

MENTAL LEXICON AND MEMORY ACCESS: HOW VOCABULARY IS STORED IN THE MIND

Citra Tiurnida Panggabean¹, Muhammad Hasyimsyah Batubara²

^{1,2}Sekolah Tinggi Agama Islam Negeri Mandailing Natal, Indonesia

Email: citratiurnidapgbn@gmail.com

Article Info

Article history:

Received December 18th, 2025

Revised December 20th, 2025

Accepted December 22nd, 2025

Keyword: (10 pt)

1. Mental lexicon;
2. Memory access;
3. Vocabulary.

ABSTRACT

This research aims to examine the structure and access of the mental lexicon in human memory through the psycholinguistic approach. The current study utilizes the qualitative descriptive approach by conducting a systematic literature review. The result shows that the access of the lexical knowledge is not constant, considering the frequency of the word, the contextual cue, and the meaning relationship, because it affects the language comprehension and production. The result also shows that the mental lexicon is hierarchically organized for effective lexical retrieval when people use language. This article concludes that the knowledge of the structure and the access of the mental lexicon is very significant for language acquisition processes and for the analysis of language disorders, including aphasia and dyslexia.

Introduction

One of the most intricate human cognitions is the ability to speak a language. When humans speak any particular language, they often fail to recognize that they are calling on a dictionary of thousands of words. The retrieval system for these words in the human mind is known as the mental lexicon. The concept of the mental lexicon was first conceptualized in the area of psycholinguistics. The idea of the mental lexicon was developed by Aitchison (1987). The mental dictionary contains information on the sounds, forms, and meanings of words.

In speaking and listening, the brain needs to access the proper word from the mental lexicon. This is the process known as lexical access. Immediately after hearing, for instance, the word "cat", the brain recognises the sound of that word according to William Marslen-Wilson (1980) through his Cohort Model—associates it with the idea of a furry pet, and accesses its meaning based on the context.

The organization of these meanings is often linked to the Spreading Activation Theory by Collins and Loftus (1975), which suggests that related concepts are interconnected in a vast mental network. All this takes a very short time, which testifies to the remarkable efficiency of the human language system.

In the area of psycholinguistics, research concerning the mental lexicon and memory access aims at elucidating how words are represented and accessed from memory during language processing. In particular, this area of inquiry tries to provide answers to how speakers can process and automatically access a huge vocabulary in language. There have been various models suggested that may account for this. One of the earliest models suggested is the Logogen Model by Morton (1969). According to this model, each word gets represented by a mental unit that gets activated given adequate sensory input. In continuity with the logogen unit activation technique, the Interactive Activation Model was suggested by McClelland and Rumelhart (1981). This Interactive Activation Model places primary stress on the interactions between different levels of information, like features, letters, and words.

These models point out that access to the vocabulary is not a straightforward activity involving interactions between different sources of linguistic information. These developments have helped significantly in aiding researchers understand the quick word retrieval abilities of speakers despite the huge vocabulary merely stored within the mental lexicon.

Method

This study employs a qualitative descriptive research design based on a literature review approach (Creswell, 2018). The research focuses on examining theoretical perspectives and empirical findings related to the mental lexicon and memory access within the field of psycholinguistics. The sources of data for this research include secondary data that have been acquired from written educational texts. This includes informative texts about psycholinguistics, research journals, and classic texts concerning the mental lexicon and the concept of lexical access. The key texts that this research will be anchored in include classic research texts (Aitchison, 1987; Collins & Loftus, 1975; Marslen-Wilson, 1980; Morton, 1969; McClelland & Rumelhart, 1981). There was also supporting data that was obtained from some recent research journals to complement and support the theories.

The data collection technique involved a systematic selection of relevant literature that discusses the structure, organization, and retrieval processes of the mental lexicon. These sources were carefully reviewed to identify key concepts, theoretical assumptions, and explanatory models concerning lexical access and memory activation during language processing.

Data analysis was conducted through qualitative content analysis. The selected theories and models were compared and synthesized to identify common principles and distinctive features regarding how lexical items are stored and accessed in the human mind. Particular attention was given to the mechanisms of activation, interaction between linguistic levels, and the role of semantic networks in word retrieval. The results of the analysis were then interpreted to provide a coherent explanation of the efficiency of lexical access despite the vast size of the mental lexicon.

Through this methodological approach, the study aims to offer a comprehensive theoretical understanding of the mental lexicon and memory access, as well as to highlight the relevance of psycholinguistic models for explaining real-time language comprehension and production.

Findings and Discussions

1. Structure and Organisation of the Mental Lexicon

Based on the literature review, the findings indicate that the mental lexicon is consistently described as a highly interconnected system rather than a simple list of isolated lexical items. Across the reviewed theories, vocabulary knowledge is represented as a structured network in which words are related through semantic, phonological, and morphological links.

As proposed by the Spreading Activation Theory (Collins & Loftus, 1975), the structure of the mental lexicon can be conceptualized as a semantic network whereby lexical items are interlinked via meaning, structure, and experience. Within this network, a lexical item such as “*school*” is associated with semantically related items like “*teacher*,” “*student*,” “*lesson*,” and “*class*.”

The analysis further reveals that such interconnectedness allows multiple access points to lexical items, which facilitates rapid retrieval during language use. According to Aitchison (1987), the stronger the associative connections among words, the faster they can be retrieved from memory. When one lexical item is activated, related items are simultaneously activated, enabling speakers to access relevant vocabulary efficiently in each context.

In addition to semantic relationships, the findings show that the mental lexicon is also systematically organized at phonological and morphological levels. As emphasized by Aitchison (1987), words sharing similar sounds or morphemic roots are closely connected in the mental lexicon.

For example, the Indonesian word “*berlari*” (to run) is linked to “*lari*” (run), “*pelari*” (runner), and “*melarikan*” (to run away with), as they share the same morphological base. This organization supports efficient lexical expansion and rapid access to related word forms.

2. The Process of Lexical Access

The findings from the reviewed literature suggest that lexical access operates through two complementary processes: perceptive (comprehension) and productive (production) access. These processes reflect the bidirectional nature of language processing in the human mind.

In perceptive access, the hearer or reader recognizes the phonological or orthographic form of a word and retrieves its meaning from the mental lexicon. This process is well explained by the Cohort Theory proposed by Marslen-Wilson (1980), which argues that word recognition begins as soon as initial acoustic input is perceived and involves the activation of a set of possible lexical candidates.

The literature also indicates that productive lexical access follows a reverse but equally complex route. According to Levelt (1989), speech production begins with a conceptual intention, followed by lexical selection and phonological encoding. These stages demonstrate that lexical access is not a linear process but the result of several interacting cognitive mechanisms.

From a neurolinguistic perspective, the findings consistently associate lexical access with specialized brain regions. Wernicke (1874) identified areas responsible for language comprehension, while Broca (1861) described regions involved in language production. These findings support the view that lexical access is neurologically organized and systematically coordinated within the human brain.

3. Factors that Influence Memory Access

The literature review reveals several key factors that influence the speed and accuracy of lexical access, particularly word frequency, context, semantic relationships, and language experience.

One prominent finding concerns word frequency. Based on the Logogen Model proposed by Morton (1969), frequently encountered words possess lower activation thresholds and are therefore accessed more rapidly. For example, the word “*makan*” (to eat) is more easily retrieved than the less frequently used word “*menyantap*” (to dine).

Contextual information is also found to play a crucial role in facilitating lexical access. According to Marslen-Wilson (1980) and McClelland and Rumelhart (1981), contextual cues help narrow down possible meanings and accelerate word recognition. For instance, the interpretation of the word “*bank*” depends heavily on the surrounding linguistic context.

Semantic relationships further enhance memory access, as demonstrated by the Spreading Activation Theory (Collins & Loftus, 1975). When semantically related words are activated, activation spreads across the network, making retrieval faster and more efficient. Additionally, age and language experience are found to contribute to a more structured and organized mental lexicon. As noted by Aitchison (1987), increased exposure to language results in richer lexical networks and more efficient access.

These findings are particularly relevant in foreign language learning, where learners often struggle with low-frequency vocabulary or words with weak semantic connections. Understanding the cognitive organization of the mental lexicon, therefore, has important pedagogical implications. Strategies such as mind mapping, visual association, and thematic grouping help strengthen semantic connections and facilitate lexical retrieval. These approaches align with the principles of Task-Based Language Teaching as proposed by Nunan (2004), which emphasizes meaningful language use to reinforce vocabulary retention and access.

Conclusions

The mental lexicon forms the foundation upon which all human language abilities are built, as consistently emphasized in psycholinguistic research. Vocabulary is organized according to semantic, phonological, and morphological criteria, functioning as a complex and highly structured mental storehouse rather than a simple list of words. The mechanism of memory access enables language users to activate appropriate lexical items rapidly and efficiently during language comprehension and production, including speaking, listening, reading, and writing. Factors such as word frequency, contextual information, and semantic relationships play a crucial role in determining the ease of lexical access. Understanding these mechanisms is essential not only for psycholinguistic and neurolinguistic research, particularly in explaining language processing in the brain, but also for practical applications in language learning and the rehabilitation of language-related disorders. Insight into how words are stored and accessed in the mind can assist educators and researchers in developing more effective strategies to enhance vocabulary retention and strengthen learners' communicative abilities.

References

- Aitchison, J. (1987). *Words in the mind: An introduction to the mental lexicon*. Oxford: Basil Blackwell.
- Broca, P. (1861). Remarques sur le siège de la faculté du langage articulé, suivies d'une observation d'aphémie. *Bulletins de la Société Anatomique de Paris*, 6, 330–357.
- Collins, A. M., & Loftus, E. F. (1975). A spreading-activation theory of semantic processing. *Psychological Review*, 82(6), 407–428.
- Creswell, J. W. (2018). *Qualitative inquiry & research design: Choosing among five approaches*. Sage Publications.
- Levelt, W. J. M. (1989). *Speaking: From intention to articulation*. Cambridge, MA: MIT Press.
- Marslen-Wilson, W. D. (1980). Speech understanding as a psychological process. In J. C. Simon (Ed.), *Models of speech perception* (pp. 231–245). Dordrecht: Reidel.
- McClelland, J. L., & Rumelhart, D. E. (1981). An interactive activation model of context effects in letter perception: Part 1. An account of basic findings. *Psychological Review*, 88(5), 375–407.
- Morton, J. (1969). Interaction of information in word recognition. *Psychological Review*, 76(2), 165–178.
- Nunan, D. (2004). *Task-Based Language Teaching*. Cambridge: Cambridge University Press.
- Wernicke, C. (1874). *Der aphasische Symptomenkomplex: Eine psychologische Studie auf anatomischer Basis*. Breslau: Cohn & Weigert.