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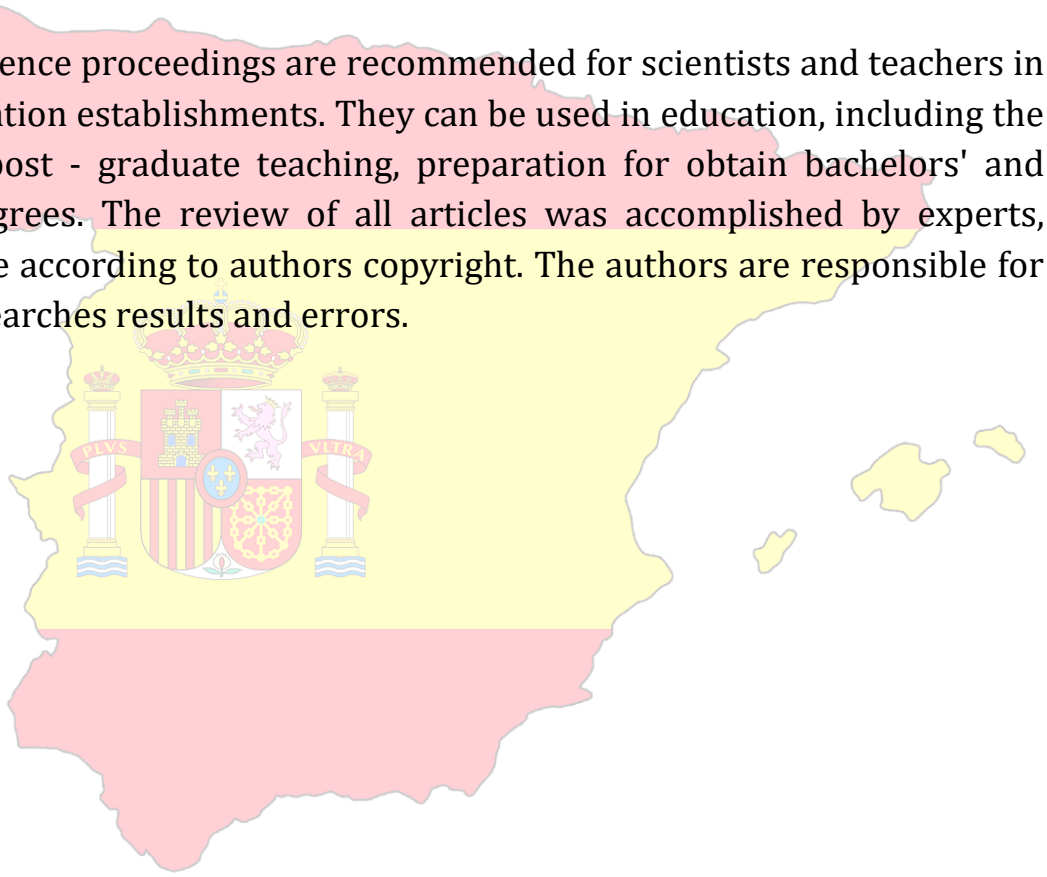

THE RELATIONSHIP BETWEEN MEMORY CAPACITY AND VOCABULARY ACQUISITION

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Abstract

Vocabulary acquisition is a fundamental component of second language learning, and memory capacity plays a crucial role in how effectively learners store, retain, and retrieve new lexical items. This article explores the relationship between working memory, long-term memory, and vocabulary learning success in second language acquisition. The study synthesizes findings from cognitive psychology and applied linguistics, showing that individuals with higher memory capacity generally demonstrate faster vocabulary learning and better retention. However, vocabulary acquisition is also influenced by factors such as repetition, context, motivation, and learning strategies. The paper concludes that memory capacity is a strong predictor but not the sole determinant of vocabulary learning success.

Keywords: memory capacity, vocabulary acquisition, working memory, second language learning, lexical retention

1. Introduction

Vocabulary is considered the core of language competence, as it directly affects reading, writing, listening, and speaking skills. Without sufficient vocabulary knowledge, learners struggle to express meaning effectively in a second language.Memory capacity, particularly working memory, refers to the ability to temporarily store and manipulate information. In language learning, this includes remembering new words, their meanings, pronunciation, and usage. Researchers have long investigated whether learners with stronger memory capacity acquire vocabulary more efficiently than those with weaker memory systems.

This article aims to analyze the relationship between memory capacity and vocabulary acquisition in second language learners, especially young adults.

2. Literature Review

Cognitive and linguistic research consistently highlights the importance of memory in vocabulary learning.

Baddeley (2000) introduced the working memory model, emphasizing the role of the phonological loop in language learning. According to this model, learners temporarily store verbal information, which is essential for vocabulary acquisition.Nation (2001) argues that vocabulary learning requires repeated exposure and memory reinforcement, especially for long-term retention.

Sweller (1988) explains cognitive load theory, suggesting that learners with limited working memory may struggle when too much new vocabulary is introduced at once.

Ellis (1994) highlights that memory capacity influences implicit and explicit language learning processes, particularly in lexical development.These studies collectively suggest a strong connection between memory systems and vocabulary learning success.

3. Methodology

This study is based on qualitative analysis of existing literature in cognitive psychology and second language acquisition (SLA). The research focuses on:

•Working memory capacity
•Long-term memory retention
•Vocabulary learning strategies
•Lexical recall performance

The data is synthesized from peer-reviewed journals, theoretical models, and empirical studies.

4. Analysis and Discussion

4.1 Working Memory and Vocabulary Learning

Working memory plays a critical role in initial vocabulary acquisition. When learners encounter a new word, they must hold its form and meaning in short-term memory before transferring it to long-term storage. Learners with higher working memory capacity can process more lexical items simultaneously, which improves learning speed.

4.2 Long-Term Memory and Retention

Long-term memory is responsible for storing vocabulary permanently. Repetition, meaningful context, and usage are essential for transferring words from short-term to long-term memory. Learners with strong memory retention abilities tend to remember vocabulary for longer periods and use it more accurately.

4.3 Cognitive Load and Vocabulary Difficulty

When too many new words are introduced at once, cognitive overload can occur. According to cognitive load theory, learners with limited memory capacity may struggle to retain vocabulary effectively. This highlights the importance of controlled input in language teaching.

4.4 Role of Learning Strategies

Memory capacity alone is not sufficient. Effective strategies such as spaced repetition, mnemonic devices, and contextual learning significantly improve vocabulary acquisition. Even learners with lower memory capacity can achieve success by using appropriate strategies.

4.5 Individual Differences

There are significant individual differences in memory capacity among learners. Factors such as age, prior language experience, and cognitive training influence vocabulary learning performance. Young adults often show stronger memory-based learning efficiency compared to older learners.

5. Results

The analysis indicates a strong positive relationship between memory capacity and vocabulary acquisition. Key findings include: Higher working memory leads to faster vocabulary learning Strong long-term memory. improves retention. Cognitive overload negatively affects vocabulary acquisition Learning strategies can compensate for lower memory capacity

6. Discussion

The findings confirm that memory capacity is a crucial factor in vocabulary acquisition. Learners with stronger working memory are able to process and store new lexical items more efficiently. This supports Baddeley's working memory model, which emphasizes the importance of the phonological loop in language learning.

However, memory capacity should not be viewed as the only determinant of vocabulary success. Motivation, exposure to language input, and learning strategies also play a major role. For example, learners who use spaced repetition or contextual learning techniques often outperform those with higher memory capacity but poor strategies.Additionally, cognitive load theory explains why excessive vocabulary input can reduce learning efficiency. Therefore, balanced instruction is essential in language teaching.

Overall, memory capacity interacts with multiple cognitive and environmental factors, making vocabulary acquisition a complex process rather than a purely memory-based skill.

7. Conclusion

In conclusion, there is a strong relationship between memory capacity and vocabulary acquisition in second language learning. Working memory supports initial learning, while long-term memory ensures retention and usage.However, vocabulary acquisition is not determined by memory alone. Effective learning strategies, motivation, and contextual exposure significantly enhance lexical development. Therefore, successful vocabulary learning results from the interaction between cognitive capacity and external learning conditions. Future research should focus on how memory training and digital learning tools can further improve vocabulary acquisition efficiency.

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