

Experience-Driven Bias in Language Perception

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Humans extract meaningful information even from noisy, ambiguous speech.

When listening to babble in a bilingual environment, do bilinguals more easily perceive one language over the other? That is, are bilinguals *biased* towards perceiving one language over the other?

THE GAP

No studies have manipulated multilingual babble noise to measure language biases.

HYPOTHESIS

Language experience predicts biases in ambiguous babble noise.

METHODS

1. Participants

Convenience sample of $N = 8$ English-French bilingual volunteers from our lab and personal contacts.

2. Language Background Assessment

Participants completed a questionnaire assessing:

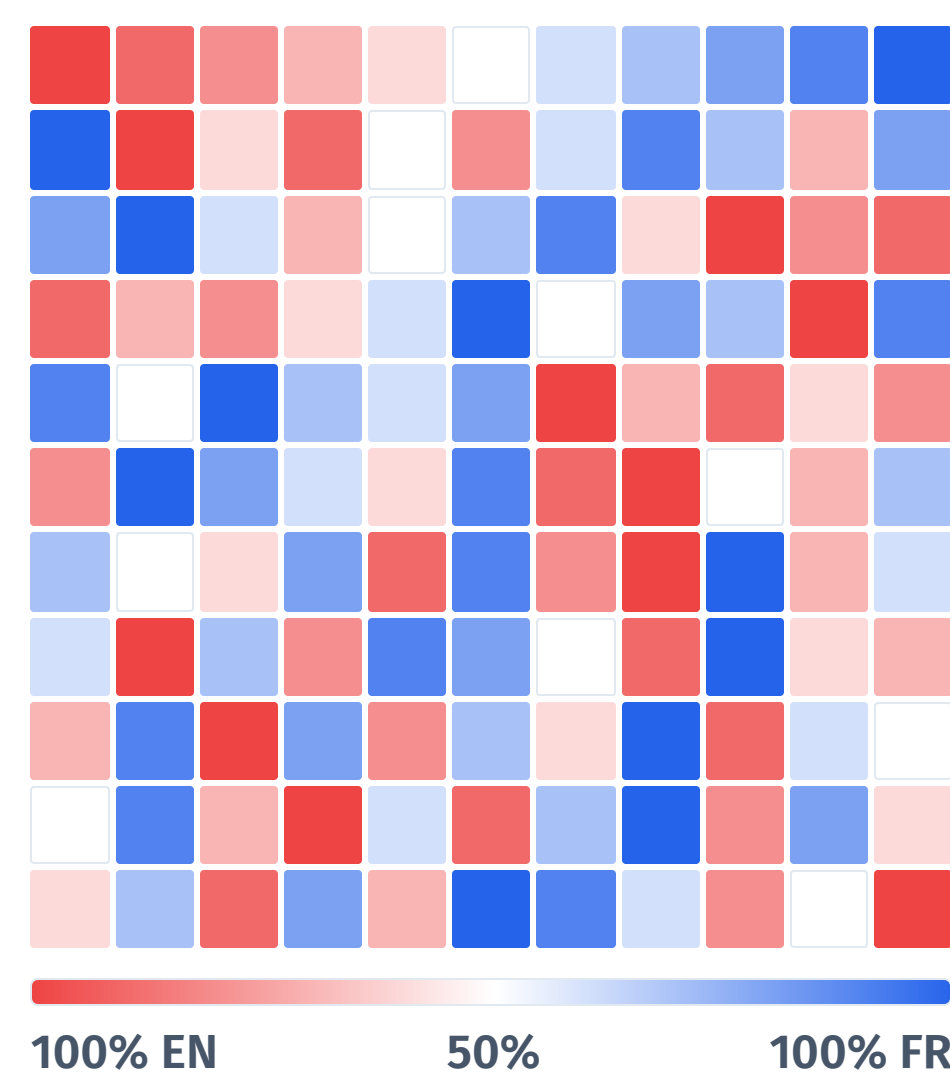
- All languages spoken
- Age of acquisition
- Daily usage (contexts, percentage...)
- Proficiency (spoken and written)
- Language of instruction

3. Stimuli

Randomly sampled mixes of two-second snippets of English and French speech from Canadian broadcasts.

4. Stimulus Presentation

Mixed language proportions in 10% increments. Randomized via Type-1-Index-1 (T1I1) sequences to eliminate trial carryover:



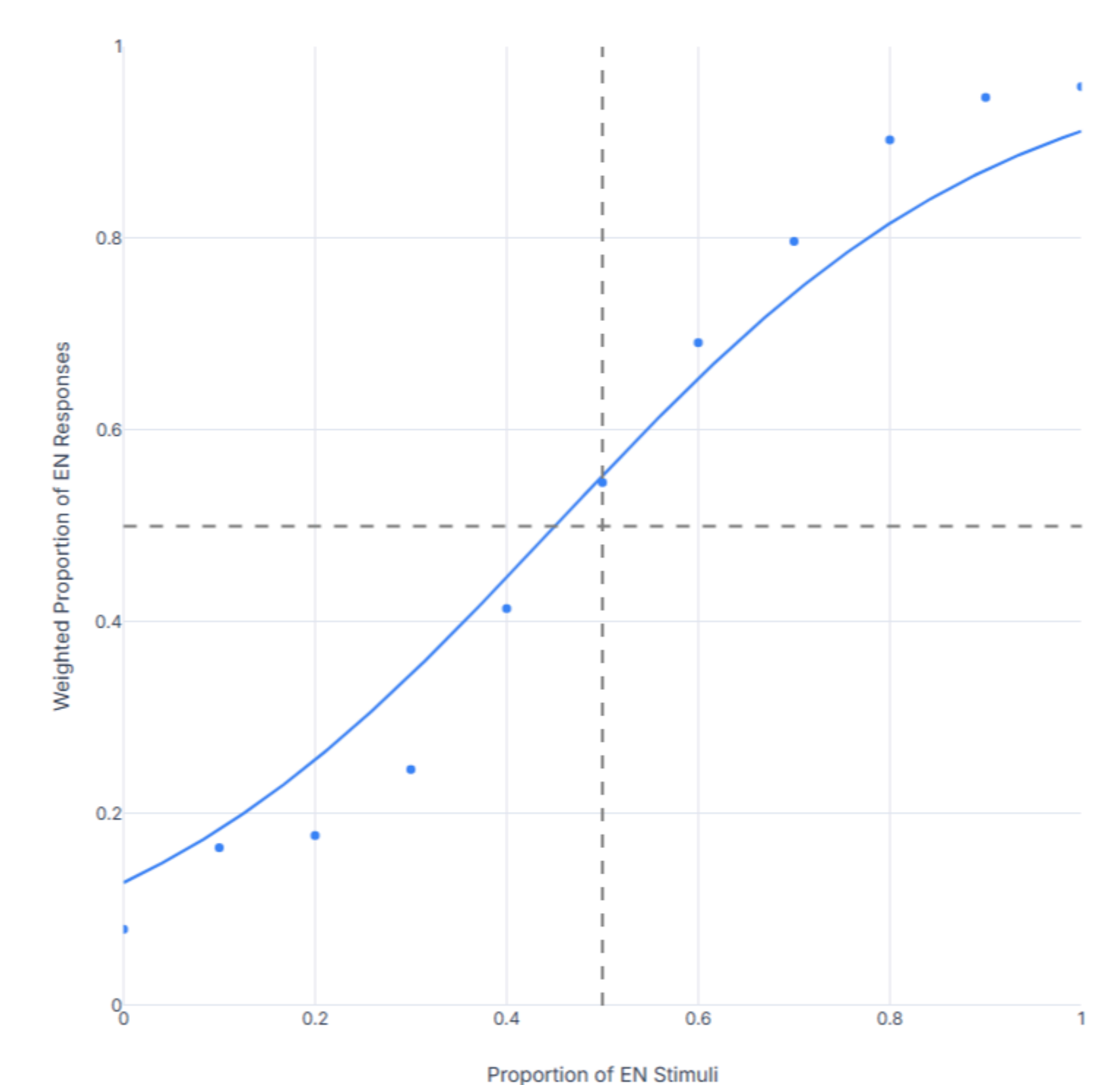
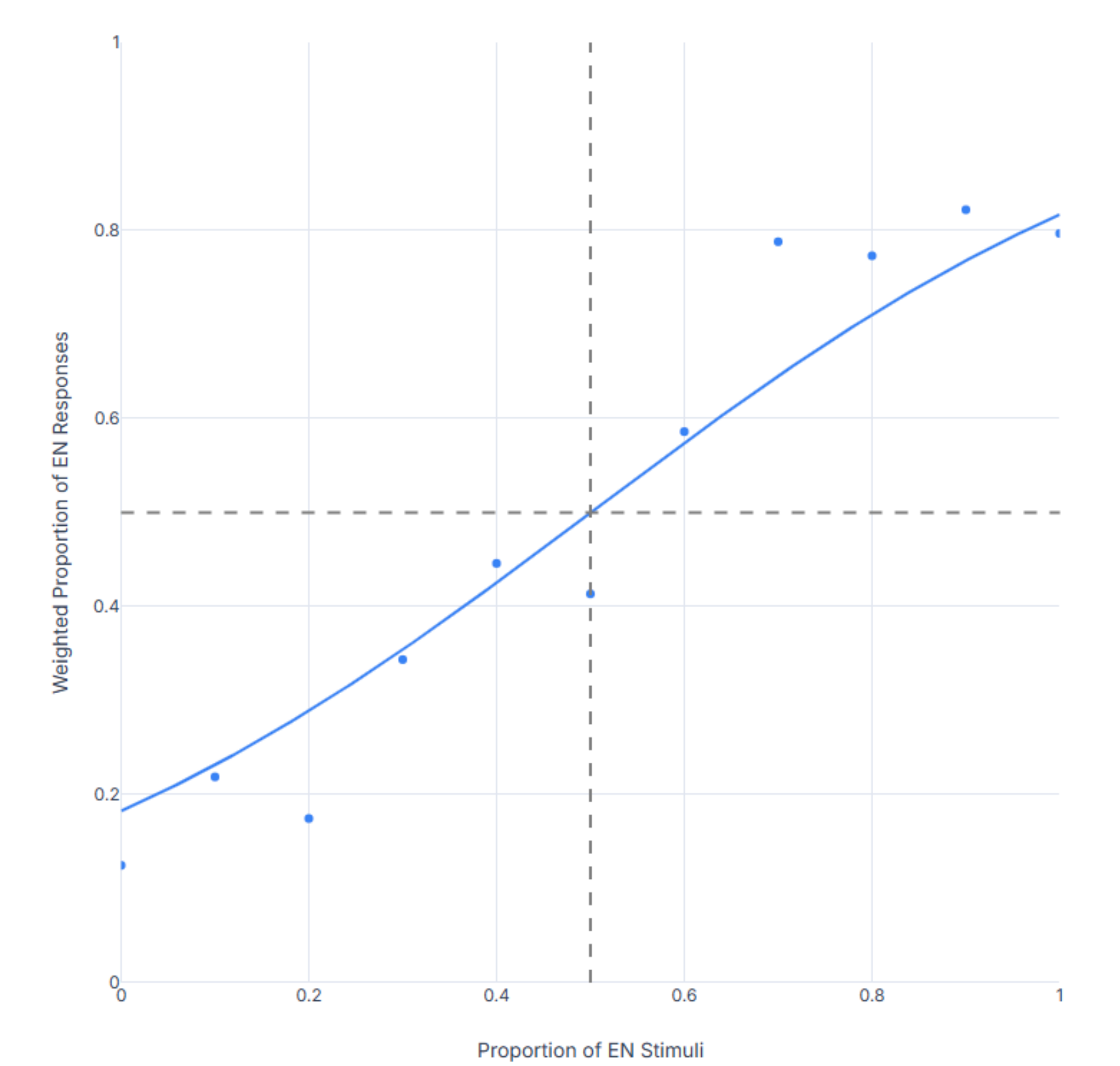
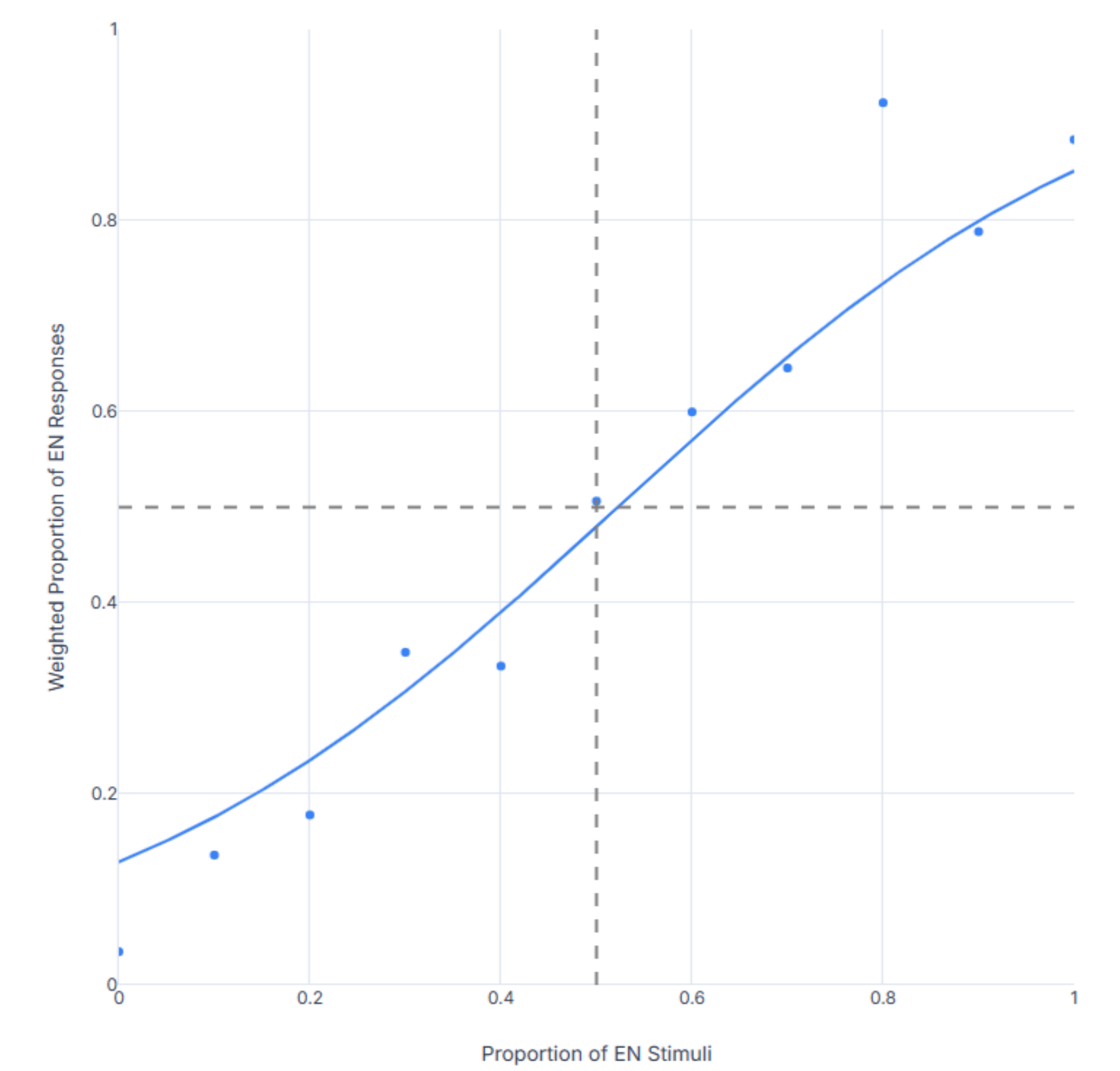
5. Rating Task

- 363 trials in a soundproof booth
- Response keys mapped to one of the languages at random, and confidence level



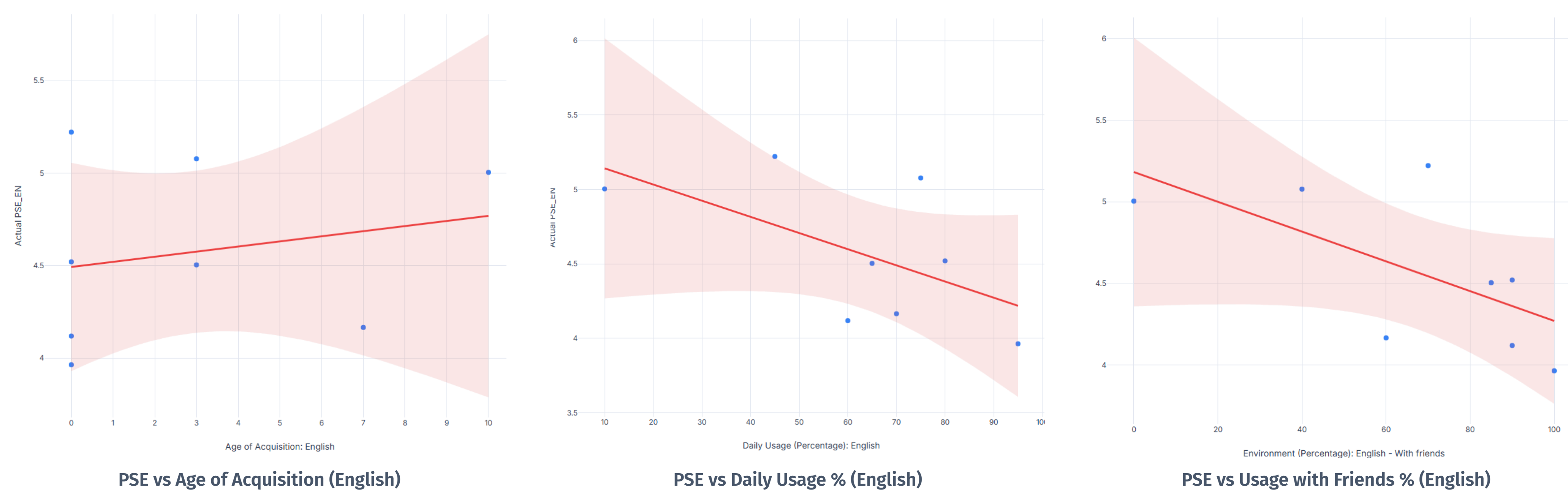
DATA

From the data collected in the experiment, we can plot the weighted percentage of English responses against the percentage of English in the audio mix.



RESULTS

Extracting the point of subjective equality (i.e., the point at which participants identify the stimulus as equally French and English) for each participant, we regressed these values against daily language usage features:



A later age of acquisition predicted a higher PSE, and a higher percentage of daily language usage predicted a lower PSE.

Discussion & Conclusion

- With an N of 8 participants, it is of course impossible to perform any significant statistical analyses
- However, the original hypothesis that the language background would be a strong predictor seems to have less potential than other factors
- The correlation with recent language usage presents a much steeper slope with a much narrower variance, suggesting that it may be a more promising hypothesis for larger studies
- Future research should focus on increasing the sample size to validate these findings. We aim to replicate this study not only with a larger sample size but with a broader population, in a variety of environments (e.g., in francophone universities as well as McGill)

References

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[QR Code]

Interactive Explorer

Scan to dynamically visualize the data.