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THE ORGANISATION OF THE L2 MENTAL LEXICON

Abstract: The paper deals with some of the most relevant trends in L2 mental lexicon research with the aim of highlighting the issue of the L2 mental lexicon organization. After reviewing the findings on the connections between the L1 and L2 mental lexicons, the author goes on to explore the structure of the L2 mental lexicon. The special emphasis is on the models of the L2 mental lexicon considering the underlying conceptual system. Finally, the issue of control mechanisms of a bilingual lexicon is dealt with. In the Conclusion section, an attempt is made to give a balanced summary of the research results presented.

Keywords: L1 and L2 mental lexicon, conceptual storage, control mechanisms

1. INTRODUCTION

How people store and manage a large amount of words they use and encounter every day has always been one of the most intriguing questions. Even today, in the era of science and technology expansion, there does not seem to be a complete and satisfactory answer to that question. Due to inaccessibility of the mental lexicon, *'an elaborate structure, with an enormous amount of information involved'* (Aitchinson, 2003:251), it is difficult to give a description or a model of its functioning. The problem becomes even more difficult, when more than one language is involved.

Taking into consideration that no real consensus on the issues of L1 and L2 mental lexicons modelling exists, this paper will attempt to present some of the most influential research in the field of L2 mental lexicon research, including the one related to the issues of L1 vs. L2 mental lexicon relationship as well as the most influential models of the bilingual lexicon. Due to the complexity and breadth of this topic, the focus will be on the ideas for the conceptual store and control mechanisms of a bilingual lexicon. The main aim is to highlight the trends in research which may prove successful in explaining the real nature of the L2 mental lexicon.

2. L1 vs. L2 mental lexicon

What seems to be undisputed by most researchers is that there are indeed two different mental lexicons in bilingual speakers. However, the issues of whether the two mental lexicons are separated or interconnected, and the degree of interconnectedness between the two lexicons, if it does exist, are still the subject of the debate among the researchers. Another somewhat controversial point is the degree of resemblance of the L2 mental lexicon to the L1 lexicon. Since the issue of separation/integration of the two lexicons is a more complex one, and often overlaps with the research results on the L2 mental lexicon structure, the author will first present the most often cited views on the similarity/difference of the L1 and L2 mental lexicons.

2.1 The basis of the L1 and L2 mental lexicons

The general view is that the nature of links between words in the L1 mental lexicon is a semantic one (for a detailed review of the issue, see Aitchinson, 2003). As opposed to the L1 mental lexicon, the L2 mental lexicon appears to be organised on a phonological basis. However, the evidence for this is neither conclusive, nor undisputed, and even if it is accepted, many unresolved issues still remain, one of the crucial being lexical retrieval in the production process (Pemberton, 1993).

The results of Meara's study known as the Birkbeck Vocabulary Project are most often presented as the evidence for phonologically organised L2 mental lexicon. The research included word association tests (non native speakers' responses to L2 stimuli were analysed) and was conducted with English-French bilinguals. The results of the L2 word association tasks provided proofs that the L2 mental lexicon is considerably different in its structure than the L1 mental lexicon. The most important implications of Meara's research are as follows: the connections between words in the L2 mental lexicon are less stable than the ones in the L1 mental lexicon; the L2 mental lexicon is predominantly based on phonology and there are systematic differences in the semantic links of words between the L1 and L2 mental lexicons (Meara, 1984).

Singleton (1999) challenges the predominant view of the L2 mental lexicon as phonologically based and questions the interpretation of the findings of the Birkbeck Vocabulary Project word association tests by Meara. Singleton's argument is that the results of this and similar studies, when examined more closely and from a different point of view, do not necessarily support the fact that the L2 mental lexicon is more form-based than the L1 mental lexicon. He cites evidence from numerous studies which point to the importance of meaning in both L1 and L2 lexical acquisition and mental lexicon integration, whereas formal processing appears to have a major role only in the early phase of word integration into the L2 mental lexicon.

Another criticism of Meara's conclusions is provided by Wolter (2001), who even proposes a model of the L2 mental lexicon structurally similar to the L1 mental lexicon. Although he acknowledges that there are some fundamental differences between L1 and L2 mental lexicons, he points out that the patterns of native and non-native responses in word association tasks show more similarity than it was supposed. His idea is that the key principle upon which both mental lexicons are organised is the depth of individual word knowledge. What seems to be the crucial concept in his theory is that lexicons are not viewed as holistic structures, but rather as fluctuating entities in which words have different status according to how well-known they are to the speaker. Therefore, his model of the L1 and L2 mental lexicons consists of more layers of words, the core one being the words that are well known. The words in layers closer to the core vocabulary have stronger connections to the other words, whereas the strength of connections decreases if the words are less-known.

From the above stated, it would appear that accepting the claim that the basis of the L2 mental lexicon is a phonological one would be unjustified without further research and more in-depth analysis of the findings so far. If more similar studies were conducted with the results which would be both reliable and consistent with the previous ones, then the phonologically-based L2 mental lexicon hypothesis would seem more solid.

2.2 Modularity vs. connectionism

A question that is equally important for the research into the L1 mental lexicon structure (see Aitchinson, 2003) and the L1 – L2 mental lexicons relationship is whether its organisation is modular or connected, i.e. are the two (or more) mental lexicons separate structures with no mutual connections, or are they interconnected? What seems to be the prevailing view nowadays is that the mental lexicons of one speaker are mutually connected, but whether the interconnectedness is complete or partial is yet to be confirmed by research.

In his review of the issue of mutual separation/integration of L1 and L2 mental lexicons, Singleton (1999) is in favour of a general connectionist approach. Connectionist models emphasise the existence of a '*common, interconnected set of cognitive structures*' (MacWhinney, 1997:119). According to the results of the research in that area, it seems that both the view of completely independent and separate L1 and L2 lexicons and the view of totally integrated lexicons can be ruled out. It is more likely that the two lexicons are connected via direct or indirect connections (a common conceptual store). However, the exact nature of L1 and L2 connections is yet to be discovered, while taking into consideration individual differences in terms of how well particular L1 and L2 words are known as well as the perception of their formal and/or semantic similarity.

More details on some of the research on shared properties of the L1 and L2 mental lexicons will be given in the following section.

3. ORGANISATION OF THE L2 MENTAL LEXICON

3.1 Conceptual store

The most common views of bilingual lexical organisation are: compound, coordinate and subordinative, the main difference among them being in the understanding of an underlying conceptual system. Compound and subordinative systems assume that there is only one conceptual system for both mental lexicons and that the main difference is in the access path. Namely, the compound system is based on the hypothesis that the L2 vocabulary has direct access to conceptual representations, whereas in the subordinative system L2 words access to conceptual representations is mediated through the corresponding L1 items. On the other hand, the coordinate view presupposes the existence of two conceptual systems corresponding to the two vocabulary sets.

De Groot (1993) argues that strict separation in views of bilingual lexical organisation as being compound, coordinate or subordinative is not in accordance with research results and advocates the mixed-representational system. The studies she reviews point towards the idea that the L1 and L2 mental lexicons of bilinguals *'contain a mixture of different representational forms'* (p. 46). The storage format of L1 and L2 vocabularies may depend on L2 learning history, word type (i. e. whether L1 words and their L2 equivalents are concrete or abstract, cognates or non-cognates), or more precisely on the shared conceptual properties of the corresponding L1 and L2 word pairs. Thus, L1 and L2 words which have more conceptual elements in common will more likely be organised in a compound or subordinative fashion (depending on the level of proficiency in L2), whereas L2 items with non-equivalent translations in L1 would probably have a separate (coordinate) representational system. The underlying idea of this model, known as *'the distributed model'* (Dong et al, 2005) is that there are two more or less separate conceptual stores, within which there is some overlapping reflected in shared conceptual nodes among certain types of words.

In contrast to this model, there are several models which emphasise the existence of a single shared conceptual storage. Two of them were proposed by Potter et al: *'the concept-mediation model'* and *'the word-association model'* (for a detailed review of all the models, see Dong et al 2005). The main difference between these two models is in the route by which the L2 words access the common conceptual store. The concept-mediation model presupposes a direct access to the conceptual store, whereas in the word-association model, the L2 words access to meaning is mediated by their L1 equivalents. Kroll (1993) explores the issue of connections between L1 and L2 lexical representations and between L1 and L2 lexical representations and concepts. Her claim is that concept mediation, which is presumably characteristic of L1 to L2 translation, can also be observed in L2 to L1 translation, especially with the increasing proficiency in L2. The new point she introduces is that concept mediation appears fairly early in the

process of L2 learning. It seems that none of the two above mentioned models is completely in accordance with research evidence. However, a combination of these models can account for the changes in interlanguage development of adult bilingual speakers: a shift from word association in early stages to concept mediation in more proficient adult learners.

Another influential model of a bilingual lexicon based on the shared store presumption is the revised hierarchical model (Kroll and Stewart, 1994). In this model, L1 and L2 words are interconnected via both lexical-level and conceptual links. However, the nature of those links is somewhat asymmetrical; namely, L2 to L1 lexical-level links are stronger than L1 to L2 links, whereas L1 conceptual links are stronger than L2 links. The evidence for this model came from the translation experiments with fluent bilinguals. It was established that translation from L1 to L2 was slower, less accurate and prone to the influence of semantic variables, which implies that the L1 words activate conceptual representations, whereas the L2 words more often activate their corresponding L1 equivalents.

In a later study conducted by Van Hell and De Groot (1998), the authors used a word association experiment in an attempt to shed more light on the issues of conceptual representations in L1 and L2 mental lexicons. It appears that word type and grammatical class have a major effect on the degree of conceptual representations sharing between the L1 and L2 mental lexicons. The results of the experiment suggest that conceptual representations, or at least, major parts of conceptual representations are usually shared between the lexicons if the words are concrete words, cognates or nouns, as opposed to abstract words, non-cognates or verbs. This would mean that conceptual representations in a mental lexicon are neither purely language-specific, nor completely shared across languages.

Kroll and Tokowicz (2001) examined how the process of developing direct L2 conceptual processing is represented in the mental lexicon of a fluent bilingual, starting from the premise that in initial stages, L2 access to meanings depends on the lexical transfer from L1. The authors highlight that the process of developing L2 mental mapping, i.e. direct conceptual links is accompanied with the development of appropriate *control mechanisms* which appear to regulate the degree of activation of the two languages. The following section deals with the research on the control of the bilingual mental lexicon.

3.2 Control mechanisms in the bilingual lexicon

The answers to the question of how bilinguals manage to control which language will be used at a particular moment, i.e. how the two (or more) mental lexicons of one speaker are managed efficiently also vary. One line of research goes in the direction of resolving the issue at the lexical level, i.e. the claim is that selection takes into account only the target language (Costa et al cited in Finkbeiner et al, 2006). The other influential explanation is that the words of the different mental lexicons are differently activated, so that only the words from the target

language mental lexicon receive enough activation, whereas activation of the non-target language mental lexicon is minimal and insignificant for the selection process (La Heij, 2005).

The third possibility is suggested by Green (1993, 1998) and is based on the premise that the non-target mental lexicon is suppressed in a reaction to the activation of the target language mental lexicon. Since Green's inhibitory control model (IC model) appears to be most fully developed, the author will deal with it in more detail. IC model of the bilingual mental lexicon is developed so that it can account for the ability to switch between the languages. It presupposes that there are multiple levels of control. The basis of the IC model is the hypothesis that, in terms of meaning, the lemmas are organised into semantic fields and are distinguished by means of tagging, whereas in terms of word forms, the items are also tagged and organised based on their phonological properties. The main innovation of this model is in identifying control processes which determine which mental lexicon will be activated in a particular situation. The model presupposes the existence of inhibitory control mechanisms which act when the speaker uses one language, suppressing the activation of the other language word forms. This enables bilingual speakers to perform various tasks in one language without interference of the other.

It should be mentioned that, although influential, Green's model is not completely accepted by other researchers. A recent study by Costa et al (2006) was an attempt to examine whether there is parallel activation of both mental lexicons in the process of speech production, and more precisely, whether the lexical representations of the language that is not being used at the moment are in any way activated either by the semantic system or by the phonological representations of the target language. Although the authors do not present any particular model, they point out some methodological flaws in previous studies which pointed towards concurrent activation of the two lexicons and propose new methodology which would provide more conclusive evidence.

Another recent article worth mentioning is the one by Finkbeiner et al (2006). The authors question previous approaches which all start from the premise that language selection is a competitive process, i.e. the two mental lexicons, or rather the words from the two mental lexicons, 'compete' in the process of lexical selection. Finkbeiner et al acknowledge that all three most influential proposals may be satisfactory explanations for the lexical selection control, but express the view that the process of lexical selection need not be a competitive one. Having revised the results obtained in previous studies and considering the results of the research they conducted, Finkbeiner et al suggest that threshold activation model is more viable and in accordance with the obtained data. Thus, the process of lexical selection is moved from a more abstract semantic field to a phonological level. According to the authors, this is where the choice itself takes place with the involvement of conscious control of the speaker.

4. CONCLUSION

Considering all of the above mentioned research, it becomes apparent that there is not one unified strain of theory in the field of the L2 mental lexicon organisation; rather, there are contrasting and complementing views continuously developing. One of the reasons for this could be the fact that many of the conducted studies give varying results, which are then open to different interpretations. Another obstacle to producing a more solid definition and description of the L2 mental lexicon structure and organisation is abstractness and inaccessibility of the very notion of ‘mental lexicon’. What is more, it should be taken into account that the results from the research in bilingualism might vary depending on the L1 and L2 languages in question.

If one would venture to give a balanced summary of the findings so far, it might be that, in the process of language perception, the mental lexicons of the two languages make up one system on the semantic, abstract level. As far as the language production is concerned, it is more likely that two separate systems operate in way which enables that only the one that is needed at the particular moment is the active one (Pemberton, 1993). 1

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ОРГАНИЗАЦИЈА МЕНТАЛНОГ ЛЕКСИКОНА НЕМАТЕРЊЕГ ЈЕЗИКА

Резиме: Рад се бави неким од најрелеватнијих смерова истраживања менталног лексикона нематерњег језика са нагласком на питање организације менталног лексикона нематерњег језика. Пошто се најпре бави истраживањима повезаности менталних лексикона матерњег и нематерњег језика, аутор даље даје увид у структури менталног лексикона нематерњег језика. Посебна пажња посвећена је моделима менталног лексикона нематерњег језика у зависности од концептуалних система на којима се заснивају. Рад се на крају бави и механизмима контроле код билингвалних лексикона. У закључном делу рада се даје балансирани осврт на презентоване резултате досадашњих истраживања.

Кључне речи: ментални лексикон матерњег и нематерњег језика, концептуално складиштење, механизми контроле