

Can proficiency explain the observed variability in the bilingual cognitive advantage?

Hanan Yafai | CUNY Kingsborough Community College | HANAN.YAFAI78@students.kbcc.cuny.edu

Introduction

The psycholinguistic literature has reported the existence of a **bilingual cognitive advantage**

- >> difficult to replicate
- >> highly controversial

Potential reasons:

- difficulty of quantifying bilingual knowledge
- difficulty of incorporating this knowledge to experimental design.
- over-reliance on self-reports

PREVIOUS WORK:

Spinu 2020: experiment with 30 monolinguals and 30 bilinguals who self-reported as native/near-native.

- the two groups were compared on two tasks: novel accent learning and digit span recall
- bilinguals outperformed monolinguals on both tasks BUT substantial variation was noted within each group.

Purpose

Understand the reasons behind the controversy regarding the bilingual advantage, by exploring one potential reason behind it.

Does proficiency level (often self-reported and not directly measured in bilingualism research) explain the variability in performance on different tasks?

Research Hypothesis

Proficiency moderates performance on accent learning and digit span recall.

Methodology

Follow-up to Spinu et al. (2020) by analyzing data collected for that study.

Materials:

Spontaneous oral translations of "The North Wind & The Sun" from English into the other language of a bilingual.

Participants:

- 26 KCC undergraduate students (mean age = 21)
- Early Bilinguals: English : Arabic / Hebrew / Spanish / Urdu / Chinese / Russian / Creole

Measurements:

- **Translation Duration**
- **Disfluencies** (number of pauses, hesitations, stuttering, repetitions, etc.)
- **Percent not translated:** ratio of total number of non-translated words to total number of words in the text.

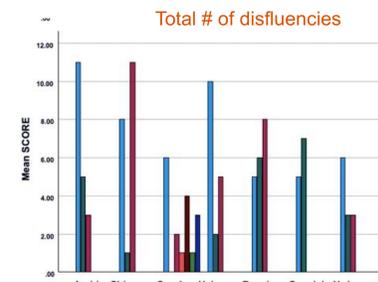
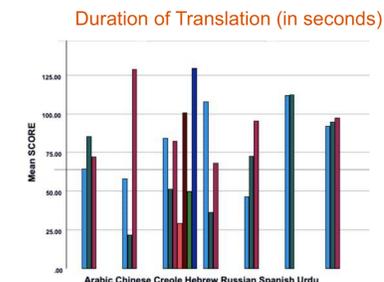
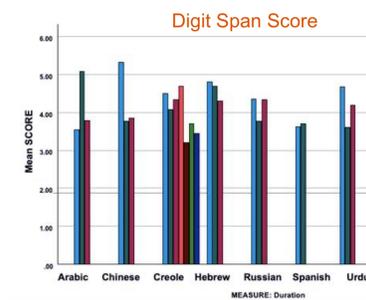
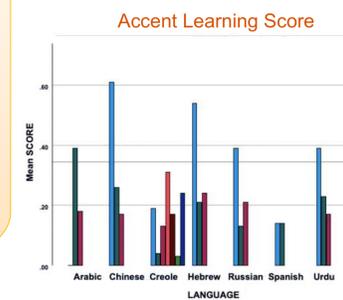
The correlations between these scores and the previously obtained accent learning scores and digit span scores (Spinu 2020) were evaluated statistically.

In the planning stage:

Perceptual task with native speakers of the languages of the translations, asking them to rate on a scale of 1-5 how native the pronunciation is.

Preliminary Results

Significant correlations	
At the 0.01 level:	At the 0.05 level:
<ul style="list-style-type: none"> • Disfluencies and # of Pauses • Disfluencies and Duration • Disfluencies and # of Repetitions • Disfluencies and # of Hesitations 	<ul style="list-style-type: none"> • Accent Score and # of Pauses • Max Digit Score and Duration • Digit Score and Duration • Duration and # of Repetitions



Discussion & Conclusion

Hypothesis supported: proficiency explains performance on digit span and novel accent learning tasks.

- Not very consistent but sample size is small, especially when broken down by language group.
- Future recommendation for work in bilingual cognition: standardized proficiency testing
- used to obtain homogenous groups for experiments
- as a continuous variable to explain the different behaviors of bilinguals previously grouped under one category.

Selected References:

- [1] Antoniou, M., Liang, E., Ettlinger, M., & Wong, P.C.M. (2015). The bilingual advantage in phonetic learning. *Bilingualism: Language and Cognition*, 18(4), 683-695.
- [2] L. Spinu, J. Hwang, and R. Lohmann, "Is there a bilingual advantage in phonetic and phonological acquisition? The initial learning of word-final coronal stop realization in a novel accent of English". *International Journal of Bilingualism*, 22(3), 2018, pp. 350-370.
- [3] L. Spinu, J. Hwang, N. Pincus, and M. Vasilita, "Exploring the use of an artificial accent of English to assess phonetic learning in monolingual and bilingual speakers" *INTERSPEECH 2020*. 25(10), 2020, pp. 2337-2381.