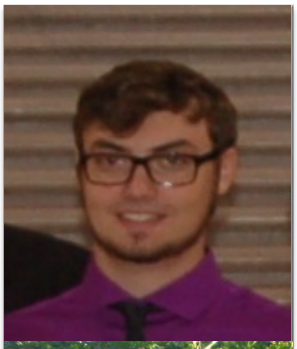

MODELING SELF-ORGANIZED CATEGORY FORMATION AND SELECTIVE ATTENTION TRAINING FOR FRICATIVE PERCEPTUAL CUES

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For fricative perception, it is largely agreed that there are two primary perceptual cues: frication noise and formant transition. These two cues are weighted differently for listeners in distinguishing specific contrasts. In English, for example, frication noise is the dominant cue used in discriminating the sibilant contrast /s/~/ʃ/, while formant transition is the dominant cue used for the non-sibilant contrast /f/~/θ/. It has been demonstrated that listeners are able to be influenced by training in the lab, resulting in temporary selective attention being given to a single cue they have been trained to use, regardless of the contrast. By creating a simulation of the fricative perceptual space, we determine that this simulation is able to arrive at the expected selective attention for one cue based on special "training" of the simulation to favor it, reinforcing exemplar models of perception in general.

This simulation was based upon similar models used in analysis of other acoustic spaces, such as vowels, in which constraints within the system give rise to a self-organizing categorization of the space resembling its categorization in human perception. New exemplars were categorized based upon their distance from the each category's average, and were moved toward that average by a magnet warping effect. Training consisted of providing two sets of exemplars distinguished only across a single dimension, with categorization based upon these sets occurring after standard warping effects from the existing clouds. Based upon the amount of training received relative to the size of the initial categories, the perceptual space was altered to favor the trained for dimension by varying degrees, similar to the results of human studies.