A Study on the Span of Attention with Meaningful and Non-Meaningful Words Among B.Ed. Trainees

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Abstract:

This study highlights the span of attention of B.Ed. trainees with meaningful non-meaningful words. The researcher tested 98 B.Ed. trainees from a college in Purba Medinipur district, West Bengal. Primary data on span of attention were collected with help of an instrument called the Tachistoscope. This tool shows an image for a very short time (1/10th of a second), and the trainees must recognize the image in that brief moment. Student's attention levels were measured by their ability to identify the image. Data analysis was performed using MS Excel. The results showed that B.Ed. trainees were better at recognizing meaningful than non-meaningful words. The mean of meaningful word recognition was 67.24%, and the mean of non-meaningful word recognition was 46.53%. This finding suggests that previous knowledge helps students recognize words because the brain can identify familiar, meaningful words more easily than unfamiliar, meaningless words.

Keywords: Span of attention, B.Ed. trainees, Tachistoscope, Meaningful word, Non-meaningful word

1. Introduction:

In psychology, attention refers to the process of focusing awareness on one phenomenon while overlooking other stimuli. It helps people identify pertinent information from their environments. Effective perception, learning, and memory depend on this process. The span of attention indicates the number of objects that can be grasped in a brief overview (Anbalagan, 2021). It influences our capacity for information processing, learning, and task performance. This describes the duration at which an individual can focus on a particular subject without becoming distracted. This concept is especially crucial in learning environments where the capacity to stay focused has a significant impact on academic achievement. The Tachistoscope is a tool used to measure the span of attention.

In this study, the researcher investigates the span of attention of B.Ed. trainees when they have access to both meaningful and non-meaningful words. The researcher identifies attention patterns by examining trainees' responses to various stimuli, which can help shape teaching strategies and enhance student performance. The Tachistoscope was used to measure span of attention precisely by presenting words for very short durations and recording recognition accuracy. This methodology offers significant perspectives on the cognitive mechanisms that underlie attention and emphasizes the significance of meaningful content in learning environments. Through this investigation, the study contributes to a

better understanding of the span of attention in learning environments and provides useful suggestions for improving teaching strategies.

2. Background of the Study:

The concept of the span of attention has been central to cognitive psychology for decades. Gaining insights into how people distribute their cognitive resources to concentrate on specific tasks is crucial for enhancing learning and efficiency. Sir William Hamilton's 1859 study was the first major investigation on attention span and set the foundation for later research. Early experiments, such as those by Hamilton and later by various researchers demonstrated that the ability to focus varies depending on the type of stimulus presented.

The study of the span of attention is especially important in educational psychology because it has an impact on how effectively pupils connect with and retain content. B.Ed. trainees, who are training to become teachers, offer a unique population for studying attention. These future teachers must understand and manage their attention to effectively facilitate learning in their classrooms.

This study focuses on the difference in attention spans when B.Ed. trainees are presented with meaningful versus non-meaningful words. By examining this specific aspect, the researcher can gain insights into how familiarity and context influence cognitive processing. This knowledge is crucial for developing teaching strategies that maximize student engagement and learning potential.

3. Objectives:

Prime objectives of this study are -

- To observe the span of attention among B.Ed. trainees with meaningful words.
- To observe the span of attention among B.Ed. trainees with non-meaningful words.

4. Methodology:

A sample of 98 B.Ed. trainees from a college in Purba Medinipur district, West Bengal was selected for this study.

Variables: Span of attention of B.Ed. trainees selected as a variable

Tool: A Tachistoscope was used to measure the attention span of the trainees. This instrument presents images (Meaningful and Non-meaningful words) for a very short duration (1/10th of a second), requiring trainees to recognize the image within this brief period. Trainees were shown 10 meaningful and 10 non-meaningful words using the Tachistoscope (Table 1.1). They had to identify the words as quickly and accurately as possible. The collected data was analyzed using Microsoft Excel.

Table 1.1: List of Meaningful and Non-meaningful Words

Sl.	Meaningful Words	Non-meaningful Words
1	GO	KN
2	SEE	CFJ
3	CENTRE	CDQZH
4	REQUEST	DNVMT
5	RESEARCH	ZHNQF
6	KINDNESS	MCFHJ
7	PERSISTENCE	VNVFMT

8	CONSTRUCTION	CNMDQF
9	REPRESENTATIVE	VQXHPW
10	UNEXCEPTIONABLE	PMNBZRC

5. Result and Discussion:

Keeping in view the objectives of the study the analysis and interpretation of data are presented in the following way –

**Table 1.2: Descriptive Statistics of the span of attention with meaningful and non-meaningful words.**

Nature of Words	Mean	SD	Skewness	Kurtosis
Meaningful Words	67.24	20.14	-0.33	-0.76
Non-meaningful Words	46.53	17.05	-0.06	-0.97

Table 1.2 shows the descriptive Statistics of the span of attention with meaningful and non-meaningful words. For the meaningful words the values of Mean and Standard Deviation (SD) are 67.24 and 20.14, respectively. The skewness value was -0.33, which indicates negative skewness. The kurtosis value was -0.76, indicating a platykurtic nature. For non-meaningful words the values of Mean and Standard Deviation (SD) are 46.53 and 17.05, respectively. The skewness value was -0.06, which indicates negative skewness. The kurtosis value was -0.97, indicating a platykurtic nature.

Table 1.3: Correct response (in%) for meaningful words

| Sl.	Meaningful Words	Correct Response (in %)
1	GO	97.96
2	SEE	100.00
3	CENTRE	79.59
4	REQUEST	86.73
5	RESEARCH	84.69
6	KINDNESS	73.47
7	PERSISTENCE	62.24
8	CONSTRUCTION	54.08
9	REPRESENTATIVE	23.47
10	UNEXCEPTIONABLE	10.20
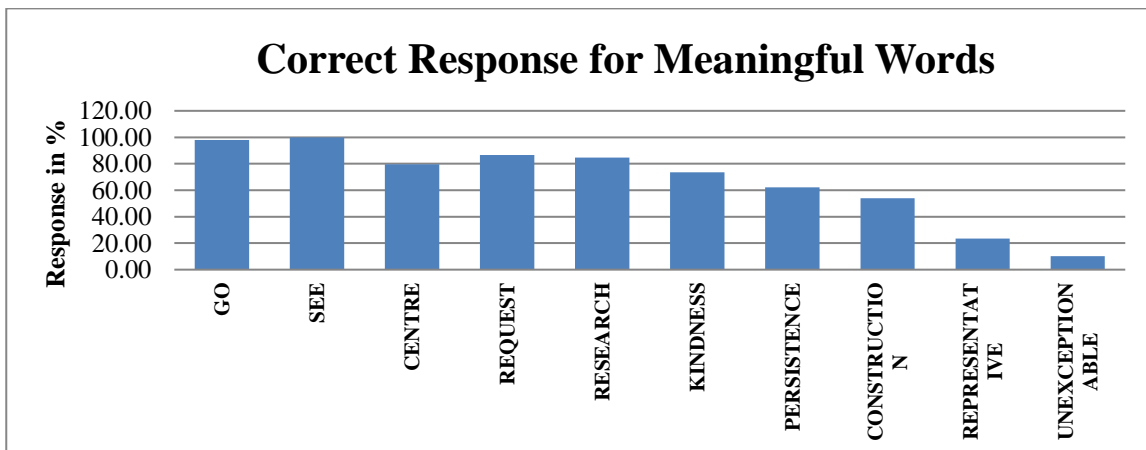
In the case of meaningful words (Table 1.3), students were able to correctly identify most words consisting of two to eight letters, especially those that were previously known to them. However, the accuracy of the responses decreased significantly when the words contained more than eight letters. This suggests that familiarity and word length play crucial roles in recognition.

Students performed better with shorter, familiar words because they were easier to process and recall. On the other hand, longer words, which often require more cognitive effort to decode and recognize, pose greater challenges, leading to a decline in correct responses. This pattern indicates that word complexity and prior knowledge significantly affect attention span and recognition accuracy.

Table 1.4: Correct response (in%) for non-meaningful words

Sl.	Non-meaningful Words	Correct Response (in %)
1	KN	83.67
2	CFJ	71.43
3	CDQZH	66.33
4	DNVMT	64.29
5	ZHNQF	59.18
6	MCFHJ	41.84
7	VNVFMT	32.65
8	CNMDQF	28.57
9	VQXHPW	9.18
10	PMNBZRC	8.16

For non-meaningful words (Table 1.4), the data indicated that students could correctly identify words consisting of only two or three letters. These short, non-meaningful words were easier for students to process despite their lack of inherent meaning. However, as the length of non-meaningful words increased, students' identification accuracy decreased significantly.
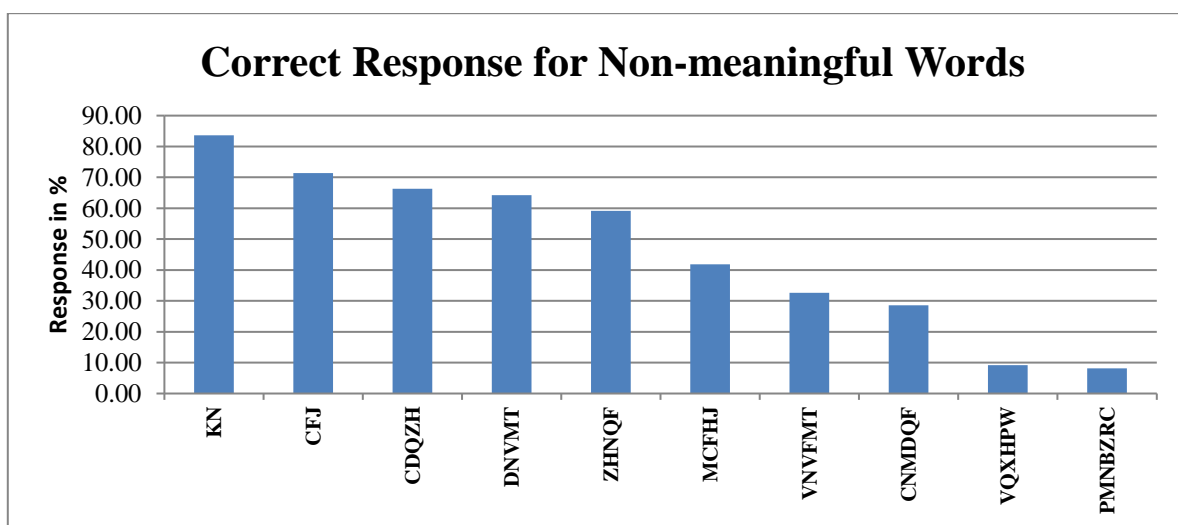
Students struggled to correctly identify non-meaningful words with more than three letters. The lack of meaning makes these longer strings of letters more difficult to remember and recognize. Unlike

meaningful words that can be recalled based on previous knowledge and context, non-meaningful words lack these associative cues, making them more challenging to process.

Findings:

From the above discussion, the following findings were found –

- This study revealed that B.Ed. trainees show a greater attention span for meaningful words (Mean = 67.24) than for non-meaningful terms (Mean = 46.53). This implies that word meaning affects attention span and cognitive processing.
- Meaningful and non-meaningful words have platykurtic distributions with negative skewness. This suggests a concentration of responses around the mean with fewer exceptions because the data for both word categories are slightly skewed to the left and have lighter tails than a normal distribution.
- For meaningful words, shorter words like "GO" and "SEE" achieved near-perfect accuracy rates (97.96% and 100%, respectively), while longer words like "REPRESENTATIVE" and "UNEXCEPTIONABLE" showed significantly lower correct response rates (23.47% and 10.20%). This indicates that familiarity and word length are critical factors influencing recognition accuracy.
- For non-meaningful words, recognition accuracy decreased as the word length increased. Shorter non-meaningful words (e.g., "KN", "CFJ") achieved higher correct response rates (83.67% and 71.43% respectively), whereas longer non-meaningful words (e.g., "PMNBZRC", "VQXHPW") resulted in much lower accuracy (8.16% and 9.18% respectively). This suggests that cognitive load increases with longer non-meaningful words.
- The results indicate that students perform better with meaningful words due to their ability to use linguistic clues in addition to previous knowledge. Conversely, non-meaningful words rely solely on visual and phonetic processing, making longer non-meaningful words particularly challenging.

6. Conclusion:

This study provides insightful information about the variables affecting recognition accuracy and the span of attention when processing meaningful and non-meaningful words. The results demonstrate that compared to non-meaningful words, meaningful words, characterized by their linguistic content and familiarity, demonstrate greater recognition accuracy and longer attention spans. Furthermore, the data emphasize the importance of word length, with shorter words consistently performing better in both meaningful and non-meaningful categories. These results suggest that cognitive processes are intricately linked to the linguistic properties of words, where semantic context and previous knowledge significantly enhance cognitive processing efficiency. Based on the properties of linguistic stimuli, researchers and educators can apply these insights to create techniques that optimize learning settings and enhance cognitive outcomes.

7. References:

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