Overview

Thanks to technology, our world is becoming a close community where researchers can draw from and contribute to a collective knowledge base. At the root of this global community is communication. The better we can learn how to communicate, the better we can collaborate. Therefore, the tools and resources developed to expedite this process will undoubtedly lay the foundation for stronger international collaborations.

TipTapTones: Aural Training for Language Learners

What
A one-minute “micro-game” that runs on learners’ mobile phones and provides an efficient, effective, and enjoyable way to train the brain to identify and differentiate between new phonetic categories.

Why
Word perception is very important for learners and perceiving the nuances of tonal languages is very difficult for non-native speakers. The importance of understanding this tonal sound system is highlighted in the example of “ma”, which when spoken in the first thorough fourth tones “má”, “mà”, “má”, and “má” (as indicated by the diacritic marks), can refer to the words of mother, hemp, horse, and scold. Tones are not the only difficulty, however. Each syllable is segmented into an initial consonant sound followed by a final sound which can sound very similar to the non trained listener (i.e., chen vs. zhan).

How
Microgame - one minute, 3 speeds, 3 levels, match Mandarin sounds with correct tones and syllables
- Level 1 (fig 1b): match Mandarin sound to tone (4 sound tasks, 4 options per task, 3 correct on each to continue).
- Level 2 (fig 1c): match tone and correct syllable (4 sound tasks, 8 options per task, 3 correct on each to continue).
- Level 3 (fig 1d): match tone and correct syllable (4 sound tasks, 16 options per task, 6 correct to finish game).

SpatialEase: Language Learning through Body Motion

What
A Kinect game for the embodied learning of language that is grounded in space and motion. In this game, learners respond to audio commands in the second language by moving their bodies in space, while a game mechanic associated with correct responses provides meaningful feedback.

Why
Learning words in a second language is hard, but mastering grammatical constructions that require a change in native-language thought patterns is even harder. For example, in the case of native English speakers learning Chinese, the command “move your left hand to the right” translates to a word order of “to the right, move you left hand”. How inspired by the traditional “Simon says” school game and Rosetta Stone’s “picture-like” minimal different scenarios (i.e., “This boy | girl is (eating | drinking)”). Our focus on form adaptation encourages a beneficial shift from semantic to syntactic processing.

SpatialEase - Level 2, Chinese commands follow the pattern “move your {left | right} | {pair} | {hand | foot} | {head | body}”, giving 3 words and 7 meaningful constructions.
- Level 2, Chinese commands follow the pattern “towards {up | down | left | right | front | back} move your {left | right} | {pair} | {hand | foot | body}”, giving 7 new words and 24 meaningful constructions.

Research Questions
1. How do inference-based approaches (both Rosetta Stone and SpatialEase) compare with instruction-based approaches (e.g., textbooks, podcasts, flashcards)?
2. How does the picture-based learning of Rosetta Stone compare with the body-based learning of SpatialEase?
3. How does the lesson-based learning of Rosetta Stone compare with the game-based learning of SpatialEase?
4. How can the embodied learning of SpatialEase generalize beyond the language of body movement?

Results / Discussion
Overall, we had 8 individuals participate in a 2 hour study and found measurable single-session learning gains from our novel SpatialEase game that were comparable to the gains from using Rosetta Stone, with average vocabulary improvements of 6.4 and SpatialEase and 5.6 for Rosetta Stone, and average grammar improvements of 7.6 and 8.5 respectively. Additionally, it was reported that the inference based learning model was not "boring".

II. International Experience

Working in the Cloud
Hold Tight
Hold Tighter
Yangshou, China

III. Collaborative Growth

Currently, I am interested in the dynamics of interaction amongst collaborative communities and my research this summer examined and developed various means to better facilitate said interaction. It would have been almost impossible to further this research agenda had I not worked with researchers in China. I expect to continue this relationship for many years as they helped me grow personally and professionally.

III. Acknowledgement

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