

# Events Boundary Effects on Speech in Physical and Virtual Reality Environments

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Speech-language pathologists (SLPs) provide rehabilitative services for persons with communication disorders such as aphasia and apraxia of speech. Both of these disorders disrupt an individual's ability to communicate. While SLPs often see strides of progress during session work, the progress may not carry over to other environments, such as home. The carryover from therapy to real life is referred to as generalizations and is often difficult for people with aphasia. One possible reason for this may be that patients are changing learning contexts, which has an impact on memory and speech, especially for older adults. Event cognition states that the mind automatically separates events, often by physical boundaries. We wanted to see if event cognition effects on memory and speech production, which have been found in physical reality, could also be found in a virtual reality environment. To test this, we created a virtual replica of our physical laboratory to allow experiment building and testing of memory and speech production in both the physical and virtual environments. In addition, a table and moveable picture cards, matching the physical picture cards used in the laboratory setting, allowed for basic experiments concerning memory and speech to be carried out in both the physical and virtual realities.

We are currently collecting data related to event cognition and the event boundary effect using the virtual environment. Experimental studies include replicating the speech production findings of Meagher and Fowler (2014). Meagher and Fowler found that the initial length of time to produce the word was longer and became shorter as the participant remained in that environment. However when they switched to a new environment or room the time to produce the words increased and had a duration that resembled the initial production in the first environment. Results of this study may have implications for better understanding event cognition effects on speech production, which, in turn, may impact generalization in speech therapy for individuals with aphasia or apraxia of speech.

## Statement of Research Advisor

Brianna led the development of a project combining speech-language pathology, psychology, and computer science. The virtual reality platform developed has potential to be adapted for many further research investigations.

*-Dallin J. Bailey, Speech Language, and Hearing Sciences*

## References

Meagher, B. R., & Fowler, C. A. (2014). Embedded articulation: shifts in location influence speech production. *Language, Cognition, and Neuroscience*, 29(5), 561-567.