Effects of code-switching on the emotional processing of words

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In the psycholinguistic study of code-switching, there is an apparent mystery: why do bilinguals code-switch so often if it is effortful (Heredia & Altarriba, 2001)? To answer this question, we turn to sociolinguistic observations. Code-switches have been found to appear before negative, emotional, embarrassing topics, including taboo words (Bentahila, 1983; Bond & Lai, 1986). Our aim in this study was to complement sociolinguistic findings on code-switching using psycholinguistic methods by experimentally testing whether processing a CS from L1 to L2 within meaningful sentences reduces emotional reactivity, beyond the purported general emotionality reduction in the L2. To accomplish this, we utilized eye-tracking while reading. We found that processing a code-switch decreased or reversed the emotional reactivity to subsequent emotional words.

Thirty code-switching Spanish-English bilinguals, with a dominance shift to their second language, participated in the experiment. We compared their early (Gaze Duration) and late (Total Duration) eye-tracking measures to emotional taboo vs. neutral words (bold) in 3 contexts: 1) L1 monolingual (Spanish, Sp); 2) L2 monolingual (English, Eng); 3) L1-L2 CS sentences:

Eng	Taboo	Last year somebody wrote "**whore**" on the wall next to the bank.
CS	Taboo	El año pasado somebody wrote "**whore**" on the wall next to the bank.
Sp	Taboo	El año pasado alguien escribió "**puta**" en la pared junto al banco.
Eng	Neut	Last year somebody wrote "**boss**" on the wall next to the bank.
CS	Neut	El año pasado somebody wrote "**boss**" on the wall next to the bank.
Sp	Neut	El año pasado alguien escribió "**jefe**" en la pared junto al banco.

We extracted the measures for the Pre-target region (two words preceding the target), Target region, and Spillover region (two words following the target) and analyzed them using linear mixed-effects models. Emotionality of the words was operationalized by using participant ratings of Valence and Arousal. We also included Word Length and Language Dominance or Balance (Spanish grammar score divided by English grammar score) as predictors.

No effects were found in the Pre-target region. We found a weak effect of Language (Eng, Sp, CS) on Valence processing manifested by the trending Language:English x Valence interaction in the Total Duration measure in the Target region ($b = -0.087$, $SE = 0.045$, $t = -1.913$). The Language:English x Valence interaction for Total Duration reached significance in the Spillover region (two words following the target; $b = -0.079$, $SE = 0.038$, $t = -2.082$), such that the spillover words following the more positive words were read faster and the spillover words following more negative words were read longer in the English condition compared to the code-switched condition (Figure 1). The emotional reactivity signature was thus reversed by the presence of the code-switch: negative words were read faster in the code-switched compared to English sentences, despite the fact that the English and code-switched target words were both presented in English.

The results of the study show that processing code-switches helps bilinguals process negative emotional content. The reported study represents among the first empirical evidence for the processing benefits of code-switches, shifting the focus of the psycholinguistic research on code-switching from immediate code-switch processing costs to the benefits it can provide in downstream processing. We discuss future directions for this line of research, including potential ways to ascertain the exact mechanism of the emotionality reduction/reversal effect and other potential benefits of code-switches. We discuss how these findings can enrich theoretical descriptions of code-switches.

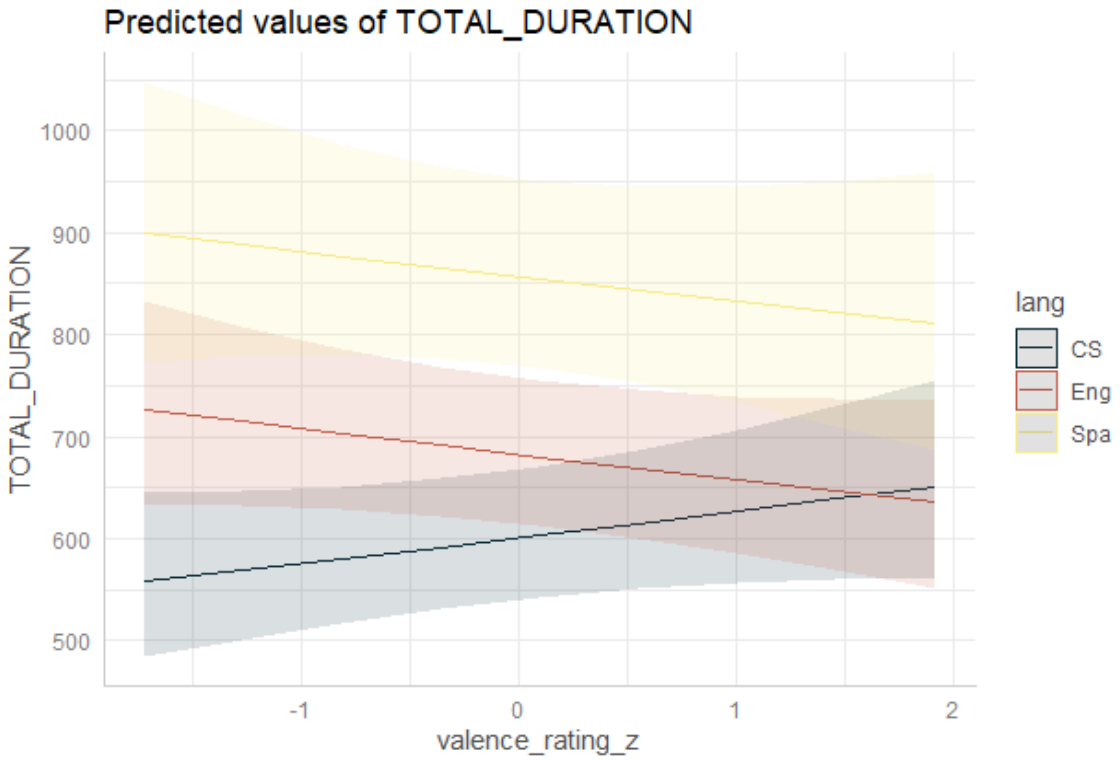

Figure 1. Predicted marginal effects plot for the Language x Valence interaction for the reported Language * Word Length * Language Dominance * Arousal * Valence model for the Total Duration measure in the Spillover region.

References:

Bentahila, A. (1983). Motivations for code-switching among Arabic-French bilinguals in Morocco. *Language & communication, 3*(3)*,* 233–243.

Bond, M. H., & Lai, T. M. (1986). Embarrassment and code-switching into a second language. *Journal of Social Psychology*, *126*(2), 179-186.

Heredia, R. R., & Altarriba, J. (2001). Bilingual language mixing: Why do bilinguals code-switch?. *Current Directions in Psychological Science*, *10*(5), 164-168.

Pavlenko, A. (2012). Affective processing in bilingual speakers: Disembodied cognition?. *International Journal of Psychology*, *47*(6), 405-428.