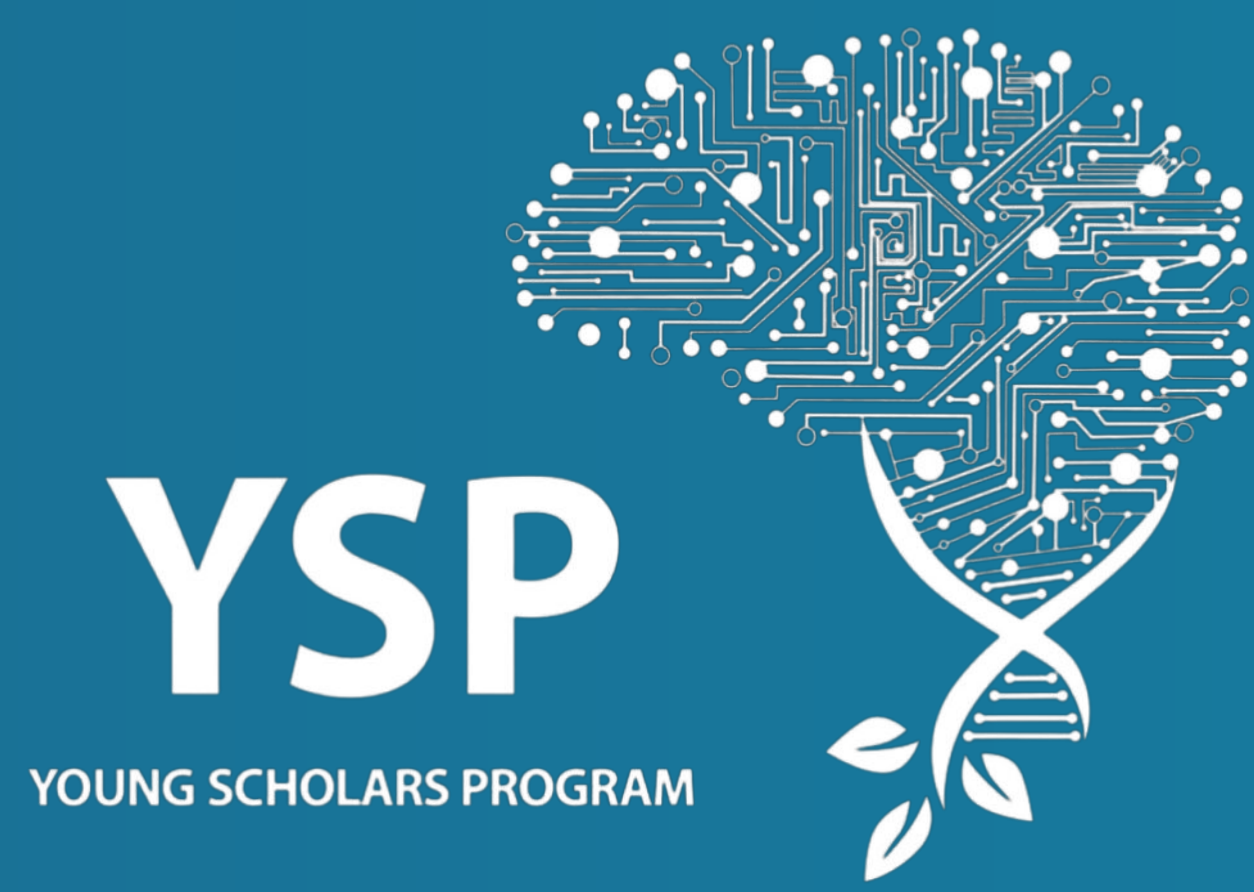


Climbing the Language Tree: Cross-Cultural Analysis of Pause Duration in Spoken Language

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Introduction

For decades, the field of psycholinguistics has ignored many of the phenomena associated with conversational speech, believing pauses and filler words found in conversation to be distractions born out of mechanical and not cognitive processes. This disregard for pauses is inconsistent with the distinct communicative interpretation of pauses and pause lengths found in different cultures. One of the most fitting demonstrations of this concept comes from the Akan language, where pauses in speech are used to indicate an inadequacy of words to express a feeling. Our research wishes to further recent discussions on this subject by examining one potential factor contributing to pause length: the communicative conventions associated with different languages. The languages studied here included a diverse set of Indo-European languages: Hindi, Greek, English, Spanish, and French. Spanish and French were chosen due to their close connection as romance languages, with Greek and English being used to compare to other European language families, and Hindi working as a foundation for a cross-familial linguistic comparison. We also wished to consider factors that could potentially vary due to cultural divergence, such as gender. We categorized pauses as segmenting, after-filler, and before-filler. Segmenting pauses are all pauses that are not preceded or followed by filler words, with after-fillers and before-fillers indicating the presence and placement of a filler in speech.

Methodology

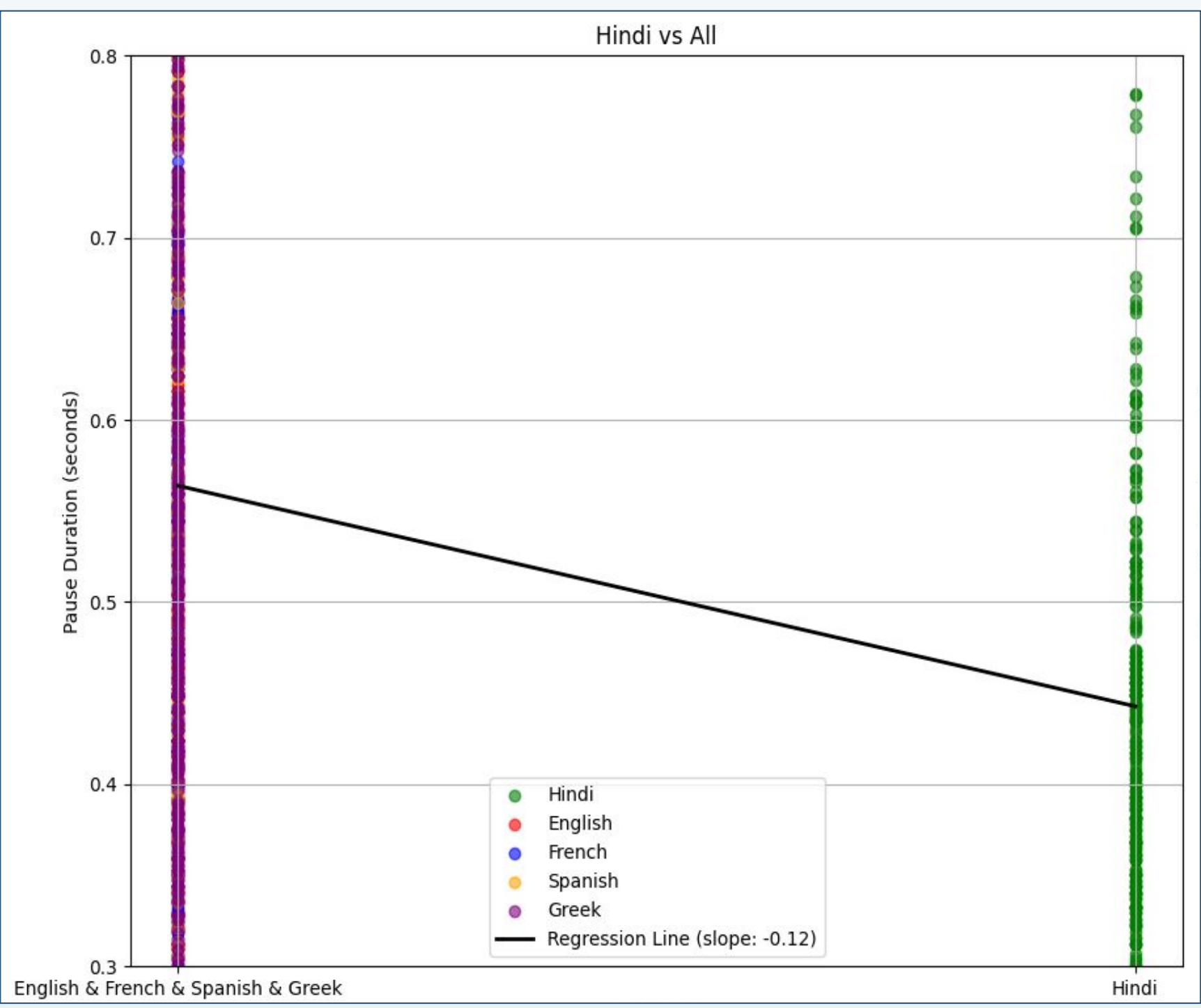
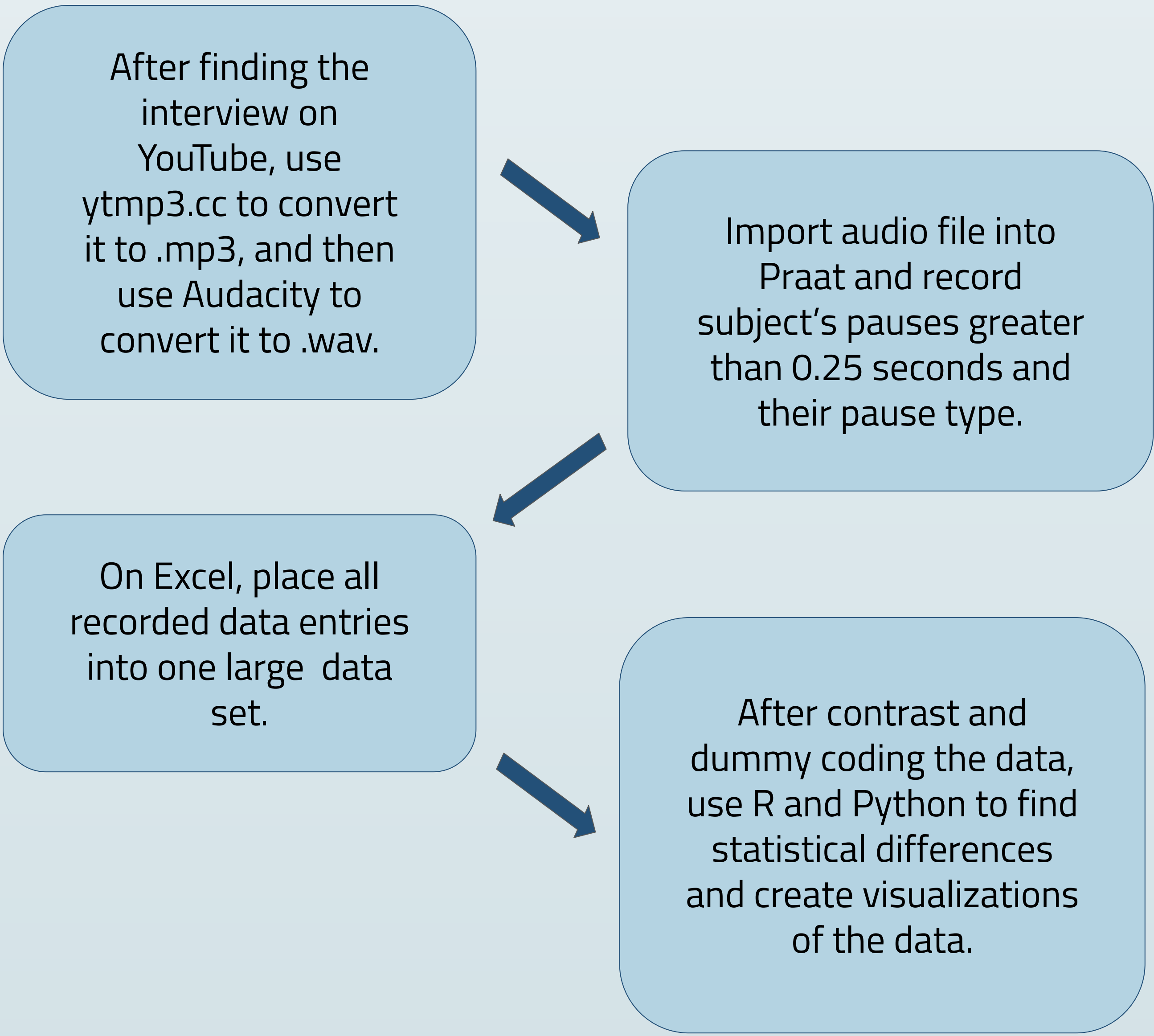


Figure 1. Hindi compared to all languages. Slope = -0.12 → this shows that Hindi has shorter pause durations than all other languages by a lot.

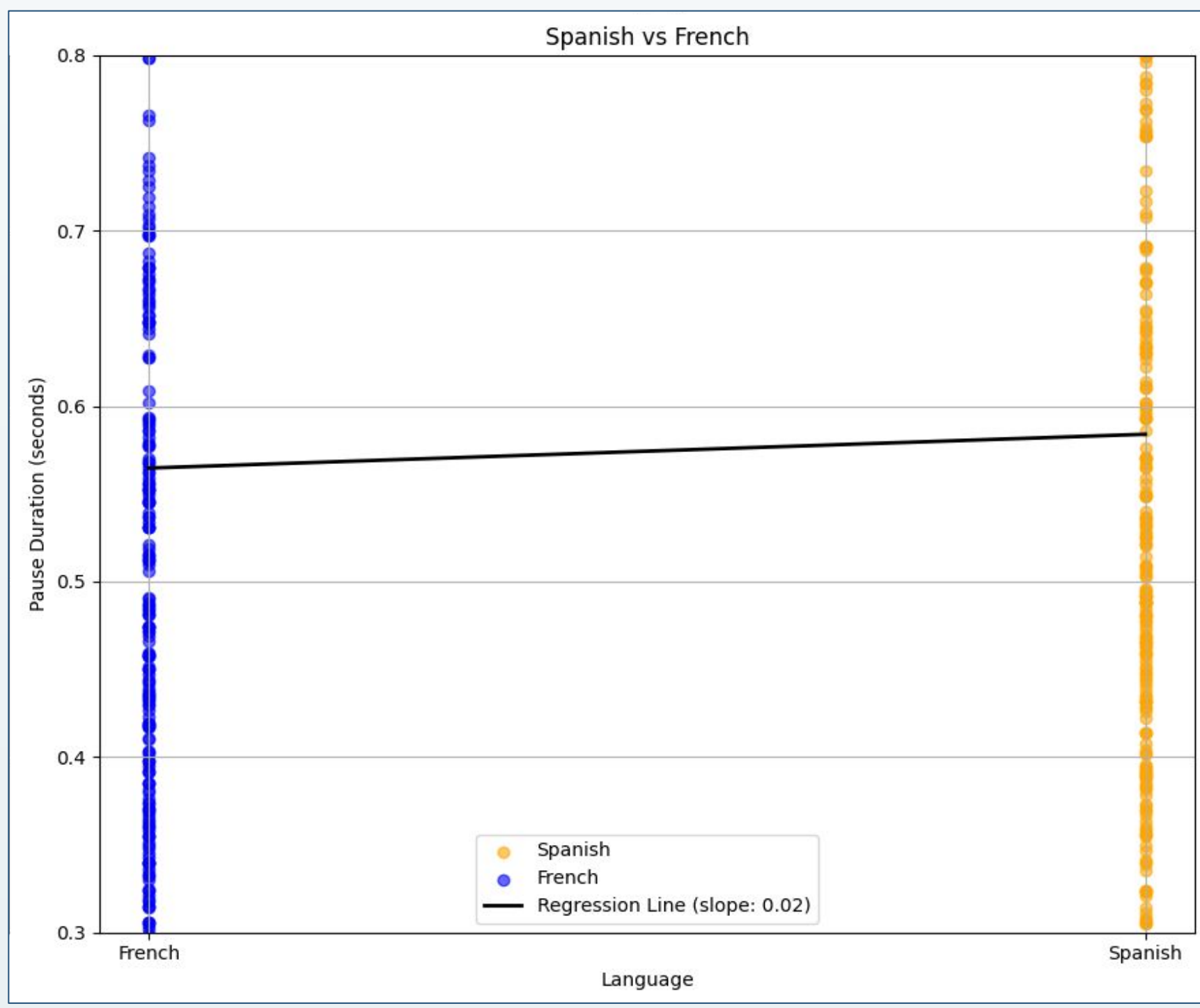
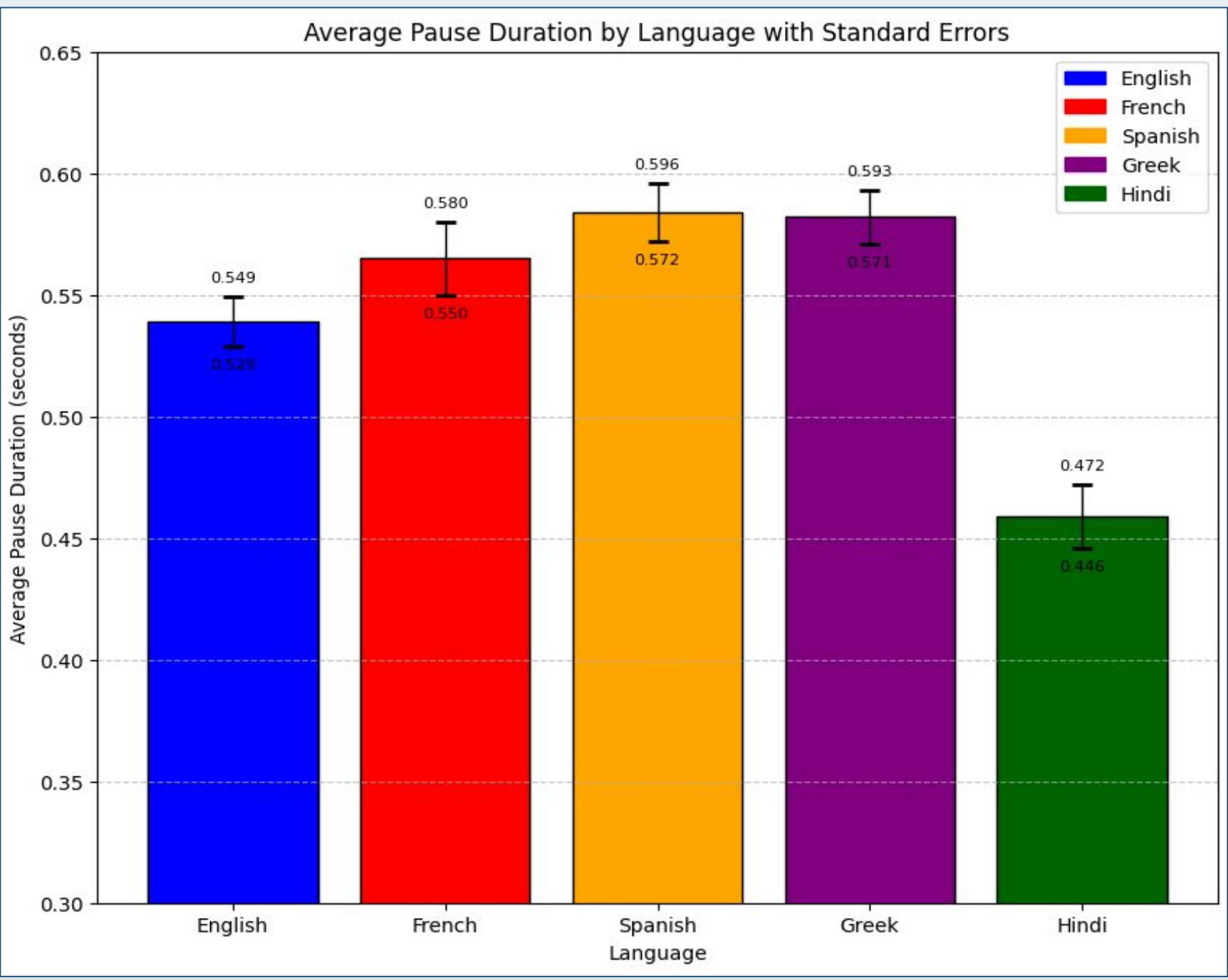


Figure 2. Spanish compared to French. Slope = 0.02 → this shows that, yet extremely close, Spanish has slight shorter pause durations than French.



Analysis revealed a difference between Hindi and all other languages for pause durations. Hindi pause lengths are about 0.019 seconds shorter than the pauses found in all other languages ($p=0.012$). This can be explained through the lens of the language tree, as Hindi is from the Indo-Iranian family tree while the other languages are a part of the European family tree, but more research is needed to confirm this hypothesis.

Results

We observed gender differences in relation to pause lengths. Between English speakers, women produced longer pauses than men (non-significant; $p=0.55$). For Spanish and French, men produced reliably longer pauses than women ($p=0.03$). This result should be analyzed to determine the factors that may lead to a difference in pause length due to gender.

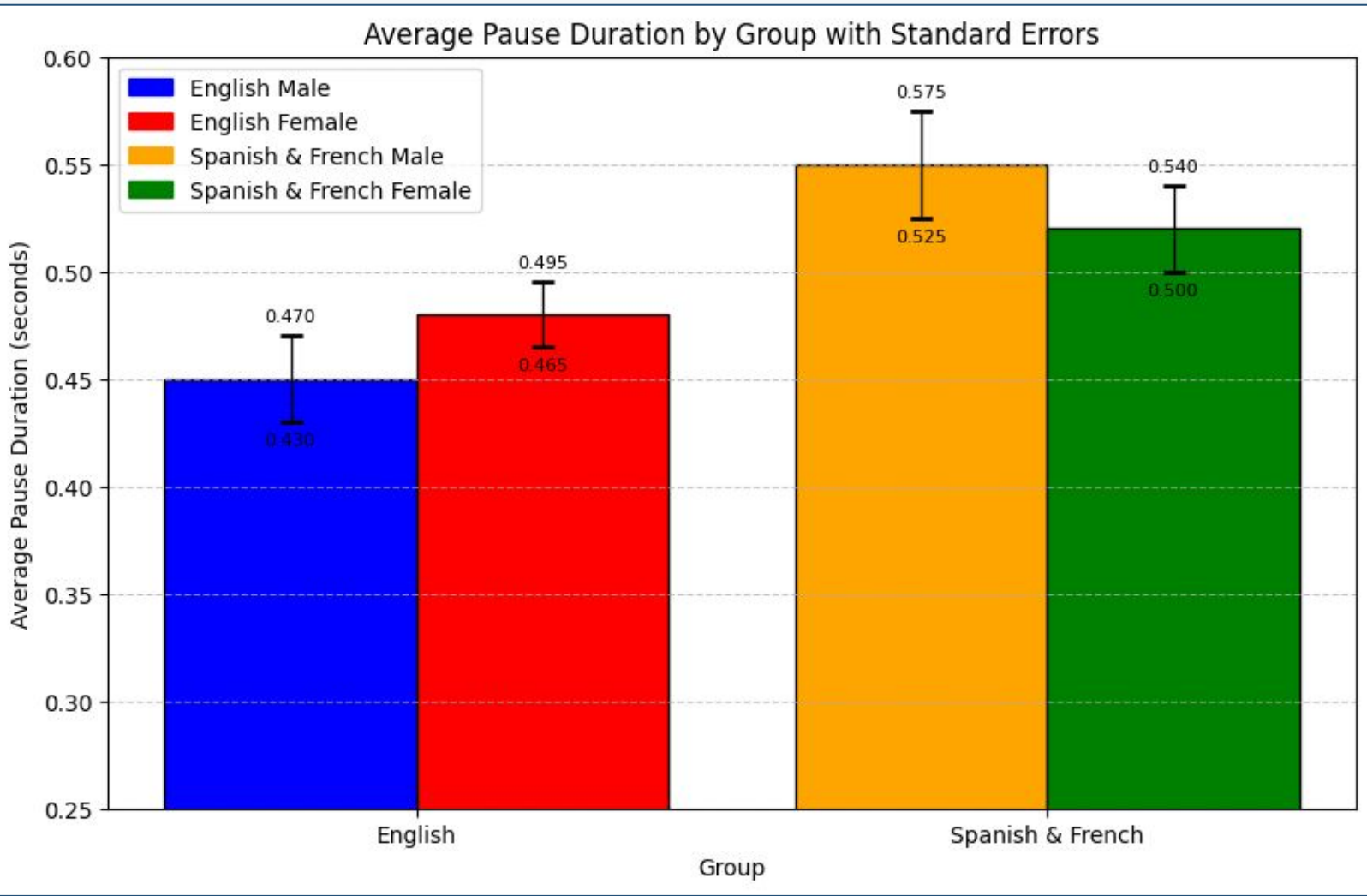


Figure 3. English compared to French and Spanish (Romantic languages) based on gender and measuring pause duration. Graph indicates ± 1 Standard Error.

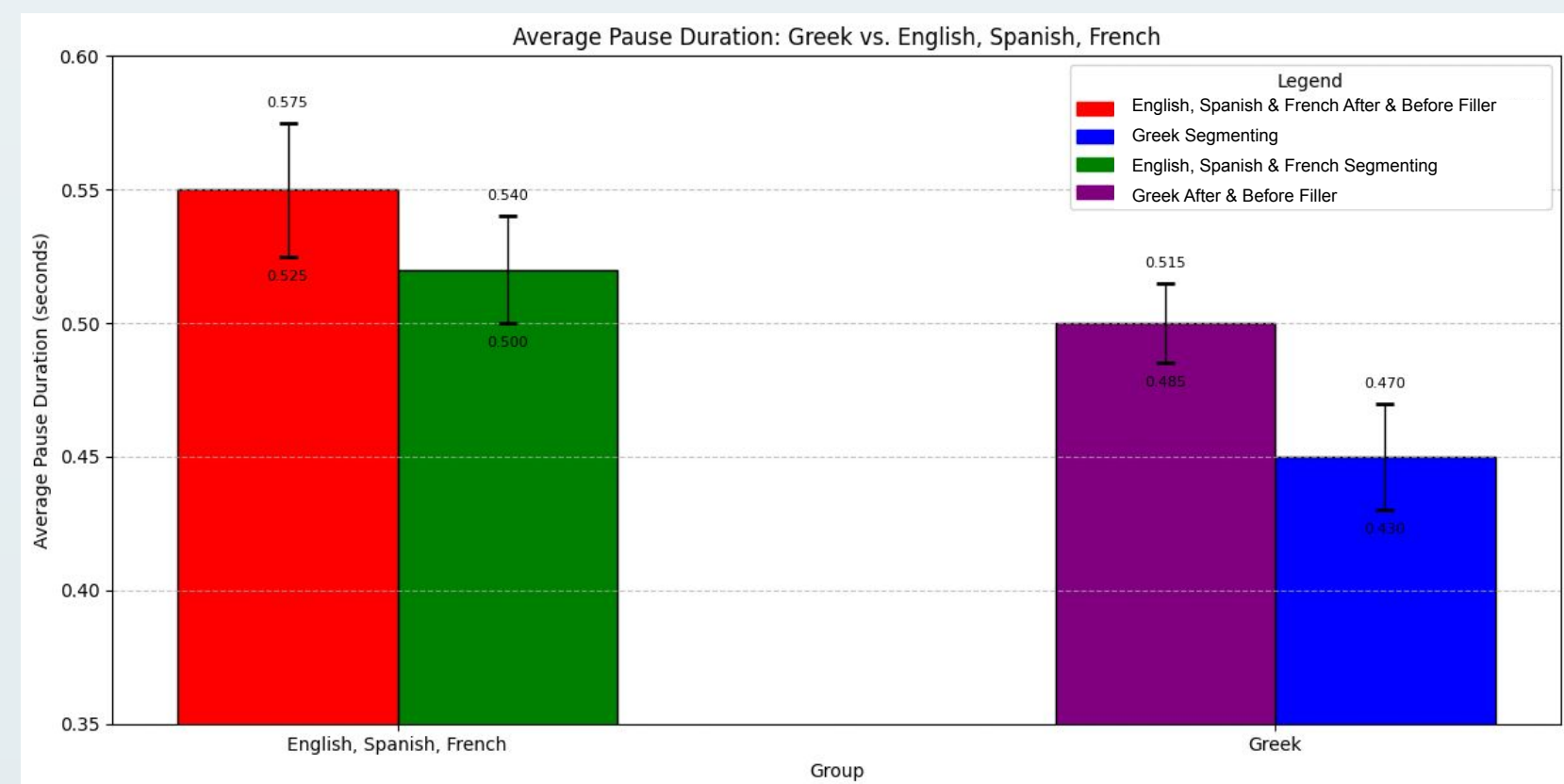


Figure 4. Comparison of the deviation between the length and type of pause in Greek compared to the same values averaged between English, Spanish, and French.

There was a tendency for segmenting pauses to be shorter than pauses associated with fillers. This effect was strongest for Greek speakers ($p=.001$). The effect wasn't significant for English, Spanish and French ($p=.36$). This may reflect the influence of culture on the use of pauses in the different languages.

Conclusion

The significant differences found in pause lengths were present between languages, pause types, and gender. Hindi has shorter pause lengths than the other languages. Segmenting pauses tended to be shorter than the other two pause types, and this difference was particularly pronounced for speakers of Greek. We also found a significant gender differences. In English, women tended to pause longer than men. In Spanish and French, men paused longer than women. Thus, pause lengths depend on several linguistic and cultural factors. We can further test the impact of language families on pause lengths by sampling a larger set of speakers from a broader set of languages.

Acknowledgements

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