

Learning words with unfamiliar sounds in VR environments

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Overview

- Virtual Reality (VR)
 - Immersive environment, computer-generated
 - VR used by community groups and education institutions for language education (Symonenko, 2019)
- Language learning
 - Language learners' pronunciation improves when provided with a visual aid for pronunciation (Blis et al., 2018)
 - Harder to learn words with two unfamiliar sounds than one unfamiliar sound (e.g. /fəXa/ vs. /foXa/) (Johnson et al., 2018)

Question

Do people learn words with unfamiliar sounds better when they are in an environment in which they are aware of the presence of a similar sound?

Methods

Participants

- Recruited in AltspaceVR and online
- Expecting 10-14 participants
- > 18 yr/ old
- English first language speakers
- Randomly assigned to one of two worlds

Materials

- Equipment
 - PC & Oculus headset
- Software
 - AltspaceVR
 - OBS - recording
- Stimuli (below)
 - Paragraph describing made-up language
 - Nonce words for animals in Lula Jargon

Language Passage Excerpt

"Lula jargon is a language that has evolved into a common language for a group of biologists researching forest animals on the west-coast of Canada. It contains elements of many other languages as a result of the diverse source languages that influenced its creation. This diversity has rendered the language equally difficult for newcomers to learn. For speakers from any given background, some features of the language will be the same and others will be completely foreign."

Control group: "Some sounds may be unfamiliar to native speakers of English; these are heard in words for many of the local forest animals."

Experimental group: "Some sounds may be unfamiliar to native speakers of English; these come from the environment, such as the sound of water in a creek or crackling of a fire."

Table 1. Subset of Nonce Words for Animals

Animal	Nonce Word
Brown bear	tufa
Rabbit	fik'a
Eagle	taʔu
Coyote	tuk'a

Design

- Condition: language sounds - environment connection

Procedure

- Introduction task: Participants heard language passage
- Training task: watched a training video
 - Saw an animation of each animal and heard the name for it, repeated 4 times
- Break: 60 second break to roam the space
- Testing task: Participants...
 - moved around world to animals grouped in 3
 - heard the name of an animal
 - were instructed to go to the named animal
 - were asked questions about their experience

Figure 1. Experimental VRE



Figure 2. Control VRE



Results

- T-tests will be conducted on response accuracy for word recollection in each world condition

Discussion

- Thus far 2 participants have completed the experimental condition
 - Felt present and relaxed during task
 - Participants strategically thought about the environment sounds when memorizing words
 - Lower recall accuracy for words with 2 unfamiliar sounds

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