Mental Lexicon: Its Organization and Representation

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Abstract

The number of words a native speaker of a language knows is incredibly vast. However, this is not just word that represents mental lexicon. Words have properties to which in a very complex way they are associated. This paper reviews the related literature and different perspectives on what mental lexicon is, what is its organization, how words are related in the mental lexicon. It has also been discussed how second language mental lexicon is stored in the brain.

Keywords: Mental lexicon, Words, Memory, storage and organization

1. Introduction

It is evident that the linguistic abilities of normal native speakers of a language includes, amongst other things, their knowledge of words (or the lexical items) of their language. Moreover many scholars agree that human beings know a lot of words and they can locate them in a fraction of second (Muller, 2008) [12]. Such huge numbers and such efficiency in finding those words required, suggest that these words are carefully organized, not just stored haphazardly in the mind (Gairns, 1986) [7]. But what exactly the notion of knowledge of words means and how this mental knowledge is represented is controversial. Scholars agree that little is actually known about the mental lexicon (Aitchison, 2003) [1] and all definitions and descriptions provided to reveal its nature are based on metaphors (Peppard, 2007) [13].

In order to refer to such a complicated repertoire, some have likened it to a dictionary (Hoff, 2005) [15] and others to the internet (Brown, 2006) [4]. However, unlike dictionary and more similar to the World Wide Web, the information in the mental lexicon is always being updated. New words are added, new connections to existing words are made and unused words may be forgotten (Aitchison, 2003).

To define mental lexicon, Bruze et al., (2009) hold that the term refers to "words that comprise a language" (p.363). Takac (2008) [19] refers to Hulstijn (2000) who defines it as "a memory system in which a vast number of words, accumulated in the course of time, has been stored, (p. 210). Bonin (2004) [3] defines mental lexicon as "the mental repository of all representations that are intrinsically related to words (p. 1).

Because learning a language may take place at different stages of an individual's physical and mental growth there are still unanswered questions that have arisen with regard to how a native language learner develops the mental links within his mental lexicon for the organization of native language (Post, 2007) [14]. However, speculations have been made as to how this knowledge is represented and organized in the mind.

Bonin (2004) declares that "mental lexicon contains several types of representations including phonological, semantic, morphological and orthographic". Levelt (1995) [10] in the same line with Bonin (ibid.) notes that mental knowledge which is the place of storage of declarative knowledge contains four kinds of features. First, there is the specification of the item meaning. For the word to eat there is something like "to ingest for nourishment or for pleasure". Second, there is a syntactic property including the category of the entry, for example to eat is a verb, the syntactic arguments it can take are the external subject and internal object. Third, there is the morphological characteristic of the item (for example, the third person for the verb 'to go'). Fourth, there is phonological information for the entry. Learning the phonological form of a word is essential for lexical access

(Randall, 2007) [16]. There are other specifications stored with an item as Randhall (2007) notes. It may have particular pragmatic, stylistic and affective features "that make it fit to one context of discourse better than another" (p. 183).

As Levelt (1995) holds, these four kinds of information are interrelated in a systematic way. Take the word painter as an example. Its meaning is related to its morphology '*paint' 'er'* and the '*-er*' refers to an agent in the world.

2. Organization of the mental lexicon

As to what this mental lexicon organization is like, different experiments have given clue as to its organization. Gairns (1986) gave some testees the definition of some words which are of low frequency and asked them to provide the name of the items. Not all test takers answered the questions, but for the researchers the answers on the tip of their tongues were of great importance. Some of the answers were erroneous; however, they were phonetically close to the given words. In some cases, some participants in the study could guess the first letter of the word or the number of syllables of the word and others mentioned some words which were semantically close to what was intended by the researchers. The findings revealed that basic to lexicon and involved in its organization is an interrelated phonological system, a system of meaning relations and a spelling system which are interrelated. Other experiments (e.g. Kraut, et. al. 2002, Loftus & Loftus, 1974) [9] [11] provided further evidence that the variable which plays a determining role in the storage and organization of items is semantics; however, apart from which variable is responsible for the organization of mental lexis there is such a complex relationship among all variables involved in the organization of lexis. It was such a conception that led Froster (1976, cited in Gairns ,1986) to suggest the theory that all items are organized in one large 'master file' and that there are a variety of peripheral 'access files' which contain information about spelling, phonology, syntax and meaning.

3.Findings on storage of words in mind

Apart from the question of what the structure of mental lexicon is and what is its organization, one may ask himself in what ways the stored lexical items are interrelated. Research in memory suggests that words are stored and remembered in a network of associations and this is agreed upon by a lot of researches (Gairns ,1986). These associations can be of many types and linked in a number of ways. As Bruza et al. (2009) [5] suggests, "individual words are not represented in long-term memory as isolated entities but as part of a network of related words" (p. 363).

Based on Collins and *Loftus'* Network Model (1975) [6], words are organized in hierarchical networks and are related through nodes which have relationships such as hyponymy or super-ordination, antonymy, collocations and coordination.

Set Model Theories

The semantic feature theory suggested by Katz and Fodor (1963) [8] assumes that there is a core meaning for each word and it has a number of nonessential facts surrounding it. Katz and Fodor (ibid.) proposed a list of hard-core essential meaning of a word in terms of features. Therefore, 'unmarried, human, male and adult, can be considered as the component or features of 'real meaning' of 'bachelor', that is to label a person 'a bachelor' each of these features is necessary.

Prototype Theories

Sripada (2008) [18] explains that based on prototype theory, people have already-held-in-mind concepts and they match features of the objects they encounter with them. According to Sripada (2008) "the essence of the theory of prototype is that an entry in the mental dictionary is centered on a representation of the prototype members of the class that the word denotes" (p. 185). Randall (2007) calls this a process of having some examples to categorize words. As he explains, people often make use of examples when asked to define categories.

4. The second language mental lexicon

How does the second language (L2) mental lexicon differs from the first language (L1) mental lexicon? Singleton (1999) [17] states that although the L2 mental lexicon and L1 mental lexicon are separately stored, they are connected with each other and are in communication. Wolter (2006) [20], in line with Singleton (ibid.), argues that there is a strong influence of L1 mental lexicon on the L2 mental lexicon. Therefore it seems that *two* mental lexicons exist (Bastkowski, 2003) [2]. It is also held by Bastkowski (2003) that the idea of a 'clean' L2 mental lexicon is not probable since even if the second language learner, as he notes, may not know the second language word, for example rain, but the concept is already in his mind. Wolter (2006) concludes that "What this means for the second language learner is that a complex set of assumptions for assimilating and structuring L2 lexical knowledge is already well in place before they learn their first word in the second language" (p. 742).

5. Conclusion

Human beings are endowed with a mental lexicon which gives them the ability to store and retrieve huge number of words in their memory. Different experiments have been conducted in order to find out which factor is more responsible for the storage of the lexis in the mind and different speculations have been made. It has been suggested that the mental lexicon contains several types of representations which have complex interrelationship with each other and different other variables. It has also been found out that words and their properties are not separately stored in the memory but there is a network of associations which holds words together. The studies of L2 lexicon have also revealed that the L2 words are stored separately from that of the L1; however, both L1 and L2 lexicons are in communication.

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