Measurement of Language Dominance in Bilingualism

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Background

Introduction

- Bilinguals typically use one language more often, or are “stronger” in one language = dominant in that language.
- Dominance is a continuous and relative construct: bilinguals are not just Language A (LA) – dominant, they are dominant in LA to varying degrees, vis à vis Language B (LB).
- “Balanced bilinguals” are dominant in neither language.
- Balance does not imply high proficiency.

Dimensions:

- [Image]

![Image]

Dimenison in Language A (Proficiency in Language A)

- [Image]

Fig 1: Dominance is continuous & relative (see X & Y axes); balanced bilinguals are dominant in neither language. 

Balance does not imply high proficiency.

Assessment of dominance

- Dominance is assessed w/r/t:
  - Dimensions: naming speed, reading speed, proficiency, fluency, MLU, etc.
  - Domains: use at work, children, with partner, for counting, math, etc.
- Dominance indices are numerical assessments along one or more dimensions / domains.
- Global dominance indices represent composite scores across multiple dimensions or domains.
- Indices are derived by subtraction (score LA – score LB); or by division as ratios (score LB / score LA); or by hybrid method (subtraction & division).

TABLE 1: This comparison of dominance indices shows an increase in absolute value of simple ratio-based indices as raw scores for LA and LB increase and as subtraction-based indices remain constant. Indices computed by the hybrid method (leftmost column) decrease.

<table>
<thead>
<tr>
<th>Raw Score</th>
<th>Derived Index</th>
<th>Simple Ratio</th>
<th>(LA – LB)</th>
<th>(LB – LA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 15 10</td>
<td>5 7 10</td>
<td>5 7 10</td>
<td>5 7 10</td>
<td></td>
</tr>
<tr>
<td>30 20 10</td>
<td>10 7 20</td>
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<td>40 30 20</td>
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<td>50 40 30</td>
<td>20 15 40</td>
<td>20 15 40</td>
<td>20 15 40</td>
<td></td>
</tr>
</tbody>
</table>

- TAKE-AWAY: When choosing a suitable method for computing dominance indices, one should compare the arithmetic outputs of various methods, and avoid any method that results in an uninformative distribution of indices over varying raw scores, e.g. subtraction in TABLE 1; ratio and hybrid in TABLE 2.

- NOTE: In cases where two or more indices do vary over varying raw scores (e.g. TABLE 3), those indices will inter-correlate.

- NOTE: In the 2 rightmost columns of each of the 3 examples, ratio and hybrid arithmetic outputs are converted to whole numbers by multiplying by 100.

TABLE 2: With a different set of increasing raw scores for LA and LB, this comparison of dominance indices shows that simple ratio-based and hybrid-based indices remain constant, while subtraction-based indices increase.

- [Image]

Fig 2: Bilingual Language Profile (BLP) is available in 15 language pairings, e.g. English-Spanish / Spanish-English. Respondents choose items (= use). Also, items for age of LA - LB learning, years of residence, language identity, etc.

Bilingual Language Profile (BLP) is an easy-to-use, open-source, no-cost assessment instrument that yields global indices of language dominance. Supported by the Center for Open Educational Resources and Language Learning (COERLL) at the University of Texas at Austin.

- Bilingual self-assess for each of their languages, on 19 questions in 4 modules: Language History, Language Use, Language Proficiency, and Language Attitudes.
- BLP includes Dimension-based items (= skills) and Domain-based items (= use). Also, items for age of LA - LB learning, years of residence, language identity, etc. Items are equally weighted. Scoring: (Score LA) – (Score LB) = BLP dominance index (range +218 to -218); 0 = perfect balance.
- BLP can be administered by pencil-and-paper, or online Google form. For the latter, BLP dominance indices are calculated automatically; raw scores & module by module are also tabulated automatically.
- BLP is available in 15 language pairings, e.g. English-Spanish / Español-Ingles. Respondents choose the language of their BLP questions.

13 different languages are represented, e.g. Arabic, Japanese, Russian, Italian, French, Basque, Catalan, Samoan. Future administrators are invited to translate BLP items into still other languages.

TABLE 3: With another set of raw scores for LA and LB, this comparison of dominance indices shows that subtraction-based indices increase, simple ratio-derived indices decrease and hybrid-based indices increase.

- [Image]

Notes:

- Indices are derived by subtraction (score LA – score LB); or by division as ratios (score LB / score LA); or by hybrid method (subtraction & division).
- Indices are represented, e.g. Arabic, Japanese, Russian, Italian, French, Basque, Catalan, Samoan. Future administrators are invited to translate BLP items into still other languages.

Future work

- Exploring dominance as a predictor of academic achievement in schools.
- Using BLP to reveal longitudinal dynamics of dominance relationships across the lifespan.

Additional information

- BLP has been used for participant screening & sorting in studies of bilingual aphasia, cross-language morphosyntactic priming, etc.
- BLP components are predictive of reading comprehension in Gen. 1,5 students, knowledge of clichés among early Spanish-Catalan bilinguals, etc.
- BLP global raw scores for LA and LB can be converted to ratio- and hybrid-based dominance indices.
- BLP by-item raw scores and modular scores used in regression along with / instead of global indices.
- Proposed formula for any dominance index. Adapted from [6].

BLP scores predict accent & learning

References: