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Can Bilinguals "Switch Off" Their Unwanted Language(S)?

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Abstract

The complexity of a bilingual's ability of two different languages have urged linguists to explore the hidden explanations for bilinguals' command and processing of the two different language lexicons. The previous research studies investigating bilinguals' lexical and sentence processing are explored, in this paper, to investigate whether it is possible for a bilingual to switch off the unintended language while using one of his languages. I expect to conclude, in the light of the presented evidence, that the bilingual's languages are active at some level even when using one of his languages.

Keywords: bilingual sentence processing, bilingual lexical processing, code-switching.

1. Introduction

Code-switching between two languages, for many bilinguals, is a natural phenomenon (Myers-Scotten, 2002). Though, it is very rare for the same bilinguals to make the error of using the unintended language when talking to monolinguals that the monolingual would be unable to understand. Does this mean that bilinguals can completely switch off their unwanted language(s)?

The empirical research suggests, however, that both the languages are active to some extent when bilinguals speak (Kroll, Bobb and Wodniecka, 2006), read (Dijkstra, 2005) and hear (Marian and Spivey, 2003) one of their languages. So, it seems like bilinguals cannot switch off their unwanted language and may influence their performance (Kroll et. al., 2012). It was once believed that the interference from L1 to L2 was present only in the bilinguals in their early stages of second language learning when bilinguals are necessarily dependant on transfer from their L1 (Kroll and Stewart, 1994; MacWhinney, 1997). The new research, on the other hand, shows that these interferences persist across language boundaries and is a fundamental feature of a bilingual system (Kroll, 2008). It appears that to influence bilingual's performance is influenced by the language not in use at all levels, for example, the lexicon (Jared and Kroll, 2001), the grammar (Dussias, 2003) and the phonology (Sundara, Polka and Baum, 2006). We shall see further to what extent and level the interference is present in bilingual's two languages.

2. Bilingual Lexical Processing

A review of empirical studies indicates that during reading under many circumstances, possible words from different languages temporarily become active (Kroll and Stewart, 1994; Dijkstra and Van Heuven,

2002; Martin et. al., 2009; Midgley et. al., 2011; Wu and Thierry, 2012). Bilinguals word recognition appears to be basically language nonselective, automatic (i.e. not under control of the reader) and although task-dependent, its first processing stages might remain unaffected by nonlinguistic contextual factors (Dijkstra, 2005).

However, there are a few studies which suggest that a bilingual's lexical access is language selective. For example, the results from a study of cross lingual repetition priming by Gerard and Scarborough (1989) on Spanish-English bilinguals and lexical decision tasks by Dijkstra et. al. (2000) on Dutch-English bilinguals suggest that there must be separate lexical-level representations for words and therefore concluded that lexical access is language selective. But Dijkstra, Grainger and van Heuven (1999) argue that the apparent language selectivity in these tasks arises because of the nature of the similarity between the words in the two languages.

2.1. Language Information and Bilingual Word Recognition

Languages compete while bilinguals process language (Heather, 2011; Traxler, 2012). Dijkstra (2005) believes that bilinguals are always conscious of a particular word that to which language it belongs. This kind of information must be stored in the language users' mental lexicon for each word which has been referred to as language tag or a language node. Dijkstra (2005) states that not much is known about these nodes or tags but believes there are two representational potential possibilities that information about the items is retrieved through the form (orthographic/ phonological) representation of an item or through its lemma (syntactic/ semantic) representation.

2.2. Bilingual Word Recognition Models

Researchers have attempted to formulate models to account for the available evidence on bilingual word recognition. The early models often assumed that the bilingual lexical access was selective in nature and that the two languages of a bilingual are stored independently (Dijkstra, 2005). They were believed to have access to two separate lexicons that would be switched on and off by means of selective access control mechanism (MacNamara and Kushnir, 1971; Scarborough, Gerard and Cortese, 1984). These models seemed ideal to explain why in general a bilingual is able to carry out a conversation in one of his languages. Gradually, however, it was realized that bilinguals cannot completely shut off the unwanted language(s) (Brysbaert, 2003) as will be discussed below.

Dijksta's Bilingual Interactive Activation (BIA) model explores the way in which the orthography of the written languages may be shared in a bilingual brain. It contains letters and words of different languages despite of their unique representation, in the same system and that is supposed to be the reason of their interaction. Thus L2 words can activate L1 lexical units despite large acoustic-phonetic disparities.

Grosjean (1997) model of bilingual spoken word recognition (BIMOLA) which he associates with processing of code-switching also suggests that the unique phonemic units from different languages are assumed to have a common level of feature units. In BIMOLA there is no language node as such and it is assumed that an input from a language simply activates the whole of that language system and facilitates processing of other words in that same language.

Other models of bilingual lexicon e.g. The distributed feature model which

considers the implications of shared semantics and The revised hierarchical model (RHM) examines the implications of the way in which aspects of lexical form may be linked to semantics for each of the bilingual's two languages. All these models project the same phenomenon of some influence of one language over the other.

2.3. Orthographic Neighbourhood Effects

Monolingual word identification and word naming have been proven to be sensitive to the number of orthographic neighbours of the target words and to the frequency of such orthographically similar words (Dijkstra, 2005). Johnson and Pugh (1994) explain that the monolinguals take longer to recognize a word if there are other similar words in the language.

Similarly, when cross-language form and meaning converge, bilingual performance is typically facilitated but if they conflict the performance is hindered; is more slow and error prone (Dijkstra, 2005). The evidence from experiment on French-English bilinguals Beauvillian (1992) and Van Heuven, Dijkstra and Grainger (1998) on Dutch-English bilinguals suggest that the bilinguals seem to be influenced by the number of L1 words that are similar to the orthographic pattern, even though their task is to perform lexical decisions in their L2. Dijkstra, Grainger and van Heuven (1999) suggested that the apparent language selectivity in the tasks like in studies of Gerard and Scarborough (1989) and Dijkstra et. al. (2000) arises because of the nature of the similarity between the words in the two languages. They experimented Dutch-English bilinguals with orthographically and semantically similar words like TYPE which were responded faster than their non-homographic controls, e.g. NICE indicating that the lexical entries in both the languages were activated.

Research on spoken word recognition, yielded the same increased competition effects between the candidates from both the languages (Spivey and Marian, 1999). This is taken a step further by Weber and Cutler (2004) who claim that the competition is increased because of the confusability of vowels in L2. They recorded the eye movements while responding to objects after they hear their names in English. They also believe that interference arises from the L1 to the L2 as the bilinguals showed no evidence of interference from L2 while listening to the L1. On the contrary, Blumenfeld and Marian (2007) show that there is competition from the L2 when the participants are highly proficient in the L2.

2.4. Simultaneous Activation of Both Lexicons in Comprehension Tasks

If bilinguals' both languages really share the same lexicon, the control over it is in question. There is enough evidence to support the assumption that initially when a word is presented to a bilingual both his lexicons become active and the language selection occurs later.

Stroop interference performed on bilinguals[1] provides evidence that even though the task requires only one language, the other just cannot simply be shut off. Similarly, in flanker task by Guttentag, Haith, Goodman and Hauch (1984) the participants were supposed to name a central word in one language and ignore the flanking stimuli that

[1] In which the words are written in one language but the colour has to be named in another language.

were either in the same language or in the alternate language. The results matched the Stroop tasks i.e. the reaction time to name the word was longer in the presence of the flanking words, even when the language differed for the word to be named from the neighbouring flanking words. Thus, the interference is there from the other language while naming words in one of the languages. Smith (1997) believes that if the bilingual has a greater proficiency in the language in which the stimuli is written the interference will be greater.

2.5. Semantic Activation and Translation

Research studies on picture naming and translation, Stroop-type interference tasks, semantic priming and semantic categorization all suggest that words in each language access conceptual representations that are common to both languages (Kroll and Dussias, 2006). Recent bilingual neuroimaging studies have shown similar brain activity while making semantic decisions in either of the languages (Illes et. al, 1999). The results from Beauvillain and Grainger (1987) also confirmed that at least initially there are interferences from the other language even when the decision requires response from one of the languages. Their French-English subjects showed the tendency of activating the English meaning of Prime word four instead of its French meaning when the targets were all in English. However, the subjects were able to activate its French meaning when the prime-target interval was longer.

The interference from L1 can be modulated by the language context. Elston-Guttler (2000) found that the L1 meaning influences L2 processing, presumably through a translational link. In his experiment on German-English bilinguals who were asked to make plausibility judgment on English sentences as fast as they could but the German-English were found to activate the German meaning of castle (lock) in a sentence like The knight rode his horse around the castle and thus their response was impeded because of the L1 interference compared to English monolinguals.

It has been suggested that the process of translation from one language to another (L1 to L2) can be performed either by concept mediation which suggests to understand the concept referred to by the L1 and then finding the best equivalent in L2 or by lexical association which exploits a learned connection between the lexical representations of the L1 and L2 words. The latter process refers to be non-semantic as the words are thought to co-occur in L1-L2 translation pairs. Chen and Leung's (1998) experimented on Chinese-English bilinguals (at three different proficiency levels) where they had to translate Chinese words into English, name pictures in Chinese and English. They concluded that there is evidence in the proficient subjects at least to have a common underlying conceptual code for both the languages which serves the basis for translation. The tendency of pure lexical association between translation equivalents is seen more in the less proficient subjects. Although it is argued that translation from L2 to L1 continues to be performed by lexical association (Kroll and Stewart, 1994).

It is commonly found that the fluent bilinguals are faster to translate from L2 to L1 than vice versa. Kroll and Dassias (2006) argue that by accessing the L1 translation, L2 words take advantage of the existing lexical-to-meaning connections. At the lexical level, the association between the L2 to their L1 translations is stronger than the reverse. At the level of assessing concepts, L1 words are

strongly associated to their meanings than their L2 counterparts.

3. Bilingual Sentence Processing

Research suggests that the sentence processing systems in the bilingual's two languages are not distinct, and that L1 processing strategies very often invade L2 processing. There are a number of studies investigating second language sentence processing using traditional reading time methods and looking at the traditional issues of syntactic ambiguity and garden path effects. These studies yield different results, for instance Frenck-Mestre (2002) claims that there is L1 transfer in early stages of L2 learning. She concludes from her eye tracking experiment on English-French bilinguals that early bilinguals transfer their L1 preferences, but then over time acquire the L2 preferences. On the other hand, Clahsen and Felser (2006) review other studies that show no evidence of transfer of this structure and conclude that L2 learners do not construct complete syntactic representations in L2.

Other studies trying to tackle the issue of syntactic processing strategies employed in L1 and L2 have not shown any convincing evidence for any difference with respect to native speakers. Frenck-Mestre and Pynte (1997) examined PP attachment[2] ambiguities on French monolinguals and English-French bilinguals[3] and found that both the groups - monolinguals and bilinguals - showed the same pattern (i.e. slower reading times for the PP on purpose vs. on horses).

3.1. Bilingual Speech Production

Can a bilingual control the cross-language competition during speech production? Is there a negotiating process which enables a bilingual to achieve lexical selection in the desired language for efficient communication? Because if there would not have been such a thing, bilinguals would have been facing disastrous consequences while communicating. The bilinguals seem to make a choice of naming an object in one language or the other. The monolinguals experience similar situation while deciding between the synonyms.

Wheeldon and Monsell (1994) argue that under normal circumstances when a person wants to express a concept, a range of words become active according to how closely they match to the stimuli, the words compete with each other and the best matching candidate is chosen. The results from the study by Lee and Williams (2001) also conclude between-language competition in bilingual production.

The data from Kroll's (2008) naming performance of Dutch-English bilinguals under mixed and blocked conditions reveal that there is a difference in the effect of language mixture for L1 and L2. Both the languages were reported to be active even when only one was required. For L2 there was little effect of language mixture while for L1 there was clear cost associated with requiring both languages to be active. The most striking feature of the study was when both the languages were required to be used under the mixed conditions; participants took longer to name pictures in L1 than in L2. The results conclude that when the second language is also engaged, the more dominant language is inhibited.

[2] VP-attachment: He rejected the manuscript on purpose because he hated it.

NP-attachment: He rejected the manuscript on horses because he hated its author.

[3] who were not exactly very fluent ; they had studied French in the U.S.A. for at least 5 years and had been studying in France for 9 months.

In the cross-lingual version of picture naming experiment on English-French bilinguals by Lee and Williams (2001), there was a significant cross-lingual inhibition effect, indicating that even in the semi-fluent English-French bilinguals when naming a picture in one language could suffer interference from primed representations in another language. This "paradoxical switching effect" is that switching cost is only obtained when going from L2 to L1. Meuter and Allport (1999)[4] deduced that this is simply because in order to use your weaker language you must strongly suppress your stronger one.

3.2. Brain Imaging Studies of Sentence Processing

The transfer studies suggest that there is quite a close relationship between L1 and L2 sentence processing and there is also evidence that L2 readers employ L1-like syntactic processing strategies. There are studies which compared global brain activation when participants listen to stories in either L1 or L2 (reviewed in Abutalebi et al., 2001). These studies conclude that for highly proficient L2 speakers there are no differences in patterns of brain activity when listening to L1 and L2 stories but for less proficient L2 speakers there appears to be activation in a smaller area although this overlaps with that produced by the L1. There were no effects of age of onset of acquisition in these studies. Some studies looking at electric activity in the brain concluded that there is little difference in relation to semantic anomalies while syntactic anomalies do produce different responses in the L1 and L2 (Weber-Fox & Neville, 1999; Hahne & Frederici, 2001) concluding a distinction between semantic and syntactic processes and that L1-L2 differences are confined to the latter.

Other studies that provide evidence for native like processing are the ones which looked at brain localization after training in miniature languages and obtained activations in Broca's area (Opitz & Friederici, 2007).

4. Conclusion

Earlier studies (reviewed in Grosjean, 1982) suggested that bilingual's one language is switched on while the other switched off and that both are never switched on at the same time. But it is now evident from all the above studies that bilingual's both languages are active all the time and that the bilingual can produce mixed language utterances at the same rate as monolingual native-like utterances (and can also decode them at the same rate). The relevant representations are therefore able to interact, suggesting they are contained in the same system, and allowing effective negotiation of potential cross-language competition. A bilingual seems to possess a control mechanism which imposes global inhibition on the unwanted language and which enables him to communicate effectively. This fundamental feature of a bilingual makes him different from a monolingual. Moreover, language control network in the brain is effected by the language proficiency in L2. For instance, while switching from L1 to L2, high proficient bilinguals engage different regions of the brain (Garbin et al., 2011) than low proficient bilinguals (Wang et al., 2007).

Finally, research in both words and sentences suggests that those aspects of the linguistic representation that are critical for

[4] They experimented on native speakers of European languages who were highly proficient in English as their L2. They were asked to name numerals as fast as they could in each of their languages.

computing meaning maybe shared across languages. At the level of word recognition and lexical access, it is possible that much of the functioning in semantic representation for the L2 is borrowed directly from the L1 (Jiang, 2000). Although meanings for words in the two languages may be computed to form distinct concepts, the pool of features on which these computations are based appears to be accessed in a manner that is blind to language (Kroll & Dussias, 2006). Thus, as demonstrated in the studies above while it is possible for a bilingual to produce both of his languages with equal competence like any monolingual, both of his languages are active at some level. L1 processing strategies often invade L2 processing making Bilingual's word and sentence processing different from a monolingual.

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