

Mental lexicon: A conceptual framework

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Abstract- The paper discussed the concept of mental lexicon or mental dictionary and some other studies related to the area of mental lexicon. How lexical items are accessed, acquired and ordered in the mind is a controversial area for both linguists and psychologists. The mental lexicon is a complicated structure organized in many ways. This paper discusses the notion of mental lexicon and what are the similarities and contrasts between mental lexicon and physical dictionary, methods and ways used for inquiry and the role of mental lexicon in case of learning and acquisition of language as well as an overview on the language and memory. The paper covers research findings in this area.

The study has conducted on the qualitative method that based up on observations and collecting material besides the observations mainly taken from theoretical observations of scholars and researchers, moreover collected materials also have been taken from collecting information that was found on published papers, books etc.

The conclusion highlights the significance of the mental lexicon and how it touches all the aspects of psycholinguistics and it also confirms that mental lexicon is complex and flexible much more than any physical dictionary, in order to cover the research findings in this area some issue that are related to mental lexicon in many ways are discussed.

Index Terms- dictionary, mental lexicon, mind, language learning, language acquisition

I. INTRODUCTION

The term mental lexicon which was introduced by R.C Oldfield in "things, words and the brain" has become an increasingly salient aspect of psycholinguistic research. In psycholinguistics, mental lexicon is a person's internalized knowledge of the properties of words.

According to Jean Aitchison in his book *Words in the mind* "unlike book dictionaries, mental dictionaries cannot be organized solely on the basis of sounds or spelling. Meaning must be taken into consideration as well, since humans fairly often confuse words with similar meanings, as in 'Please hand me the tin-opener' when the speaker wants to crack a nut, so must have meant 'nut-crackers.'" (Jean Aitchison, 2003)

Marcus Taft has cited an example explaining the mental lexicon:

"Even with hard yakka, you've got Buckley's of understanding this dinkum English sentence, unless you're an Aussie".

"An Australian has no difficulty understanding the above sentence, while other English speakers might struggle. The words 'yakka,' 'Buckley's,' and 'dinkum' are in the vocabulary of most

Australians, that is, they are stored as entries in the **mental lexicon**, and therefore an Australian has access to the meanings of these words and can consequently comprehend the sentence. If one possessed no mental lexicon, communication through language would be precluded." (Marcus Taft, 1999).

II. REVIEW OF LITERATURE

In the early Generative Grammar (Chomsky, 1965) the idea about the lexicon was just that it is a list of words on which syntax, the central module, operated. But recently, the study of the lexicon has been given more importance and it has received a reinforcement from the researches of cognitive psycholinguists (e.g. Taft and Foster, 1975; Henderson, 1985), neuropsychologists (e.g. Caramazza, 1997), specialists of reading such as (Rumelhart, 1977; Besner, Waller and Mackinnon, 1985), and cognitive scientists (e.g. McClelland and Rumelhart, 1981; Marcus, 2001), it's to mention the central disciplines.

The mental lexicon has become a common aspect and has attracted a large number of researchers to investigate. The mental lexicon is known as a mental dictionary which contains information about a word's pronunciation, meaning, syntactic attributes, and so on, (Jackendoff, R.S, 2002). In linguistics and psycholinguistics Mental Lexicon used to refer to individual speaker's lexical or word, representations.

The mental lexicon is not a collection of words, it also deals with how those words are stored, activated, processed and retrieved by a speaker whenever he/she wants. An individual's mental lexicon is not perpetual; it is always developing and growing as new words are learned. Many theories about the issue of how mental lexicon occurs were argued.

Nativist Theory, a theory hypothesized by Noam Chomsky who used the idea that language is innate, it's to say that human beings are born with a set of rules in their heads about language which termed as UNIVERSAL GRAMMAR. According to Chomsky the ability to learn grammar is hard-wired into the brain. In this theory he proposed that if we are brought up under normal conditions, then we will always be able to develop language with a certain property X (e.g. differentiating function words from lexical words or differentiating nouns from verbs) in this case property X is considered as a property of universal grammar.

Dual – Coding theory, a theory of cognition by Allan Pavio, his idea is about the role of the formation which is presented by mental images in learning, Pavio proposed that the formation of mental images helps in learning (Reed, 2010), according to Pavio there are two ways a subject could expand on learned material which are: visual imagery and verbal associations.

Dual-Coding theory assumes that verbal and visual information is used to represent information (Sternberg, 2003).

As well as the Semantic Network theory by Charles S. Pierce (1909), the theory of semantic network proposes a graphical nodes and edges that he called 'the logic of future' (Russell, Stuart J.; Norvig, Peter, 2010). A semantic network is a frame network that represents semantic relations between concepts. It is used as a kind of knowledge representation and it is a directed or undirected nodes consisting of vertices that represent concepts and edges (John F. Sowa, 1987) this network can be used when a person knowledge that is best understood as a set of concepts which are related to each other. Mostly semantic networks are cognitively based.

The theory of semantic network is a hypothetical mental process which works when one of nodes in the network is triggered, and suggests three methods namely: frequency effects, priming effects and neighborhood effects.

- Frequency effects, propose that words which are frequent in a one's language can be recognized faster than those that are infrequent (Foster, K. I, 1976).
- Priming that is termed to use in lexical decision tasks; it is to decrease reaction times of related words, the ability to have interchangeable words aid in the reaction times of others (Traxler, Matthew ;2011).
- Neighborhood effects refer to the triggering or the activation process of similar neighbors of a target word, those neighbors known as items which are confusable with the target word because of their overlapping features (Andrew, Sally; 1989).

According to (Elman, J. L. 2004), a key part of knowing language is knowing the words of that language. This knowledge is ordinarily thought to live in the mental lexicon, a sort of word reference that contains data in regards to a word's pronunciation, meaning, syntactic qualities, and so on. In this perspective, words are seen as boosts that work specifically on mental states. The phonological, syntactic also, semantic properties of a word are uncovered by the impacts it has on those states. The perspective propelled here is comparative in a few regards to a few past propositions. The thought of 'direct perception' is itself not new. There is a nearby partiality with MacDonald and Christiansen's proposition in regards to working memory. The essential recommendation of his proposition is to regard words as stimuli, whose "signifying" lies in the causal impacts they have on mental states. Then again, to summarize Dave Rumelhart – words don't have meaning; they are signals or cues to meaning.

Some psycholinguists and linguists don't believe in the existence of the mental lexicon and it is considered as a controversial concept. One theory about the mental lexicon suggests that it is "a collection of highly complex neural circuits" (Foster, K. I, 1976), another proposes that mental lexicon organize our knowledge about words "in some sort of dictionary" (Foster, K. I, 1976)

III. MENTAL LEXICON VS. PHYSICAL DICTIONARIES

As the Mental lexicon includes similar properties or information to those found in a dictionary, it could even be contended whether they are very nearly the same. So as to demonstrate or

refute this proposal, it is important to quickly take a gander at their similarities and contrasts.

Truly, the implications of words are put away in both, as socio-cultural data about use, and so on. Both the dictionary and the mental lexicon empower the speaker to recall information about the use of a vocabulary item. Lexicons generally can contain the grammatical forms a unit can take. That sort of data is furthermore kept in the mind, despite the fact that it may not be found as obviously organized as in a physical lexicon. The item "scarf" is labeled in the Oxford advanced Dictionary as noun and verb while a normal learner of the English language is most likely not ready to utilize this item in both forms when it is at first learnt. The way that it can be utilized all the more generally might be found later when the item is "re-learned" in another setting. Information, along these lines, can likewise be given on the diverse types of things yet they are more available in a dictionary than they are in the mental lexicon.

Another highlight which the mental lexicon and dictionaries have in like manner is the register of a vocabulary item. A dictionary is liable to list the word "stuff" as casual or colloquial. A speaker of the English language, then again, would know when to utilize that item effectively on the grounds that items in the mental lexicon dependably accompany their connoted meaning. Connotations are, obviously, recorded in both the mental lexicon and a physical dictionary. Hence, the mental lexicon can even be more exact than a dictionary on the grounds that dictionaries generally don't list the greatest number of connotations as the Mental Dictionary can store. Other than the similarities expressed above, there are likewise contrasts between the Mental Vocabulary and lexicons (Aitchison, 2003).

IV. NETWORK MODEL

Research findings about the way lexical items are stored and memory proposes that those lexical items are related to each other by sight as well as by meaning, sound and form in a network of associations. Thus they can be stored and remembered by means of these associations that can be of many different types and ways (Nattinger, 1988).

V. LEXICAL DECISION TASK: AN OVERVIEW

Mental lexicon is sometimes called mental dictionary as mentioned above, but human mental dictionaries are organized with links between semantically and phonologically related words or lexical items (Jean Aitchison, 2003), Unlike the human mental dictionaries which seem to be organized alphabetically. Another difference is there between mental and book dictionaries that the mental lexicon always updates itself with new lexical items and word meanings while book dictionaries contain a fix number of words and word meanings. In research there are continuous efforts to identify the proper way of how words are linked and accessed. A known method in this field to analyze those links is by the help of a *Lexical decision task* (Contemporary linguistic analysis,2008), in this task participants required to respond as accurately and quickly as

possible to a string of letters presented on a computer display and they are required to tell if the string is a related word or non-word(Altman, Gerry;1999), then times of reaction indicate that these words are more 'Active' in participants minds after related words have been presented, this method enables the researchers to identify whether a set of related lexical items are stored closely in the mental dictionary, if yes then they will be able to analyze with what related counterparts words are stored and what can activate them(Altman,Gerry;1999).

VI. LANGUAGE ACQUISITION AND LANGUAGE LEARNING

According to Channel (Carter and Mc Carthy, 1988), second language is considered as acquired by a learner when the meaning of a word can be understood rather than used, and it can be used naturally in a proper situation. Learning as a process leads to the acquisition as a final result.

It is generally supposed that receptive words are a learner comes across in listening and reading, while productive words those are used in speaking and writing. According to the previous assumption of acquisition of vocabulary, productive acquisition is preceded by receptive acquisition. Researchers are trying to find out how acquisition takes place from the stage of reception to the stage of production, but several theorists proposed that words are not a part of productive capacity, but they remain a part of receptive capacity. According to Fay and Carter (Carter, 1988) the direction of mapping during comprehension is sound to meaning and meaning to sound during production, this kind of mapping led to the perception that there could be two listing of words that are represented and organized in a way enabling easy recall and retrieval.

Another important issue here is first language acquisition, vocabulary growth is one of the concerns of research on the development of the mental lexicon. Researches assume that the words acquired in the stage of language development are mostly nouns or noun-like, we can observe the similarities in early words among children {e.g. Baba, Mama} (Contemporary linguistic analysis, 2008). Other researches assume that words need a type of acknowledgement before they are effectively stored in the mental dictionary of children.

VII. ON THE LANGUAGE AND MEMORY

When a subject knows a word it means (x) that the word is retained in a particular way that enables the subject to comprehend and recognize it during reading or listening and to use it while writing or speaking (and this is the process of bringing it out of storage), when required. Processes, production and understanding or comprehension of language are involving a person's memory that contains lexicons (in case of the speaker knows two languages), that is known as the human word store or human mental lexicon.

The distinction between long term memory (LTM) and short term memory (STM) is clear. The long term memory LTM that contains the word store or the mental lexicon, An individual has an account of words are ordered and represented in a manner enabling easy retrieval or recall, that reveals a close connection between memory and language.

VIII. CONCLUSION

As the current work is a conceptual frame work about mental lexicon, it discusses several issues that are related to the mental lexicon which provide more clarity about the role of mental lexicon and how it functions, and moreover it confirms how Lexical items are accessed, acquired and ordered in the mind. A comparative between the physical dictionaries and the mental dictionary (Mental lexicon) has discussed in this paper in order to mention the similarities and differences between them and to have deep understanding about the concept of mental lexicon. The role of mental lexicon in the process of language learning and language teaching is also elaborated. On the basis of this research it could be concluded that mental lexicon is enchanting topic that touches on all aspects of psycholinguistic, it is undoubtedly much more flexible and complex than any book dictionary and there are many points of view from which to study. Accordingly there is still other discussions about which model is best, even whether it is sensible to produce a globally serviceable model. We have to remember that each model has its own advantages and each model has discussed in this paper has expanded our knowledge and deepen our understanding of the mental lexicon in valuable manner.

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REFERENCES

- [1] Andrews, Sally (September 1989). "Frequency and Neighborhood Effects on Lexical Access: Activation or Search?". *Journal of Experimental Psychology: Learning, Memory, and Cognition* **15** (5). doi:10.1037/0278-7393.15.5.802 W.-K. Chen, *Linear Networks and Systems* (Book style). Belmont, CA: Wadsworth, 1993, pp. 123–135.
- [2] Carter, Ronald, and Michael McCarthy. *Vocabulary and language teaching*. Routledge, 2014.
- [3] Contemporary Linguistic Analysis (5th Custom Edition for U of A). Toronto, ON: Pearson Custom Publishing, 2008.
- [4] Elman, Jeffrey L. "An alternative view of the mental lexicon." *Trends in cognitive sciences* 8.7 (2004): 301-306.
- [5] Forster, K. I. . Accessing the mental lexicon. In F. Wales & E. Walker (Eds). *New approaches to language mechanisms* (p. 257-287). Amsterdam: North Holland, 1976.
- [6] Jackendoff, Ray. *Foundations of language: Brain, meaning, grammar, evolution*. Oxford University Press, 2002.
- [7] Jean Aitchison, *Words in the Mind: An Introduction to the Mental Lexicon*. Wiley-Blackwell, 2003

- [8] John F. Sowa. "Semantic Networks". In Stuart C Shapiro, (1987). *Encyclopedia of Artificial Intelligence*. Retrieved 2008-04-29
- [9] Marcus Taft, *Reading and the Mental Lexicon*. Psychology Press, 1991
- [10] Miller, George A. "Dictionaries in the Mind." *Language and Cognitive Processes* 1.3 (1986): 171-185.
- [11] Nattinger, James. "Some current trends in vocabulary teaching." *Vocabulary and language teaching* (1988): 62-82.
- [12] Noam Chomsky. "Tool Module: Chomsky's Universal Grammar" . Retrieved 2015-10-07.
- [13] Reed, Stephen. *Cognition: Theories and applications*. CENGAGE learning, 2012.
- [14] Russell, Stuart. "Artificial intelligence: A modern approach author: Stuart russell, peter norvig, publisher: Prentice hall pa." (2009).
- [15] Sternberg, R. J. *Cognitive theory* (3rd ed.). Belmont, CA: Thomson Wadsworth, 2003
- [16] Traxler, Matthew J. *Introduction to psycholinguistics: Understanding language science*. John Wiley & Sons, 2011.

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