DEPARTMENT OF COMMUNICATION SCIENCES AND DISORDERS
COLLEGE OF ALLIED HEALTH SCIENCES

SUMMER RESEARCH OPPORTUNITIES FOR UNDERGRADUATE WOMEN

APPLICATION DEADLINE: 03/01/2020

PROJECT TITLE: <u>Characterizing token-to-token production variability in Jamaican Creole- and English-speaking preschoolers: An exploratory study</u>

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Project Description

1. Area of the research (Bilingualism/multilingualism)
Bilingual children are routinely misdiagnosed for speech sound disorders (SSD). Under-diagnosis put children at risk for academic and career achievement, while over-diagnosis, which occurs in up to 9% of cases puts children at risk for social stigma and has been associated with a cost to the system of $10,000/misdiagnosed child[1]. The proportion of speech-language pathologists (SLPs) working with bilingual children is steadily increasing[2], but research-based tools for clinical management of SSD in bilingual speakers have not kept pace with this growth[3]. This need is particularly pressing in the context of understudied language combinations – languages interact differently depending on their typological properties, and by focusing on a relatively small set of well-documented cases (e.g., Spanish-English) we risk arriving at an overly narrow model of bilingual speech development and disorders. By studying children acquiring Jamaican Creole (JC) and English, we aim to benefit an underserved population[4] while also broadening our theoretical understanding of bilingual development.

We propose to model bilingual speech development using the Articulatory Map (A-map[5]). Though initially proposed in a monolingual context, the A-map model indirectly posits a possible mechanism to explain interaction between the phonetic production inventories of two languages developing in parallel[6]. Recent research suggest that token-to-token production variability may be useful in diagnosing SSD in bilinguals[7]. However, even for monolinguals, there is debate over what level of variability should be considered typical[8,9], and whether measures should be acoustic- or transcription-based. In the bilingual case, the situation is further complicated in that bilingual input may have intrinsically higher

variability, particularly when the input languages overlap phonologically and lexically[10]—as is true for a creole language and its lexifier[11] (e.g., JC).

The long-term goal of this research is to arrive at a theoretically coherent understanding of how speech production development differs in bilingual versus monolingual learners, with the goal of developing improved diagnostic markers for bilingual learners. Using transcription-based measures of accuracy and variability across repeated productions, we will test the predictions of the A-map model in a sample of bilingual children (3-to-4-yrs) acquiring JC and English, as well as a matched monolingual English-speaking sample. Statistical modeling of the relative contributions of acoustic- and transcription-based measures of variability and accuracy will be used to identify the optimal diagnostic criteria for bilingual JC-English speakers.

Specific Aim: Document accuracy and variability in children's speech production in bilingual and monolingual contexts. We will compare token-to-token variability in JC-English bilingual child productions versus a previous monolingual English corpus10, controlling for expressive vocabulary size. We hypothesize that bilinguals will show greater variability and equivalent accuracy to monolinguals, and that both samples will show significant tradeoffs between accuracy and variability as predicted by the A-map.

2-3. Research tasks training, specific requirements of WISE scholar:
• Complete IRB (#2013-6345) procedures
• Complete mentored training sessions, including a directed reading list and review resources, as well as learn about reliability/statistical procedures
• Organize/enter data, complete transcriptions
• Support dissemination activities

4. Background Characteristics of WISE scholar (specific requirements):
• CSD background
• CITI training