The Effect of Language Dominance on Bilingual Speech Planning

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Introduction

• Bilinguals must choose words from competing languages in order to speak in the intended language. This may strengthen the selection mechanisms involved in lexical production.
• In our study, we use a novel naming paradigm to investigate how bilinguals handle different types of conflict during word retrieval. Lexical conflict was introduced by way of object name distractors and attentional conflict was introduced using color word distractors.
• We investigated whether the two types of interference would differ when naming in the dominant language (English) or the non-dominant language (Spanish). We also examined whether the size of the proficiency difference in the two languages (balanced/unbalanced) would affect speed of retrieval.
• We expected participants to adapt to different distractor conditions across the course of the experiment, perhaps by engaging control mechanisms to enable fluent speech (e.g., Guo et al., 2011; Zhang et al., 2013).

Research Questions

1. Does language dominance and proficiency predict naming latencies for various distractor types?
2. How do participants adapt to different distractor conditions across time?

Methods

Tasks

• Language History Questionnaire: Assesses the language history of participants, including self-reported proficiency on a scale from 1 (poor) to 10 (excellent) and age of acquisition.
• Naming task: Measures word retrieval ability for colored pictures preceded by distractor words. Participants were instructed to name the object. Six distractor conditions were used. The task consisted of four blocks of ninety trials each. 180 items were named one time and 30 items were named 6 times in 6 different colors (following each of the six distractors).

• Verbal Fluency Task: Participants were asked to name as many words as possible within thirty seconds for four separate semantic categories. Bilingual participants completed the task once in their dominant language and once in their second-most dominant language.

Participants

<table>
<thead>
<tr>
<th>Group</th>
<th>Age Range</th>
<th>Gender</th>
<th>English AoA</th>
<th>Other Language AoA</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>18-23 yrs</td>
<td>90.9%</td>
<td>0.7 yrs</td>
<td>m=1.9, s=1.88</td>
</tr>
<tr>
<td>Spanish</td>
<td>18-22 yrs</td>
<td>90.6%</td>
<td>1.8 yrs</td>
<td>m=3.93, s=1.76</td>
</tr>
</tbody>
</table>

Analysis

• Condition effects were calculated by dividing the mean RT for each condition by the mean RT for the control condition per participant. Values above 1 indicate interference; values below 1 indicate facilitation.
• Using a vocabulary test we determined which words (distractors or pictures) the participants had never seen and excluded any trials containing those words from the analysis.
• Language dominance (balanced vs English-dominant) was determined using the difference between the English verbal fluency score and Spanish verbal fluency score. Difference scores between -4 and 4 were considered Balanced (n=12 participants). The remaining 14 were English-dominant.
• Spanish proficiency was calculated as High or Low based on the total verbal fluency score in Spanish. Low-proficiency scores ranged from 23-33 (sum of four categories) and high proficiency ranged from 34-47.

References & Acknowledgements

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