Cross-language influences in different-script bilinguals: Evidence from a visual lexical decision task with Arabic-Hebrew bilinguals

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- Both languages of bilingual speakers are active and interactive even in single-language contexts, among same-script bilinguals.
- Yet, not much is known about the pattern of cross-language interactions for bilinguals with languages that differ in orthography.

- Increasing of form similarity between two languages led to **faster** RTs in an L2 (English) lexical decision task among Korean-English bilinguals(Dijkstra et al., 2010)

- Similarly, Peleg et al (in press) demonstrated cross-lingual phonological **facilitation** among Arabic-Hebrew bilinguals in an L2 (Hebrew) lexical-decision task:
  - Hebrew non-words sounding like Spoken Arabic were easier to reject than Hebrew non-words not sounding like Arabic.

- Cross-lingual phonological effects were also observed in an L2 (Hebrew) visual semantic decision task among Arabic-Hebrew bilinguals (Degani et al., 2018; Prior et al., 2017), but in the absence of shared meaning the effect was **inhibitory**.

The Goal of the Current Study

To investigate whether different-script bilinguals' first language (Arabic) influences visual lexical-decision performance in their second language (Hebrew).

- Would false cognates (FC), sharing form but not meaning, facilitate or inhibit responses?

Hypothesis:

- Native Hebrew speakers' performance will be faster and more accurate than Arabic-Hebrew bilinguals'.
- Arabic-Hebrew bilinguals, but not native Hebrew speakers, will show facilitation in RT and accuracy for both cognate words and false cognate words.

Method:

Participants:

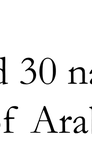
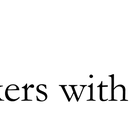
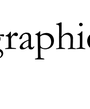
30 Arabic-Hebrew bilinguals and 30 native Hebrew speakers with not more than minimal knowledge of Arabic

Stimuli:

84 Hebrew words and 84 orthographically legal non-words.

Hebrew words included:

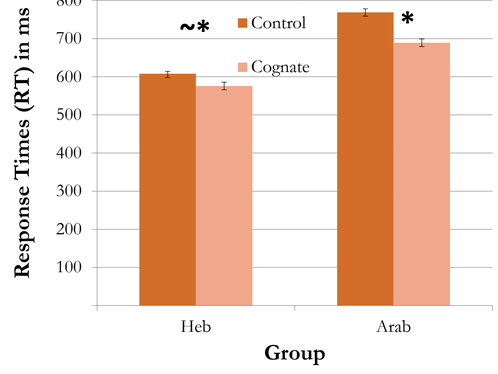
- 14 Hebrew-Arabic cognates (e.g. /ʔozen/ meaning 'ear' in both languages)
- 14 Hebrew-Arabic false-cognates (FC) (e.g. /ṣu:ṣ/ meaning 'horse' in Hebrew but 'chick' in Arabic)
- 42 unambiguous control Hebrew words.
- 14 filler ambiguous Hebrew words (homonyms) (e.g., 'mapa' meaning both a tablecloth and a map).

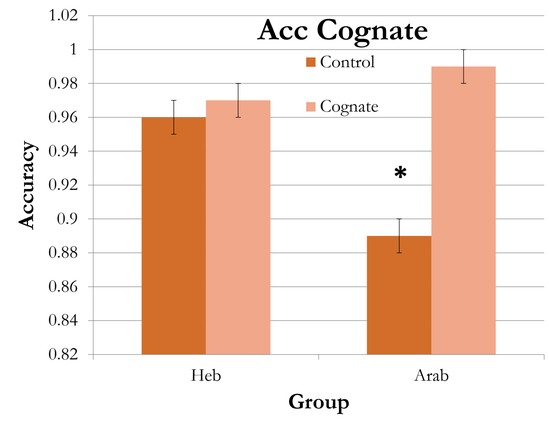
	Cognate	False Cognate
Presented form	אוזן	סוס
Hebrew meaning	Ear 	horse 
Arabic meaning	Ear 	chick 

Results:

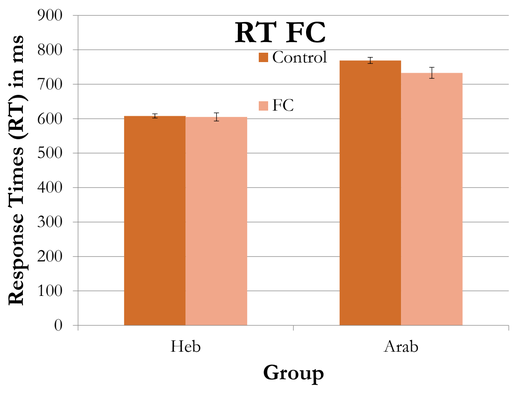
- Analyses using lme4 (Baayen, Davidson, & Bates, 2008) in R.
- **Lexicality**: Words were responded to more quickly and more accurately than non-words for both groups of participants.
- **Group**: Native Hebrew speakers responded more quickly and accurately than Arabic-Hebrew bilinguals.
- **Cognates vs. Controls:**
  - A significant interaction between word type and group in both accuracy and RT.
  - Follow up tests showed a significant cognate effect for Arabic-Hebrew bilinguals - cognates were responded to more quickly and more accurately than control words.
  - A marginally significant cognate effect in the RT data for Hebrew speakers.
- **False Cognates vs. Controls:**
  - A significant interaction between word type and group in the accuracy analysis.
  - Follow up tests showed no difference between groups on FC items, but more errors for Arabic-Hebrew speakers compared to native Hebrew speakers on control words.

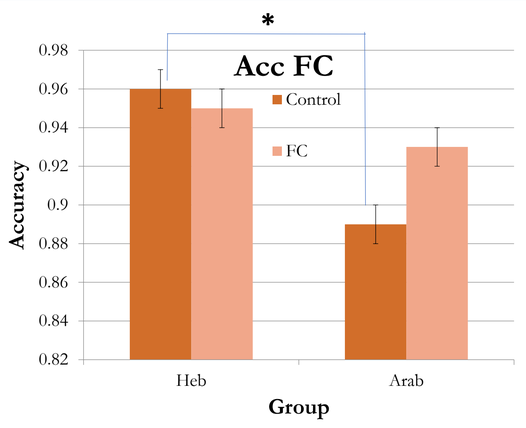
Cognate Response Times (RT) and Accuracy





False Cognate (FC) Response Times (RT) and Accuracy





Discussion and Conclusions:

- Our results show phonological activation of the L1 during a visual lexical decision task in L2, despite difference in orthography.
- A cognate facilitation effect was observed for Arabic-Hebrew bilinguals, in concurrence with previous studies (Peleg et al., 2018; Degani et al., 2018; Dijkstra et al., 2010)
- The false-cognate effect was weaker, and was in a direction of facilitation in the accuracy measure.
- The fact that there was no difference between groups on FC items but not on control items indicates that phonological overlap facilitated performance for Arabic-Hebrew bilinguals, allowing them to 'catch up' with the native Hebrew speakers on these items.
- Future analysis will examine how individual differences in language proficiency in both Hebrew and Arabic modulate these findings.
- An ongoing study tests whether Hebrew speakers learning Arabic exhibit similar cross-language phonological effects in this task following Arabic vocabulary learning.

References:

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