

**Language Code-Switching: A Psychological Analysis of Why Bilinguals Mix Spanish and**

**English en la Frontera**

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## **Language Code-Switching: A Psychological Analysis of Why Bilinguals Mix Spanish and English en la Frontera**

A major goal of research in bilingualism has been to investigate how people who speak two languages organize them in memory. Do bilinguals organize their languages in one or two mental dictionaries? Although much has been written on this issue, little is known about the psychology of why bilinguals code-switch or mix their two languages during the communicative process. Code-switching or language mixing occurs when a word or a phrase of a first language (L1) is substituted by a phrase or a word of a second language (L2) or vice versa (Grosjean, 1988). To illustrate, consider the sentence, *Dame una hamburguesa sin LETTUCE por favor* (*Give me a hamburger without LETTUCE please*). In this sentence the English word (lettuce) replaces the Spanish word (lechuga). Why is the word "lettuce" chosen instead of the correct Spanish word? Given the speed with which spoken language and other linguistic constraints occur simultaneously (e.g., phonological, grammatical and pragmatic information), one would expect bilinguals not to switch languages, especially if retrieving a word from an L2 takes additional time than retrieving a word or concept from the same language. Do bilinguals code-switch because they do not know either language completely? Alternatively, does code-switching occur because bilinguals are unwilling to put the extra effort into searching for the appropriate word? Why do bilinguals code-switch?

### **Language Proficiency**

One of the most frequently used explanations of why bilinguals code-switch is that they do it so as to compensate for language proficiency. The argument is that bilinguals code-switch because they do not know either language completely. Not surprisingly, when asked about their code-switching, Spanish-English bilinguals *en la Frontera* are quick to point out their "lack of

formal knowledge" in Spanish and English ( F. Grosjean, 1982).

One major weakness of this view is that it does not allow for the possibility that code-switching could be due to a retrieval failure. This inability to remember is reminiscent of the classic tip-of-the-tongue (TOT) phenomenon, in which people are sometimes unable to remember information that they know. For instance, I, the first author, go into TOT every time I try to remember the Spanish word for *estimate* (presupuesto). Not because I do not know the correct word, but because I do not use this word frequently. Thus, I switch to English, which is easier and faster to retrieve. The implication here is that code-switching may be a problem of retrieval (remembering) affected by a combination of closely-related factors such as language use (i.e., how often the L1 is used) and word frequency (i.e., how much a particular word is used in the language).

A second problem with this view is that it is unable to explain the finding that code-switching is governed by a grammatical structure. For example, Spanish and English differ in relation to how adjectives are used. In English, the adjective precedes the noun (e.g., "I want a GREEN tomato"). In Spanish, the noun precedes the adjective (e.g., "quiero un tomate VERDE)." Therefore, language switching can occur between an adjective and a noun only if the adjective is placed according to the rules of the language of the adjective (Lederberg & Morales, 1985; Myers-Scotton, 1993). Thus, the sentence *Pete wants a VERDE motorcycle* would be incorrect because the adjective should follow the Spanish grammatical structure. Likewise, K. Pletsch de García (personal communication, September 28, 2000) argues that verb phrases such as "to drive" cannot be decomposed into "to MANEJAR" without breaking linguistic restrictions on code-switching.

Third, another important problem concerning this hypothesis is that the notion of language proficiency is not clearly defined. Does reading and writing take precedence over spoken language? Most language proficiency tests consider written language the determining variable. This may be a serious problem because most bilinguals typically receive their formal education, and most of their personal interaction and communication takes place in the L2. When their reading and writing ability is tested in Spanish, bilinguals appear less fluent and less proficient. This disparity is not due to their lack of knowledge of Spanish, but due to a differential in usage.

Finally, the notion that people code-switch as a strategy in order to be better understood is another plausible alternative. As concepts are at times language specific, some ideas are better communicated in one language than other. For example, take the sentence *Roberto has a lot of CARIÑO for Jeanette*. The word "cariño" implies a combination of liking and affection. Neither of these words alone truly conveys the meaning of the Spanish word. Thus, communication between two Spanish-English bilinguals would achieve a greater level of understanding by using the above code-switch.

### **Is Code-Switching a Time Consuming Process?**

A general finding in the bilingual literature is that sentences containing code-switched words take longer to read and comprehend than monolingual *sentences*. In a classic study, French-English bilinguals read mixed language passages. Sentences in some conditions were switched, and in others the mixture was random with some passages favoring the English or the French word order. When bilinguals answered questions about the passages they read, no differences were found between the code-switched and the monolingual sentences. However, when participants read the sentences aloud, they were slower to read the mixed-language passages than

the monolingual ones (Kolers, 1966). Although these findings have been challenged on methodological grounds, these results have been replicated using distinct methodologies (e.g., Altarriba, Kroll, Sholl, & Rayner, 1996; Soares & Grosjean, 1984).

Why is code-switching a time consuming process? A “two switch mechanism” was proposed that determined which of the bilingual's two mental dictionaries would be “on” or “off” during the course of language processing (Macnamara & Kushnir, 1971). While the input switch was viewed as functioning at lower levels of perception, the output switch was viewed as a high order mechanism under the bilingual's voluntary control, responsible for the selection of the linguistic system in producing speech.

Accordingly, the input switch is responsible for setting the language processing system to select the appropriate mental dictionary to be employed during the comprehension of a sentence. Although this switch was hypothesized to be automatic and beyond voluntary control, it would take an observable amount of time to operate. Thus, during the presentation of a spoken sentence, if the acoustic signal matched that of English, this switch would select the English linguistic system to further process the sentence. One important assumption is that once the English linguistic system is “turned on”, the Spanish linguistic system is “turned off.” Because both linguistic systems cannot be active simultaneously, the deactivation of the English and the activation of the Spanish mental dictionary causes the processing of code-switched material to slow down.

How is the input switch triggered? It is suggested that this mechanism relies on the distinctiveness of the linguistic code of each language. Thus before selecting the appropriate mental dictionary, the bilingual analyzes the incoming acoustic signal at the lowest perceptual

level possible (i.e., the phoneme level). Other researchers have suggested that the input switch may be regulated by a continuous monitor system that remains active during language processing. However, recent findings suggest that this input mechanism may only function under conditions in which bilinguals know what language to expect and when they are given enough time to activate the appropriate language (Hernández, Bates, & Ávila, 1996).

What is the current status of the input switch mechanism? Current research is more concerned with studying the on-line processing of spoken language and identifying some of the factors influencing the recognition of code-switched words. For instance, how fast an English word embedded in a Chinese sentence is recognized depends on the phonotactic overlap between English and Chinese (Li, 1996). For example, the English language allows for both initial consonant-consonant (CC) and consonant-vowel (CV) clusters. It is grammatically correct for an English word to start with two consonants (flight) or with a consonant and a vowel (bear). Chinese, on the other hand, allows for CV clusters but lacks CC clusters. When Li manipulated this variable, Chinese bilinguals took longer to recognize the English code-switched words containing CC initial clusters than those containing CV initial clusters. Clearly, the Chinese phonological structure affected the processing of the English code-switched word. Other important factors reported to influence the recognition of code-switch words include, context, phonetics (e.g., whether the code-switched word is pronounced according to the L1 or the L2), and homophonic overlap (e.g., words that are pronounced the same) across the two languages. According to Li, given the appropriate methodology and considering some of the factors described above, bilinguals do not take extra time to recognize code-switched words than monolingual words (see also Grosjean, 1988).

## The Present Study

One important shortcoming of most models and general accounts of bilingualism is that they rely on the assumption that the bilingual's L1 has special status. Current bilingual models (e.g., Kroll & Stewart, 1994) depict the bilingual's L1 mental dictionary as bigger and containing more information than the L2 mental dictionary. As a consequence, the L1 would always be accessed (retrieved) faster, and would always be the base language. Given this argument, one would expect that if code-switching were to occur, it would take place from the bilingual's L2. That is, bilinguals whose L1 is Spanish would experience more L1 interference as they communicate in their L2. This would be due to their limited knowledge of the L2. Although this may be the case for beginning bilinguals, Spanish-English bilinguals *en la frontera* report more English interference when they communicate in Spanish, their first language, and little or no interference from Spanish when they communicate in English, their second language. In other words, these bilinguals code-switch more when they communicate in Spanish than when they use English.

Are these observations supported by research? To address this issue, Spanish-English bilinguals from Texas A & M International University and the Laredo community participated in two experiments. In one experiment, a group of bilinguals listened to English sentences (e.g., *it is difficult to admit that a WAR sometimes brings profits*) and another group listened to Spanish sentences (e.g., *se debe aceptar que una GUERRA a veces trae ganancias*). Participants in both experiments pronounced visually presented words that were related or unrelated to the critical word "WAR" in the English sentence condition or GUERRA in the Spanish sentence condition. Visual presentation occurred immediately after the critical words for both experimental

conditions. The related words for both sentences were "peace" in English and "paz" in Spanish. Likewise, the unrelated words for both experiments were "light" and "luz," respectively.

In short, the results showed that bilinguals were actually slower to name Spanish target words as they listened to Spanish sentences, and faster to name English target words as they listened to English sentences (Heredia, 2000). More important was the finding that bilinguals were faster to name English target words as they listened to Spanish sentences, than when they named a Spanish target word in the English sentence condition. These results suggest a reliance on the L2 as opposed to the L1. The findings may be interpreted as somewhat counterintuitive if we assume that the bilingual's L1 is the reference or base language. If this were true, bilinguals should have been faster to access words in their L1. Likewise, they should have been faster to access L1 words as they listened to L2 sentences.

How can these results be explained? As I, the first author, have argued elsewhere (Heredia, 1997), after a certain level of fluency and frequent use of an L2, a Language shift occurs in which the L2 behaves as if it was the bilingual's L1. In other words, the L2 becomes more readily accessible and bilinguals come to rely more on it. This language reversal is not uncommon and other researchers have reported similar findings (e.g., Altarriba, 1992; Heredia, 1997).

What is the mechanism underlying this language shift? One possibility for this language shift could be due to frequency of language usage. That is, regardless of which language the bilingual learned first, the more active (dominant) language would determine which mental dictionary is going to be accessed faster (Heredia, 1997). This argument is not unreasonable when we consider that most bilinguals whose L1 is Spanish obtain most of their formal education in English. Likewise, many of their everyday interactions involve the L2. As a result, words and



concepts in the L2 become more readily accessible than words in the L1 . The implication is that during early stages of bilingualism, bilinguals tend to rely more on their L1. In terms of code-switching, these bilinguals would be more likely to experience more intrusions from their L1 as they communicate in their L2. However, as the L2 becomes the dominant language, bilinguals would be expected to experience more intrusions from the L2 as they communicate in their L1. In short, we suggest that language dominance plays an important role in how bilinguals access their two languages. We would like to argue that bilingual lexical representation is not a static but a dynamic representational system in which the first language can fall in strength, while the L2 becomes the dominant language.

### **Conclusions and Recommendations**

What are the implications regarding code-switching and language processing? At the theoretical level, the research reviewed here suggests that code-switching may be a language accessibility issue. During the communicative process, bilinguals switch languages whenever a word in a base language is not currently accessible. At issue is whether or not this "switch" is time consuming. Although some evidence suggests that language switching is strategic and occurs only when bilinguals have enough time to select the appropriate mental dictionary, our results challenge this view. When language dominance, and the linguistic structure of the languages in question are considered, accessing code-switched words is faster than retrieving monolingual words.

What are the implications of the present findings in relation to code-switching and education? It is important to note that code-switching is not a negative habit or that it has negative consequences on the bilingual's intellectual capacity or cognitive ability to use and

process language. Code-switching is a language retrieval issue that could be overcome by simply assuring that the individual wishing to become "fully-bilingual" has enough practice in reading and speaking in both languages. Language retrieval is a mental process that is highly sensitive to practice effects. The more practice in reading Spanish, for example, the faster the bilingual will be in decoding Spanish text, and the faster she will be in retrieving words in Spanish.

Finally, applied research (e.g., Altarriba & Santiago-Rivera, 1994) has revealed that code-switching is often used strategically in counseling settings, as clients choose to speak in an L2 when trying to distance themselves from emotional events. As the L1 is often associated with a broader range of emotions than the L2, language switching becomes a defense mechanism. Further research should address the ways in which code-switching techniques provide an effective means of tapping events from a bilingual's memory.

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