The Role of Native Language in Statistical Learning Success
Krystal Mendez, An Nguyen, Violet Kozloff, Zhenghan Qi

Language Acquisition and Brain Laboratory, Department of Linguistics and Cognitive Science, University of Delaware, Newark, DE, USA

Introduction

Statistical learning is the ability to extract repeated patterns of regularities and transitional probabilities. We examined whether native language experiences (English vs. Hebrew), perceived familiarity with one’s native language, or native language proficiency affects how successful an individual learns an artificial language that is composed of Hebrew syllables.

The aim of this study was to confirm these hypotheses:
1. English native speakers will perform relatively worse than Hebrew native speakers in learning the artificial language, but equally well in the non-linguistic statistical learning task.
2. There will be a positive correlation between the perceived English likeness of the artificial language and the learning success of an artificial language.
3. People with better verbal knowledge and reading experiences will show greater success in both statistical learning tasks.

Method

32 adults participated in the study (mean age 21.9 years old, 26 females and 6 males). All were between the ages of 18 and 40, receiving payment for their participation. They were all native English speakers with no learning, hearing, or language impairments.

Experiment Procedure:

Table 1: Mean accuracy of statistical learning performance in the current study and Arnon (2018) (SD).

Table 2: Inferential statistics of English native speakers’ performance compared to chance and Hebrew native speakers.

Table 3: Correlation matrix showing all individual difference measures in native English speakers (p-value marked in asterisks).

Table 4: Multiple linear regression model predicting Linguistic ASL performance

Table 5: Multiple linear regression model predicting Non-linguistic ASL performance

Results

This study explores the role of native language in statistical learning success. The results show that:

1. Familiarity (or perceived familiarity) of language is related to statistical learning success from the speech input.
   - English native speakers perform worse than Hebrew native speakers in learning artificial language consisting of Hebrew syllables.
   - Perceived English likeness of the artificial language is associated with linguistic statistical learning success in English native speakers.

2. Individuals’ vocabulary is only associated to linguistic statistical learning success in English native speakers.
   - Statistical learning performance is associated with a single unique data trend in linguistic statistical learning success in English native speakers.
   - In the Hebrew group, there is a unique contribution to the statistical learning task.

Conclusion

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References


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