

**Department of Communication Sciences and Disorders
COLLEGE OF ALLIED HEALTH SCIENCES AND SOCIAL WORK**

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 1, 2014

The Department of Communication Sciences and Disorders is pleased to offer the following research project for the summer of 2014. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.

Project Title: VISUAL FEEDBACK AND PERCEPTION OF SPEECH SOUND ERRORS

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Project Description

While traditional speech sound therapy is effective for many children, there is a small group who does not respond. These children are described as having residual sound errors (RSE). A common error for children with RSE is /r/, which many cannot remediate even after years in therapy. It has been hypothesized that these children have an overly-broad mental representation of acoustic targets, leading to incorrect categorization of error productions as correct. Ultrasound biofeedback provides children with a method of self-monitoring their productions visually, leading to increases in correct productions. Yet, it is not clear if ultrasound biofeedback is refining children's perception abilities along with productions. Most studies of ultrasound biofeedback have not tested children's perceptions, possibly due to the difficulty of precisely defining acoustic /r/ targets. Recently, a method has been applied to define the threshold below which the third formant of /r/ must drop, leading to a target that is individualized for children's vocal tracts. This method can be used with natural speech stimuli to investigate the mismatch between children's /r/ production and perception. The long-term objective of this study is to determine factors in ultrasound biofeedback treatment that improve /r/ productions in children with RSE. This study hypothesizes that ultrasound therapy will improve perceptual categorization for /r/ in some children, and that the therapy will have best outcomes when the client has refined *perceptual categorization abilities* (defined here as the ability to distinguish between correct and incorrect productions).

The purpose of this study is twofold: (1) Describe the perceptual categorization abilities of children with RSE before and after ultrasound biofeedback intervention and (2) Describe the relationship of perceptual categorization abilities with production abilities for children with RSE. Research questions related to these purposes are: Will children' perceptual categorization of "correct" and "incorrect" /r/ sounds improve after ultrasound therapy? Will children' higher scores in perceptual categorization tests result in more correct /r/ productions?

Project Elements for the WISE scholar

- Prepare stimuli for experiment: cut list of files and assist in programming presentation software
- Observe consent process and keep notes during process of experimentation
- Collect data
- Arrange data using Excel post-processing methods
- Generate preliminary data analysis

Background characteristics of the WISE scholar

An interest in speech perception and production