxon's signed rank test was used for comparison. For group 1 the Z score obtained was 2.33 and corresponding p values showed significant difference. For group 2, the Z score was 2.89 and the corresponding p values also showed significant difference. Thus, there was difference between the immediate naming and delayed naming for both the groups.

4. Discussion

The study was carried out with the aim of comparing fast mapping and slow mapping abilities in learning novel words in typically developing children. Two group of children were considered for the study. The first group was trained using fast mapping while the second group was trained using slow mapping. The number of words learnt were assessed on immediate and delayed naming task. It was noted that there was significant difference between the two groups exposed to fast mapping and slow mapping on delayed naming task only. For the immediate naming task, there was no significant difference between the two groups in terms of their performance.

Most of the studies documented on new word learning focusses on fast mapping. Researchers claim

that mere exposure to the stimulus can evoke learning in children. These studies use only immediate naming to deem the performance. A delayed naming task would reveal if learning is momentary or not. Hence the current study used delayed naming task in addition to the immediate naming task. On immediate naming task, there was no difference between the two group which means momentary learning would have taken place in fast mapping as well as slow mapping. Results on delayed naming suggested that the participants exposed to slow mapping performed better than participants who were exposed to fast mapping indicating that semantic association would lead to better learning of novel words on a long-term basis.

Role of referent selection: In slow mapping semantic features are taught to the children, on the other hand fast mapping would expose to the participants to only the linguistic labels. The slow mapping method would engage the participants in referent selection owing to which slow mapping would have worked better compared to fast mapping on a long-term basis

Role of semantic-word association: The semantic word association is another important variable provoking new word learning. When the child is exposed to semantic features, it enables the children to associate the features with linguistic label. Those children who are exposed to fast mapping are deprived of this and as a result children who are subjected to slow mapping would have performed better

The study was carried out only on 20 typically developing children. The study has to be carried out on a larger group of participants to generalize the results. The delayed naming was administered after a lapse of 5 days and it can be extended over a period of 7-10 days to see how many words can be recalled and named. This would be a better indicator to decide if learning has taken place. The other short coming of the stimulus was that only nouns were used. The study can be extended by considering words belonging to other grammatical class

In summary, the study was carried out to compare fast mapping and slow mapping abilities in typically developing children. 20 participants were considered for the current study and the participants were divided into two groups. The first group was exposed to fast mapping where the linguistic label was presented for 5 times and the second group was exposed to slow mapping where the semantic association was taught. On immediate naming task, there was no difference between the two groups but on delayed naming task, carried out after a lapse of 5 days there was a difference indicating that consolidated or stable learning takes place in slow mapping.

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