

Different Types of Priming on Picture Naming in Preschool Children Learning Phonics

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Abstract

The aim of the present study was to compare the lexical, phonemic and syllabic priming on picture naming in pre-schoolers who were exposed to phonemic teaching method with those exposed to alphabetical teaching method and the obtained data was statistically analysed using paired sample t test to compare the mean reaction times for naming with different types of priming. Responses from within the group and across the groups were compared using independent sample t test. The mean reaction times for naming in lexical priming, syllabic priming and phonemic priming were 1.267sec, 1.47sec and 1.41sec with a mean error of 7.1, 4.2 and 9.3 in alphabet teaching group respectively, whereas for phonemic teaching group the mean reaction time taken to name the picture for lexical priming, syllabic priming and phonemic priming were 1.24sec, 1.33sec and 1.38sec with a mean error of 5, 5.1 and 7.2 respectively. Even though the phonemic teaching group performed better, there was no significant difference between the groups for reaction times of naming with syllabic, phonemic or lexical priming and number of errors according to the results of independent sample t test.

Key words: lexical, phonemic and syllabic priming, picture naming, pre-schoolers, comparison between priming types

Introduction

Priming refers to a change in the ability to identify or produce an object or word as a result of a specific prior encounter with the item (Tulving & Schacter, 1990; Jacoby, Toth, & Yonelinas, 1993). It has long been established that reaction times are decreased in response to

words preceded by semantically related words in comparison with words preceded by semantically unrelated words, which is referred to as semantic priming effect (Lupkar, 1984; Neely, 1991). Ganesh and Rao (2010) studied the influence of semantic priming on reaction time measures in typically developing children and the results of that study revealed that target words were retrieved faster in lexical priming conditions rather than no prime conditions for a picture naming task.

Use of Priming Methods

Priming methods have been successfully used to evaluate wide-ranging aspects of semantic and lexical processing in adults as well as children (Bowles & Poon, 1985; Moss, McCormick, & Tyler, 1997; Nation & Snowling, 1999). Research examining priming effects in the lexical decision task has primarily been concerned with items that are semantically associated. Several studies (Jakimik, Cole, & Rudnicky, 1985; Meyer, Schvaneveldt, & Ruddy, 1974), suggesting that priming in lexical decision encompasses more than semantic associations between items. Meyer, Schvaneveldt, & Ruddy (1974) and Hillinger (1980) found facilitation to make a visual lexical decision when words were phonemically similar. Several empirical observations have been reported favoring the hypothesis that syllables correspond to processing units in visual word recognition (Perea & Carreiras, 1998; Prinzmetal, Treiman, & Rho, 1986). Interestingly, the absence of any such syllabic priming effect in the lexical decision task also suggested that syllable unit activation is essentially related to phonological activation.

Phonics

Phonics is a study into itself, valued by linguists, philologists, dictionary writers, and cryptologists, as well as by reading teachers. When used by children, its main purpose is to gain knowledge and skill in identifying words not recognized immediately. Enhanced by knowledge and skill in phonics, reading becomes more accurate and fluent, and spelling improves. The ultimate goal for children to apply with ease what they learn in the phonics program to their own reading and writing (Jeanne and Helen 1996). The study of phonics can give teachers and students a sense of great intellectual feat of the development of alphabetic writing (McGraw-Hill, 1967, 1983; Fort Worth, and Harcourt Brace, 1996). Because explicit phonics instruction teaches recognition, pronunciation, and blending of the sound-spelling patterns, students are better

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equipped to apply those same patterns to spellings (Adams, 1988; Stanovich, 1986; Foorman, Francis, Novy, & Liberman 1991).

Need for the Study

Phonological priming, semantic priming on picture naming tasks and also syllabic priming on lexical-decision tasks on preschoolers who have received traditional alphabet teaching are discussed in available literature. But only a handful of studies have compared the effect of lexical, phonological and syllabic priming on picture naming task between preschoolers who are trained using phonemic and alphabet teaching method. Researchers advocate that children will get more advantage by learning phonology and phonological awareness skills better through phonics instruction rather than alphabetic training. But still it is not clear whether phonemic priming is more advantageous than lexical priming when activating lexical semantic system. Hence it would be interesting to study the effect of enhanced phonological system on speed of lexical access and this will throw light on organization of phonemic and lexical items which are the basis of various information processing models.

Aim of the Study

The aim of the present study is to compare the lexical, phonemic and syllabic priming on picture naming in preschoolers who are exposed to phonemic teaching method with those children who are exposed to alphabetical teaching method.

Method

Subjects

Twenty subjects participated in the study. The subjects who participated in the present study were all native Kannada speakers. They were divided into 2 groups with the mean age of 5 years.

The subjects had no significant history of any associated problems like hearing deficit or neurological problem.

Group 1 Participants were exposed to phonemic teaching for a minimum of 2 years. Group 2 Participants were exposed to alphabetic teaching for a minimum of 2 years.

Stimulus

- The present study included three tasks which were lexical, syllabic and phonemic priming for picture naming.
 - Lexical priming consisted of 20 pairs of familiar pictures each pair being semantically related.
 - Syllabic and Phonemic priming consisted of 20 familiar pictures preceded by the auditory presentation of the first syllable and each picture respectively.

Software

- Stimulus was generated using DMDX software.
- DMDX was developed at Monarch University and at the University of Arizona by Foster and Foster.
- DMDX is a script interpreting system for screen control, stimulus presentation and timing for cognitive experiments. It is experimental presentation control software.
- It has two components which are TIME DX and DMDX. The TIME DX sets and checks software and hardware features for running DMDX.
- Its main components are millisecond time, refresh rate, select video mode and time video mode.
- DMDX software presents the stimuli and records the reaction time with ms accuracy.

Instruments

- A well-calibrated DELL laptop (Inspiron 15 3521) and a headphone with microphone (Sony) was used to record the responses.

Procedure

- The response from each child was recorded by making the child to sit at 1 foot distance from the laptop in a quiet room with adequate lighting.

- All the children were instructed to visualize (lexical) and comprehend auditory signal (syllabic & phonemic) presented to them for all the three stimulus and respond appropriately.
- The collected data was subjected to statistical analysis.

Results and Discussion

The aim of the present study was to compare the lexical, phonemic and syllabic priming on picture naming in preschoolers who were exposed to phonemic teaching method with those exposed to alphabetical teaching method and the obtained data was statistically analysed using paired sample t test to compare the mean reaction times for naming with different types of priming. Responses from within the group and across the groups were compared using independent sample t test. The mean reaction times for naming in lexical priming, syllabic priming and phonemic priming were 1.267sec, 1.47sec and 1.41sec with a mean error of 7.1, 4.2 and 9.3 in alphabet teaching group respectively, whereas for phonemic teaching group the mean reaction time taken to name the picture for lexical priming, syllabic priming and phonemic priming were 1.24sec, 1.33sec and 1.38sec with a mean error of 5, 5.1 and 7.2 respectively. Even though the phonemic teaching group performed better, there was no significant difference between the groups for reaction times of naming with syllabic, phonemic or lexical priming and number of errors according to the results of independent sample t test.

Further, the results of within group paired sample t test revealed that, for alphabet teaching group there was significant differences ($p=0.00 < 0.05$) for reaction times of naming when priming was syllabic and lexical and also phonemic and lexical where the lexical priming had less reaction time, whereas no significant difference was noticed ($p=0.332 > 0.05$) for naming when priming was phonemic and syllabic. Similar results were obtained for phonemic teaching group where the reaction time for lexical priming was better compared to phonemic and syllabic priming. No significant difference for reaction time of naming when priming was phonemic and syllabic was seen in alphabet teaching group.

Conclusion and Summary

The results of the present study showed that the children learning phonics showed similar priming effects for both syllabic and phonemic priming whereas in children with alphabet teaching the priming effects for syllabic priming was significantly better when compared to phonemic priming. In other words phonemic priming did not produce priming effects in alphabet training group.

The present study is in contradiction with the study of Ganesh and Rao (2010) wherein they noticed lexical priming is better compared to other types of priming. The present study suggests that children with phonemic learning may have advanced phoneme recognition skills providing them with greater confidence and accuracy, which helps in faster identification of words which might be related to their reading and spelling.

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