Psycholinguists beware! Switching and borrowing involve distinct processing mechanisms

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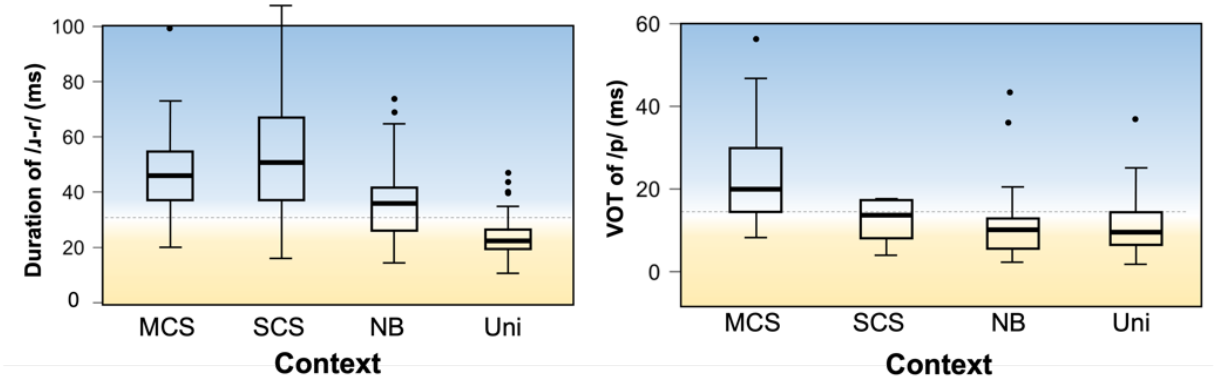
During the last two decades, psycholinguists have ardently debated the putative cognitive costs associated to the practice of bilingual code-switching. One often neglected parameter in this literature concerns the distinction between multi-word switches, single-word switches, and nonce-borrowings. Just like single-word switches, nonce-borrowings are lone items that originate from a donor language and are inserted into a recipient language. However, while code-switched segments conserve their original morpho-phonological grammar, borrowings are said to be 'integrated' into the grammar of the recipient language [1]. At present, it is unclear whether these different types of alternations involve the same underlying processing mechanisms, and thus, whether they elicit similar degrees of cognitive effort.

In the current project, we disentangle multi-word switches, single-word switches and borrowings in order to examine their underlying computational pathways in the bilingual human language faculty. Specifically, the naturalistic Spanish-English speech of 'Maria', a habitual code-switcher from the Bangor-Miami corpus [2], was examined. Instances of English-to-Spanish multi-word code-switches (MCS), single-word switches (SCS) and nonce-borrowings (NB) were compared to Maria's unilingual Spanish productions (Uni). We utilize the English-to-Spanish phonological integration of specific segments (e.g., a diminution of rhotic duration and/or shortening in VOT for /p/) to probe Maria's underlying processing mechanisms. Under a minimalist view of the human language faculty [3], the presence vs. absence of phonological integration entails distinct computational pathways.

Results from mixed model analyses indicate that Maria's English-to-Spanish phonological integration did indeed vary according to the context of the alternation (i.e., MCS, SCS or NB). For rhotics, English-to-Spanish phonological integration (i.e., diminution of rhotic duration) was significantly higher for NB compared to MCS and SCS (ps<.02). For /p/, English-to-Spanish phonological integration (i.e., shortened VOT) was significantly greater for NB than for MCS (p<.001), with no differences in phonological integration between SCS and the two other contexts (ps>.34). Altogether, the findings suggest that borrowing and code-switching are subjected to differential computational pathways in the human language faculty; code-switches are parsed into the phonological grammar of the donor language (i.e., English) while borrowings are parsed into the phonological grammar of the recipient language (i.e., Spanish).

Since Maria's underlying processing was context-dependent, future studies examining the cognitive costs of code-switching should aim to disambiguate multi-word code-switches, single-word switches, and nonce-borrowings. Collapsing these types of language alternations into a single phenomenon may have contributed to the inconsistent results presently observed in the code-switching literature. That is, if we consider that borrowings and code-switches follow distinct computational pathways in the human language faculty, they likely also necessitate differential cognitive costs.

Figure 1. Left: *Duration of* /ɹ-r/ *according to context.* Right: *VOT length in /p/ according to context. The dotted line represents the 'phonological threshold': yellow regions correspond to Spanish phonological thresholds; blue regions correspond to English phonological thresholds.*



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