CANDIDATE STATEMENT

Track Record:

Previous training in clinical and translational research. My research questions are based in my experiences as a speech-language pathologist. During this time, I worked at a school for children with significant medical disabilities and complex communication needs, including cerebral palsy (CP). However, I found limited evidence-based resources to support my clinical decision-making to accurately diagnose and determine a prognosis for speech development in these children. As a doctoral student, I developed foundational knowledge in understanding the theoretical framework to study typical and atypical infant vocal development across populations. Since beginning my postdoctoral training at the Waisman Center in 2021, I have developed a strong relationship with my Primary Mentor, Dr. Katherine Hustad to study speech and communication development in children with CP. I have also conducted two preliminary studies examining perceptual features of infant vocalizations. However, it is critical that we work together, alongside the consultants of my proposal, to expand this line of work to study acoustic variables of infant vocalizations to expand the clinical and translational nature of my research.

Research opportunities. I have participated in all stages of clinical research including obtaining participant consent and assent, data collection, participant retention, data analysis and management, manuscript writing, and scientific conference presentation. I have broadly contributed to many other aspects of the research process, including conceptualization of studies, and project planning using rigorous methods. These experiences have been largely conducted in a laboratory setting and I aim to expand my research to engage clinical providers and the broader public. However, to-date, I have had no explicit training in clinical and translational research methods and outcomes. My programmatic line of research has clear potential to directly support speech-language pathologists and the broader community, including families of children with disabilities and other medical providers. Therefore, I am seeking a third year of postdoctoral training through the UW-Madison ICTR TL1 program to further enhance my skills in topics relating to my research, as well as in clinical and translational research methods, mentorship, grant writing, and in the responsible conduct of research. This training is critical to successfully reach my long-term goals (described below) and to continue to conduct research supporting earlier detection of speech motor impairments in infants at risk for CP.

Productivity. To-date, I have contributed to 14 manuscripts (7 as first author) and presented first-authored research 21 times across 9 national and international annual conferences. I am presently collaborating on three manuscripts in preparation (2 as first author, 1 as middle author) within and outside of my laboratory. I have peer reviewed 8 manuscripts across multidisciplinary journals since 2020. An extra year of training and participation in the activities described in my Individual Development Plan will expand the translational nature of my research and to ensure that I am a competitive applicant to a research-intensive university.

Grants/Awards. I was selected as an awardee of the highly competitive Waisman Center T32 postdoctoral training program, which has supported the first two years of my postdoctoral training under the mentorship guidance of Dr. Katherine Hustad. At the beginning of my postdoctoral training (2021), I was awarded an NIH Loan Repayment Award. In 2022, I was awarded the New Investigators Research Grant ($10,000) through the American-Speech-Language Hearing Foundation. I also applied and was selected to participate in the Pathways Program in 2021, an early career professional development program, and Lessons for Success in 2023, an intensive grant writing workshop, through the American Speech-Language-Hearing Association. I will write a K grant application during the TL1 project period which demands preliminary data from my proposed research plan in order to extend my research efforts across the translational research continuum.

Career Objectives:

Long-term translational research career goals. My programmatic line of research aims to leverage vocal biomarkers of speech motor impairment to develop clinically translatable diagnostic tools for early detection. My proposed research meets criteria for the T1 classification of the translational research continuum; however, explicit training through the TL1 program will expand my ongoing productivity conducting research in the T2-T3 domains to develop diagnostic tools, practice guidelines for diagnosis, and public health materials on clinical red flags for impairment to support referrals and screening of infants at risk for CP. Long term, I aim to drive the clinical and translational nature of my research in two parallel directions.

First, the perceptual study of infant vocalizations can offer evidence-based solutions to improve clinical screening of early vocal milestones in infants at risk using parent-reported interviews. Thus, I aim to develop parent-reported diagnostic and screening tools to flag potential risk or presents of speech motor impairment in infants at risk for CP. This work has great potential to expand across the translational research continuum (T2-T4) to develop educational resources for families and general medical practitioners to identify risk factors that necessitate earlier referrals to speech-language pathologists.

Second, the acoustic study of infant vocalizations can drive the development of automated tools to detect and analyze vocalizations using all-day recording methods. Existing methods only crudely count the number of child vocalizations and adult speech; however, there is great potential to expand these tools to conduct fine-grained analyses of vocalization acoustic parameters to further expand my research across the continuum (T2-T3). The efforts proposed in this research project are critical to drive research across these areas.

Public Health Impact. The successful completion of this research and training plan will directly support the future development of clinically translatable diagnostic tools to support earlier detection of speech motor impairment in infants at risk for CP, and possibly other neurological disorders. This work will greatly impact children and their families with developmental disabilities. Specifically, the early identification of any level of speech impairment is critical to support 1) caregiver awareness of developmental red flags, 2) medical practitioner knowledge of red flags to screen and refer infants at risk to speech pathologists, and 3) drive interventions supporting access to alternative communication methods. This work is critical to improve communication participation outcomes and quality of life in children with CP throughout the lifespan.

Participation in TL1 postdoctoral program. As part of the TL1 postdoctoral program, I intend to conduct the research project as described in the Research Plan and actively participate in activities supporting my short-term and long-term research and career goals. Specifically, I will receive additional training from my Primary Mentor and consultants to conduct the acoustic and statistical analyses of the proposal in which I require additional mentorship. Also, I will receive training across broad topics in clinical and translational research and outcomes, responsible conduct of research, mentorship, and grant writing. These training activities are critical to becoming a competitive applicant for NIH funding and to obtain a tenure-track research faculty position at a research-intensive university.

Short-Term Research Goals:

1. Acquire expertise in acoustic analysis and statistical modeling of vocal predictors and speech outcomes
2. Develop conceptual knowledge across topics in clinical and translational research:
    a. Clinical and Translational Outcomes
    b. Dissemination and Implementation
    c. Diverse Community and Stakeholder Engagement
3. Conduct and promote responsible and ethical research
4. Enhance mentorship skills for developing an inclusive and supportive laboratory
5. Refine grant writing skills to successfully apply for a K award by the end of the project period

Long-Term Career Goals:

1. Obtain a tenure-track research faculty position in a department of communication sciences and disorders at UW-Madison or other research-intensive university
2. Obtain K and future R funding to conduct my programmatic line of clinical and translational research
3. Develop clinically translatable diagnostic tools to detect speech motor impairment in infants with CP

Due to the maximum 3-year training requirement for NIH National Research Service Award (NRSA) Fellowships, I am requesting one year of additional postdoctoral salary support through the ICTR TL1 program following two years of T32 training to support my learning across topics as described. I have carefully selected and outlined a series of workshops and seminars to expand my knowledge and research skills to meet each goal during the duration of a 1-year project period, as described and outlined in my Individual Development Plan. Specifically, I will participate in a variety of activities sponsored throughout UW-Madison, including offerings through outside conferences, the Waisman Center, Delta Program, and ICTR to achieve these goals.