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Psycholinguistics: Cognitive Processes and Language Cross Interaction in Bilingualism in Educational Institutions

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ABSTRACT

This article provides a brief review of psycholinguistic research that has been conducted to reveal the processes and representations of bilingualism that occur in a multicultural society, especially. The main conclusion from the description of the different levels of representation that has been presented both at the lexical level, semantic level, and syntactic level is that bilingual speakers always experience different languages as long as their use continues. Both bilingual speakers and speech partners benefit from the universal characteristics of the languages they master in an integrated manner. In line with this conclusion, recommendations that can be given regarding psycholinguistic research are on the study of language control and language transfer.

Key Words**: **Psycholinguistics, bilingualism, cross interaction

INTRODUCTION

In an academic environment where language differences are possible or in a multicultural society, where people are used to mingling with one another, the phenomenon of code switching is found in their language life. This language switching process can also be found anywhere, such as in markets, buses, cafes, or business meetings. From a linguistic point of view, the interesting thing is how well can people understand the two languages used? How do they process the language input they get? And when will

they move from one language to another? (Schwartz & Kroll, 2006).

In fact, almost everyone in this world has the ability to speak more than one language (Bathia & Ritche, 2004), which means that bilingualism is commonplace. However, how the language and cognitive processes that occur behind bilingualism remain an area of research that needs to be developed. If there is ambiguity, for example at the level of morphology, they can separate their use properly so that there are no differences in interpretation. For example, in the phenomenon of bilingualism in the El Paso area of Texas, USA. The people speak two languages, namely Spanish and English. The word "Discussion" which in Spanish means debate due to misunderstanding and the word "Discussion" in English which means discussion (without any element of debate) is often used interchangeably without any errors in its use (Schwartz & Kroll, 2006). In this case, experts still differ in opinion, among others, whether there is context involvement in their language acquisition and debate about which influences modularity and interaction in terms of understanding a language. These are all areas of research that will never be reached in the area of monolingualism.

Many of the studies that have developed on bilingualism are related to the phenomenon of how the process of producing and understanding language in the context of bilingualism, especially cross-linguistic interaction. Previous studies have generally found that if there are similarities between the two languages, the first language will provide a positive influence (facilitation) on the acquisition of a second language, both from the phonological and syntactic levels (Desmet & Duyck, 20017). While recent studies have pointed to the possibility of competition between the two languages, especially the stage of cognitive control (e.g., Bialystok, Craik, Klein, & Viswanathan, 2004; Green, 1998).

Bloomfield (1958: 58) explains that bilingualism is mastery of two languages as well as mastery by native speakers. The general concept of bilingualism is the use of two languages by a speaker in interaction with other people alternately (Chaer and Leonie, 1995: 112). From this explanation, bilingual speakers are

defined as people who have good skills in two languages and use them actively even though one language is more dominant than the other.

Bilingualism is closely related to second language acquisition. Language acquisition is closely related to how a person acquires words, meaning, structure, and pragmatics as well as the processes that occur in his mind and attitude. Bilingualism or multilingualism makes a person experience the process of acquiring words, meanings, structures, and pragmatics that are more complex than those who are only monolingual (Wahyudin, 2012). In conclusion bilingualism brings a person to experience two different languages which will have different influences both psychologically and socially.

RESULTS AND DISCUSSION

2. Types and Levels of Representation in Bilingualism

a. Lexical Representation

Being a bilingual speaker means having more than one lexical representation to express one meaning. Indonesian-English bilingual speakers whose mother tongue is Indonesian and English as a second language will have the same reference when referring to a barking pet with the words "dog" in Indonesian and "dog" in English. The most prominent theory on this lexical context tends to believe that bilingual speakers have two different lexicons (mental dictionaries) where one area of the lexicon contains all the words in the mother tongue and the other area contains all the words in the second language. However, many research results in this study disproved this opinion. Many research results have found that lexical representations in the first language are also accessed during word processing in the second language and vice versa.

b. Orthography

Orthography is related to how to write a word. Researchers have conducted many studies of lexical representations from the perspective of orthography and lexical cross-interactions of the two. Van Heuven, Dijkstra and Grainger (1998) found that speakers will learn faster when the words learned have a lot of close written patterns in both the first language (B1) and the second language

(B2). This orthographic proximity is done by replacing one of the letters of the word being studied and finding how many words it can produce. An example of the word 'car' generates many new word variations by replacing one of the letters with a word: 'bar', 'war', 'far', 'cab', 'cat', etc. In Indonesian there are several words that follow orthography close to English, including 'me' (me) with 'noodles' (instant food), 'males' (plural males) with 'males' (attitude), 'mass' (mass) with 'mass', or 'mas' (precious metal/nickname), 'entry' (enter) with 'queue', 'ketchup' (tomato sauce) with 'soy sauce'.

The next orthographic concept is inter-lingual homograph, namely words that are written the same in both languages but have different meanings. In cases like this, there tends to be a delay in the response process due to activation of B1 and interference from B1 to B2. Some examples of this phenomenon occurring in words include: 'water' (air) with 'water', 'wild' (liar) with 'wild'.

The last orthographic concept is the cognate facilitation effect. Cognates are words that have the same meaning and are written the same in both languages but can also be written the same in parts. There are lots of examples of words in Indonesian and English that we can find, such as: bus, film, monitor, internet, radio, etc.

The conclusion from these studies on orthgraphy is that the closer or the same the writing and meaning of the two languages is, the faster the acquisition process will be.

c. Phonology

In this phonological phenomenon, the more similarities in sound and meaning of the two languages, the faster the bilingual acquisition process (cognate effect) will be. Duyck et al (2004) argue that bilingual speakers acquire B2 words more quickly when the word has a similar sound or is pleasant to hear in B1 even though it has no meaning. An example, 'soar' (soaring) which sounds the same as 'sor' (Javanese: the sound of splashing water), the word 'pluck' (pick) which sounds the same as 'plak' (expression of the sound of slapping).

Jared & Kroll (2001) stated that bilingual speakers will tend to slow down the pronunciation of B2 words when the word has a

different way of pronunciation in B1. Examples in Indonesian and English are the words 'air' and 'air' (air).

From the above studies it can be concluded that the phonological lexical representation of B1 is very likely to be accessed when reading in B2 and vice versa.

d. Listening Word Processing

The phenomenon of word processing in bilingualism whose input is through hearing is also one of the studies of researchers. Several studies that have been carried out include Weber and Cutler (2004). They found a phenomenon where Dutch-English bilingual speakers needed longer time to determine the word 'desk' (bench) with the right picture because the word has a sound similar to the word 'deksel' (close). The same result was also obtained by Spivey & Hirsch (2003) who found bilingual Russian-English speakers often mistakenly followed orders to take 'markers' (markers) with stamps because 'markers' sound similar to 'markers' (stamps).

e. Understanding Words in the Context of Sentences

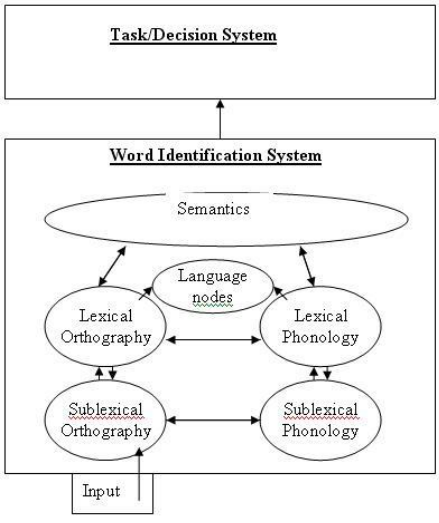
Previous studies were carried out at the word level without including context. The research subjects were instructed to pronounce the sound of words or recognize words without seeing them. put context. The next question is whether the research results can be generalized in the context of sentences. One of the hypotheses raised is that it is very possible for speakers to use context as an aid in determining the meaning of a word (Schwanenflugel & Lacount, 1988).

Some research results such as (Duyck, Van Assche & Hartsuiker; Elston-Guttler, Gunter & Kotz, 2005; Schwartz & Kroll, 2006) show that the influence of sentence context on language cross-interference is small (limited). Even though the word is included in sentences that must be uttered by speakers in B2, interactions still occur in both languages. The cognate facilitation effect is still visible even though it is included in the sentence, especially if the cognate nature is greater in both languages, then the acquisition process becomes faster.

f. Bilingual Interactive Activation Model (BIA)

The Bilingual Interactive Activation Model (BIA), popularized by Dijkstra and Van Heuven, is the most influential model in lexicon research. The BIA model is a connection model that is

implemented from visual word recognition in two languages. This non-selective language model is organized by four hierarchical levels of various linguistic representations: letter features, letters, words, and language tags (or language nodes). When a word is represented by this model, the character of the letter that is formed is first activated. Then, these letter features work together and activate the letters that are part of the words presented. In turn, these letters activate the words of that language. The candidate word then activates the connected language node. They simultaneously send feedback activation to the letter level. Language nodes can also inhibit the activation of word candidates from other languages (for example, English nodes reduce the activation of Dutch word candidates). After a complex process of interactive activation and inhibition, the lexical candidate corresponding to the word presented becomes the most active word unit. The following is the BIA+ model which is a refinement of the BIA model.



Gambar 1. Model BIA+ (Dijkstra & Van Heuven, 2002)

g. Semantic Representation (Meaning/Concept)

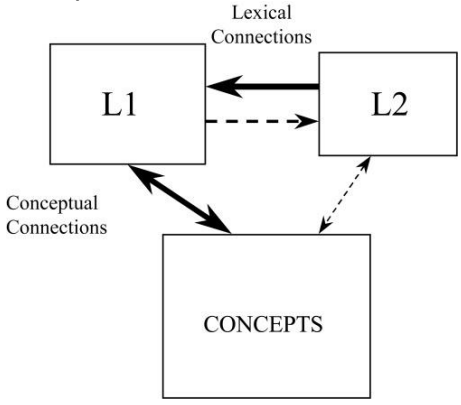
As previously stated, bilingual speakers have two different sets of lexicons, one for B1 and one for B2. The question that arises then is whether this also applies at the semantic level? What needs to be remembered is that the semantic level (concept) is different

from the word (lexical) where this semantic level has similar concepts in almost all languages. Take for example the word 'dog' which in Indonesian 'dog' has the same concept of meaning as a barking pet. Therefore, at the conceptual (meaning) level, there is no need for two different sets of representations from different languages. Several studies show that at the level of meaning, there is interference from one language to another. Bilingual speakers have a tendency to think longer in recognizing words in T2 while at the same time they are also given pictures of words that are adjacent to concepts (Fox, 1996). Several other studies also show that bilingual speakers tend to activate their semantic level (concept) first before using it in sentences even in different languages.

h. Distributed Feature Model (DFM)

Based on a literature review of research results such as that of Kroll and Stewart (1994), they proposed a general model of language processing in the context of bilingualism, called the Revised Hierarchical Model (RHM; Figure 2). Although this model can be applied to languages acquired simultaneously (simultaneous bilingualism), it is actually inspired by sequential language acquisition (sequencial bilingualsim), where L2 learning takes place after L1 has been mastered to a sufficiently proficient level. According to this Revised Hierarchical Model, a hierarchical distinction has to be made between two types of word representations: lexical representations that contain information about word forms (forms), and conceptual representations that correspond to word meanings (meanings). At the lexical level, a division is made between the lexicon for the mother tongue and the lexicon for the second language. Because bilingual speakers know more words in L1 than in B2, the B1 lexicon is hypothesized to be larger than the B2 lexicon. While at the level of meaning (conceptual) it is assumed to be shared by two languages. The most important feature of this model involves the interactions between the various components. RHM introduces a combination of the two previously suggested subsystems: One in which B2 words are recognized by direct lexical association with their B1 translation (Association Word Model) and one in which B2 words, such as B1 words, are created directly. The relationship between

conceptual representations and words in the second language is assumed to be weak at first but becomes stronger with more experience with the language. Once bilingual speakers have mastered a second language, it is assumed that the same conceptual representation will be accessed from both languages. However, the exact nature of the conceptual representation is not specified (Kroll, Van Hell, Tokowicz & Green, 2010), because RHM has abstract feature representation.

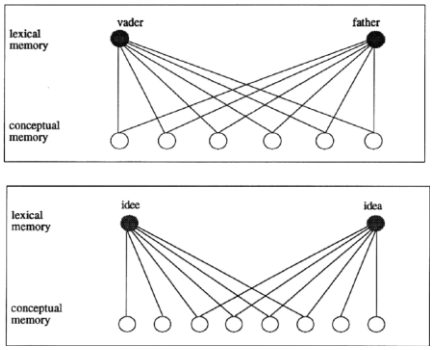


Gambar 2. The Revised Hierarchical Model (Kroll dan Stewart,1994)

i. Mapping Lexical into Semantic

De Groot et al (De Groot, 1992a; Kroll & De Groot, 1997; Van Hell & De Groot, 1998) developed a distributed concept model to account specifically for differences in how word translation is equivalent to a conceptual representation (Figure 3). Conceptual memory is assumed to be shared across languages and composed of basic units of meaning, or features. Equivalent translation pairs may enable all or many of the same features, as in Figure 3 (top panel) for the English 'father' and Dutch 'vader', or may activate the same features slightly, as in Figure 3 (bottom panel) for English 'idea' and Dutch 'idee'. De Groot stated that concrete words tend to have the same or similar conceptual features. Because concrete words refer to perceptual references which are largely the same in all languages, abstract words tend to have fewer conceptual features. This model is supported by research showing that concrete words are easier to translate than abstract words (De Groot, 1992b; De Groot & Poot, 1997), concrete translation pairs

more often produce the same word association response than abstract translation pairs (Kolers, 1963, Van Hell & De Groot, 1998), and the semantic priming effect of cross-language is greater for concrete words than for abstract words (Jin, 1990). The following is the concept of the Distributed Feature Model (FDM) of De Groot et al.



Gambar 3. Distributed Feature Model (FDM) De Groot dkk (1992)

De Groot and colleagues did not specify the nature of these conceptual features so that several subsequent studies disproved this RHM concept. The results of this study state that these lexical representations do not immediately unite in meaning. La Heij et al (1996) used the Stroop task to test this concept. Participants were tested to say the name of the color written differently from the letter. This is done to test semantic activation because it is difficult to separate the concept of meaning in color from the writing. In this case there will be difficulties in mentioning the color 'green' when the word is printed in 'red'. This indicates that a new concept of meaning will be internalized if a speaker is already at a proficient level of proficiency.

j. Syntactic Representation

Recognizing word forms (lexical stage) and understanding their meaning (semantic stage) is not enough to be said to understand a language. The next thing that must be possessed is the ability to combine these meanings into a meaningful utterance. For example the following sentences: 'John kicked Paul' and 'Paul kicked John'. The two sentences have the same words used but the meaning is very different. Research on the study of sentence-making processes is aimed at examining syntactic processes starting from word identification to the meaning after sentence formation.

Unfortunately research at the semantic level has not been studied too much (Desmet & Duyck, 2007)

k. Priming Syntax

Priming is an implicit memory effect in which exposure to one stimulus influences response to another. Loebell and Bock (1993) showed that people recognize a word more quickly when it follows a related word. For example, the word 'nurse' will be recognized more quickly after the word 'doctor' than it will follow the word 'bread'. The activation caused by the presence of the same idea in the two words is the best explanation for this effect. In experiments the same target stimulus can be presented with different prime numbers. This allows the priming effect to be measured. Priming can occur after perceptual, semantic, or conceptual stimulus repetition. For example, if someone reads a list of words including the word 'table', and is then asked to complete a word that begins with 'tab', then the answer is more likely to come out is the word 'table' rather than other words that are not priming.

l. Language Control and Code Switching

From all the explanations in the previous sections, it leads to the conclusion that between B1 and B2 owned by bilingual speakers, the two of them continuously interact with each other at all levels. This is what then causes the phenomenon of code switching in bilingual speakers. Code-switching occurs when a speaker switches between two or more languages within the context of a single conversation. Bilingual speakers sometimes use elements of several languages when conversing with each other. Thus, code switching is the use of more than one linguistic variation in a way that is appropriate to the syntax and phonology of each language (Myers-Scotton, 1989).

Bilingual speakers practice code switching when they are fluent in both languages. Code mixing is a term that is closely related to the use of the term code switching. Some scholars use the two terms to denote similar practices, while others see code-mixing to denote formal linguistic properties when cross-language interactions occur.

Several types of code switching that are commonly found in code switching phenomena include:

a. Intersentential switching is when code switching occurs outside of sentences or clauses. This is sometimes called "extrasentential" switching.
b. Intra-sentential switching is code switching that occurs in a sentence or clause.
c. Tag-switching is the movement of tag phrases or words, or both, from one language to another.
d. Intra-word switching occurs within a word itself, such as at morpheme boundaries.

CONCLUSION

This article provides a brief review of psycholinguistic research that has been conducted to reveal the processes and representations of bilingualism that occur in a multicultural society, especially. The main conclusion from the description of the different levels of representation that has been presented both at the lexical level, semantic level, and syntactic level is that bilingual speakers always experience different languages as long as their use continues. Both bilingual speakers and speech partners benefit from the universal characteristics of the languages they master in an integrated manner. In line with this conclusion, recommendations that can be given regarding psycholinguistic research are on the study of language control and language transfer.

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