CATEGORICAL EXPECTATION IN BILINGUALISM

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Do bilinguals generate cross-language predictions?

- Bilinguals produce and interpret sentences in two different language systems, and many routinely code-switch from one language to another.
- Readers and listeners generate probabilistic expectations as they process language (e.g. Hale, 2001; Levy, 2008)
- Code-switching often obeys the surface order of both languages at the switch point (e.g. Poplack, 1980)
- Our question: Are (categorical) expectations language-specific on the word-level?

Key conditions

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<th>Grammatical (Det-N)</th>
<th>Ungrammatical (Adv-N)</th>
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<tr>
<td>Same Language</td>
<td>more cars</td>
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<td>aquella cama</td>
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<td>Mixed Language</td>
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Fillers included Det-Prep, Adv-V and many others: grammaticality not predictable from first word.

Key prediction: Nouns in mixed language phrasal constituents read faster than nouns in non-constituents

Method: List lexical decision task, eye-tracking

- Bilingual two-word list lexical decision task (Meyer et al, 1974): 2 words, 1 response
- SR-Research EyeLink 1000 eyetracker

800 Trials (per participant)

- 400 'yes', 400 'no'
- 400 same language, 400 mixed language
- 60 Det-N, 60 Adv-N
- 680 fillers (42 bigram filler types)

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<td>Det-N mixed-language ‘yes’ (all-words) trial</td>
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<td>Same-language (phonotactic) ‘no’ (nonword) trial</td>
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Results

Reading Time of Noun (ms)

We performed a linear effects mixed model on the first pass reading time of the noun in critical trials:

\[
\text{ImeraFPRT} = \text{trialNumber} + \text{block} + \text{session} + \text{language} + \text{wordLength} + \log\text{frequency} + \text{languageCongruence} \ast \text{previousWordLogFrequency} + \text{languageCongruence} \ast \log\text{ConditionalProbability} + \text{languageCongruence} \ast \text{previousWordLength} + \text{languageCongruence} \ast \text{dn.or.an} + \text{languageCongruence} \ast \text{item} + \text{languageCongruence} \ast \text{dn.or.an | subject})
\]

- Nouns were read faster following determiners, relative to nouns after adverbs, independent of whether or not there was a language switch
- Language congruence (switch cost) effects were marginal

Summary

Our data support the hypothesis that bilinguals form language-independent categorical expectations.

Future directions

- If word order is different across languages, as in Adj-N pairs in English as compared to N-Adj pairs in Spanish, will language-independent categorical expectations form?
- In a non-balanced bilingual, are cross-language predictions different depending on the direction of the language switch?

References