Inhibition in Bilinguals' Language Production

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Background

- When bilinguals plan speech in one of their two languages, the other language is active and potentially competing for production.
- Bilinguals inhibit their dominant language (L1) in order to produce words in the non-dominant language (L2) (Guo et al., 2011; Misra et al., 2012).
- It is not known whether this inhibition operates over the whole lexicon (global inhibition) or for specific words in the lexicon (local inhibition).
- When people name pictures repeatedly, they get increasingly faster, which is called the "repetition advantage" or repetition priming. This advantage disappears when bilinguals switch languages (Misra et al., 2012).
- In mixed blocks, switching into the L1 is more costly than switching into the L2 (Meuter & Allport, 1999). However, it is unclear how that inhibition is affected by prior naming.

Research Questions

Do bilinguals inhibit the whole language (global inhibition) or specific lexical items (local inhibition)?

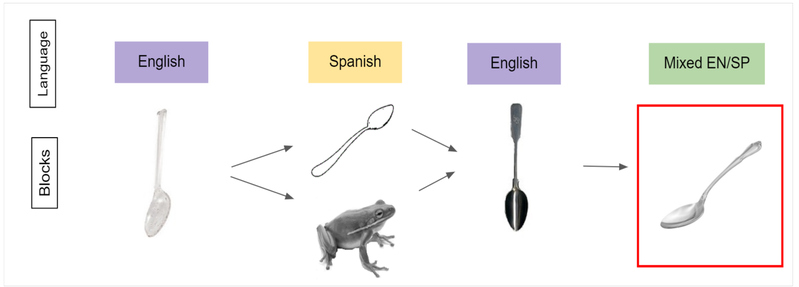
What are the consequences of that inhibition?

Predictions

- If the L1 is inhibited globally, we expect the same patterns for both groups to occur.
- If specific items are suppressed, naming in the second L1 block should be faster for those who named novel pictures in the L2.

Methods

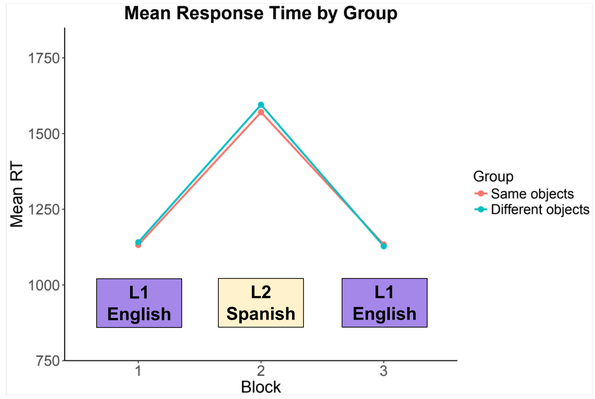
- Blocked picture-naming design
- L1 -> L2 -> L1 -> Mixed



- 144 experimental trials (36 per block)
- In the mixed block, a language cue was presented before the picture.
- Pictures included line drawings, black-and-white photographs, and colored photographs.
- Group A named the same pictures across all blocks while Group B named novel pictures in Block 2 only. The two groups saw the same pictures in blocks 1, 3, and 4.

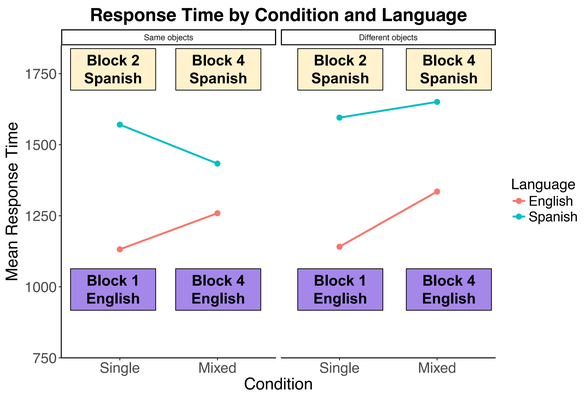
Results

RQ1:



- No repetition advantage was found for group A when naming the same pictures in Spanish (block 2) that they had named in English.
- No repetition advantage was found for either group A or B when naming the second time in English (block 3).
- Both groups showed the same pattern of response times across the first 3 blocks.

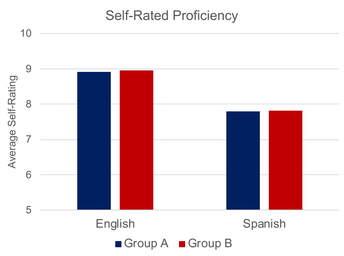
RQ2:



- Overall, naming in the mixed language block was slower than naming in the single-language blocks.
- But for participants who named the same pictures in L1 and L2 in previous blocks, Spanish was actually faster in the mixed block than in the single-language block.
- Spanish in mixed naming benefitted from previous naming (repetition advantage), but English did not.

PARTICIPANTS

	N	Age mean (SD)	Gender	English Age of Acquisition mean (SD)	Spanish Age of Acquisition mean (SD)
Group A	29	20.29 (2.54)	24f; 6m	5 (3)	2 (2)
Group B	29	19.72 (1.22)	20f; 8m	4 (2)	2 (2)



Discussion

- We predicted that group B would show a repetition advantage for English because they named different pictures in Spanish, so they should not have word-specific interference.
- However, group B did not show a repetition advantage and instead mirrored group A.
- This is evidence of global inhibition of the non-target lexicon when naming in one language. When bilinguals speak in one language, they inhibit the other language to avoid interference.
- Like prior studies, we observed the typical mixing cost, which is slower naming in the mixed-language context than the single-language context
- Also in line with previous studies, the dominant language was more negatively affected by the mixed-language context.
- Both groups showed a mixing cost in English, but only the group who named different pictures in Spanish showed a mixing cost.
- Surprisingly, the group who named the same pictures in Spanish in single-language and mixed blocks showed a repetition advantage and no mixing cost.
- These results may provide insight into the cognitive mechanisms underlying native-language attrition.

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