School of Communication
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December 1, 2020

Department of Academic Affairs and Research Education
American Speech-Language Hearing Association National Office
2200 Research Boulevard
Rockville, MD 20850, USA

To the Pathways Advisory Committee:

I am pleased to submit the attached application in consideration for the 2021 ASHA Pathways Program. I recently passed my doctoral dissertation defense in October 2020 under the advisement of Dr. D. Kimbrough Oller at the University of Memphis and I am scheduled to formally graduate in December 2020.

My clinical research interests are in the area of **prelinguistic indicators of speech impairments in children with neurodevelopmental disorders such as cerebral palsy**. This line of study is deeply rooted in my experience as a speech-language pathologist (SLP). During my experience as a school-based SLP, I learned that there is little evidence on the topic of preverbal and early speech developmental trajectories in children with complex communication needs. This realization first led me to pursue a doctoral degree with Dr. Kim Oller, one of the leading researchers in the field of prelinguistic vocal development. My dissertation evaluated the social and non-social nature of infant vocalizations throughout the first year of life and how these sounds can be used by caregivers to gather information about their child's development.

In the spring of 2021, I will begin a postdoctoral fellowship with Dr. Katie Hustad at the University of Wisconsin-Madison. In this experience, I aim to expand my predoctoral training to evaluate differences in prelinguistic and early speech developmental trajectories among children at risk for cerebral palsy to assist in the prediction of later speech impairments.

Participation in the Pathways Program in the early stages of my research career will be a fundamental building block toward the development of an independent line of research and subsequent laboratory as I transition into a tenure-track faculty member position. Your consideration of this application is greatly appreciated, and I am honored to be a member of such a supportive field of research.

Sincerely,

Helen Long, PhD, CCC-SLP

Helen Long, PhD, CCC-SLP
Research Assistant
School of Communication Sciences and Disorders
University of Memphis
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BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES**.

NAME: Long, Helen Lauren

eRA COMMONS USERNAME (credential, e.g., agency login): hlong1

POSITION TITLE: Research Assistant

EDUCATION/TRAINING *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)*

INSTITUTION AND LOCATION	DEGREE *(if applicable)*	Completion Date MM/YYYY	FIELD OF STUDY
Indiana University, Bloomington, IN, USA	BA	05/2010	Speech and Hearing Sciences; Slavic Languages and Literature
Florida State University, Tallahassee, FL, USA	MS	08/2012	Speech-Language Pathology
University of Memphis, Memphis, TN, USA	PhD	12/2020	Communication Sciences and Disorders

A. Personal Statement

The Pathways Program is designed to foster research success through mentorship and training of promising early career research scientists. My long-term research goal is to identify early indicators of speech impairments in children with neurodevelopmental disorders such as cerebral palsy. Throughout my Bachelor's and Master's programs in communication sciences and disorders, I participated in research assistantships studying the pitch shift reflex and voice disorders with Dr. Teri Burnett at Indiana University and word and speech sound variability with Dr. Toby Macrae at Florida State University. After working as a school-based speech-language pathologist in a school for children with significant medical disabilities, I became interested in early speech development of children with complex communication needs. I began a doctoral program at the University of Memphis studying with one of the top researchers in the field of infant vocal development, Dr. Kim Oller. My experiences in Dr. Oller's laboratory provided a strong foundation for understanding the typical emergence of prelinguistic vocal stages in human infants. Furthermore, I was offered the invaluable opportunity to use longitudinal and observational research methods to track children's developmental trajectories. I have contributed to six publications out of Dr. Oller's laboratory (two in submission) including three first-authored publications. During my doctoral program, I have independently collaborated with the local children's hospital in Memphis, Tennessee to initiate a project tracking prelinguistic milestones in young children with cerebral palsy in preparation for my transition in becoming an independent researcher. To complete my formal research training, I will begin a postdoctoral fellowship in the Spring of 2021 with one of the leading researchers of communication development in cerebral palsy, Dr. Katie Hustad, at the University of Wisconsin-Madison. Through this fellowship I aim to receive mentorship in developing an independent line of research evaluating prelinguistic vocal development and communication developmental trajectories in children with complex communication needs, specifically cerebral palsy. My goal in participating in the 2021 ASHA Pathways Program is to build my skillset in grant writing and to maximize a productive early research career plan in preparation for a smooth transition into a tenure-track research faculty position at a university with high research activity.

B. Positions and Honors

Positions and Employment

2009-2010 Undergraduate Research Assistant, Voice Physiology Laboratory, Department of Speech and Hearing Sciences, Indiana University
2010-2012 Teaching Assistant, Distance Learning Program, School of Communication Sciences and Disorders, Florida State University
2011-2012 Graduate Research Assistant, Experimental Phonetics Laboratory, School of Communication Sciences and Disorders, Florida State University
2015-2020 Research Assistant, Origin of Language Laboratory, School of Communication Sciences and Disorders, University of Memphis
2016-2017 Teaching Assistant, School of Communication Sciences and Disorders, U. of Memphis
2017-2018 Lecturer, School of Communication Sciences and Disorders, University of Memphis

Other Experiences and Professional Memberships

2009-2012 Member, National Student Speech-Language Hearing Association
2012-2014 Speech-Language Pathologist, Easter Seals Massachusetts
2013- Member, American Speech-Language Hearing Association
2014- Speech-Language Pathologist, Invo-Progressus Healthcare, Shelby County Schools
2014-2015 Mentor, ASHA S.T.E.P. Program
2016-2020 Member, Institute for Intelligent Systems Student Organization, University of Memphis
2018- Membership Committee, American Academy for Cerebral Palsy and Developmental Medicine
2019- Member, International Congress of Infant Studies
2020- Co-Founder, CSDisseminate

Honors

2006-2010 H. Fullmer Faculty Scholarship Award, Indiana University
2011 Dr. Avery Vaughn Scholarship Fund for Excellence, Florida State University
2012 Outstanding 2nd Year Master's Student Award, Florida State University
2012 Red Apple Award for Outstanding School Personnel, Southborough Education Foundation
2019 S.P. Wong Award for Best Presentation in Statistical Application, University of Memphis
2020 OrthoPediatrics™ Travel Scholarship (Merit-based), American Academy for Cerebral Palsy and Developmental Medicine
2020 Celebrate Student Success Award, University of Memphis
2020 Graduate Student Association President Service Award, University of Memphis

C. Contribution to Science

1. **Infant vocalizations as fitness signals:** My doctoral research and dissertation evaluated the role of social and endogenous factors influencing infant vocalizations as fitness signals. This line of research offers an innovative perspective on the ways in which parents can gather information about the progress of their child's development. Specifically, I investigated the reliability of listener judgments of the degree of infant vocal imitativeness as a measure of the saliency of potential vocal fitness signals. I found high intra- and inter-rater agreement among listeners, suggesting vocal imitation has the potential to be used as a signal of fitness in early development. I also quantified the extent to which infants produce vocalizations socially vs endogenously (non-socially) across settings. I observed high rates of endogenously produced sounds which may result from evolutionary pressures to signal wellness to caregivers through vocalization. Finally, I examined social and endogenous motivations in the emergence of advanced vocal forms in infants at low and high risk for autism. The findings highlight a potentially robust internal motivation for the production of advanced vocal forms, even in the presence of likely social-cognitive differences such as risk for autism. This line of research supports the notion of robust evolutionary pressures for infants to signal fitness through vocalization.

a. **Long, H.L.,** Oller, D.K., & Bowman, D. (2019). Reliability of listener judgments of infant vocal imitation. Frontiers of Psychology, *Developmental Psychology, 10,* 1340. doi.org/10.3389/fpsyg.2019.01340
b. **Long, H. L.,** Bowman, D., Yoo, H. J., Burkhardt-Reed, M. M., Bene, E. R., & Oller, D. K. (2020). Social and endogenous infant vocalizations. *PLoS ONE, 15*(8), e0224956. doi.org/10.1371/journal.pone.0224956

Other Publications (currently under peer review)

c. **Long, H. L.,** Ramsay, G., Bowman, D., Burkhardt-Reed, M. M., & Oller, D. K. (in submission). Social and endogenous motivations in the emergence of canonical babbling: An autism risk study. *BioRxiv,* [Preprint]. doi.org/10.1101/2020.10.09.333872

2. **Evolutionary origins of language:** In addition to the publications listed above, I have also contributed to projects studying the evolutionary origins of language. This line of research is founded in the notion that the stages of prelinguistic vocal abilities follow a natural logic of development foundational to advanced linguistic skills in humans. In these studies, we observed newborn and even preterm infants produce high rates of vocalizations which serve as an early foundation for vocal language. Gesture is often thought of as a foundation for language; however, we found that infants produce far higher rates of vocalization than gesture, supporting the theory that language is founded in the vocal domain. Across sexes, we observed a greater tendency for higher vocal volubility in males at earlier ages but no sex differences in canonical babbling development, suggesting a robust mechanism for prelinguistic speech development.
   a. Oller, D. K., Griebel, U., Bowman, D. D., Bene, E. R., **Long, H. L.,** Yoo, H., & Ramsay, G. (2020). Infant boys are more vocal than infant girls. *Current Biology, 30*, R417-29. doi.org/10.1016/j.cub.2020.03.049
   b. Oller, D. K., Caskey, M., Yoo, H. J., Bene, E. R., Jhang, Y., Lee, C.-C., Bowman, D., **Long, H. L.,** Buder, E. H., & Vohr, B. (2019). Preterm and full-term infant vocalization and the origin of language. *Scientific Reports, 9,* 14734. doi.org/10.1038/s41598-019-51352-0

   Other Publications (currently under peer review)

   c. Burkhardt-Reed, M., **Long, H. L.,** Bowman, D., Bene, E. R., & Oller, D. K. (in submission). The relative roles of voice and gesture in early communication development.

3. **Prelinguistic vocal development in infants with cerebral palsy:** I have independently initiated data collection at a local children's hospital to build an archival dataset on prelinguistic speech and language developmental milestones in young children diagnosed with cerebral palsy. At present, I have collected data on ~40 young children between 1-4 years of age diagnosed with cerebral palsy with follow-up data after 3-6 months to track their developmental trajectories. I have presented preliminary data on this project at several conferences and I plan to expand this dataset throughout my postdoctoral fellowship and publish forthcoming manuscripts on research collected through these efforts. I am also completing a multiple case study following two infants at-risk for cerebral palsy over 12 months to evaluate their longitudinal canonical babbling emergence.
   a. Hidecker, M. J. C. & **Long, H. L.** (2020, September 23-26). *When to refer: Early indicators for communication concerns in cerebral palsy* [Seminar]. Virtual American Academy of Cerebral Palsy and Developmental Medicine 74th Annual Meeting.
   b. **Long, H. L.,** Oller, D. K., Friener, L., Romer, K., & Rhodes, L. N. (2020, August 7-8). *Mastery of prelinguistic milestones in young children with cerebral palsy* [Poster]. Virtual Cerebral Palsy Early Detection and Implementation Conference.
   c. **Long, H. L.,** Eichorn, N., & Oller, D. K. (2020, February 19-23). *Canonical babbling in infants at-risk for cerebral palsy: A longitudinal multiple case study* [Poster]. Motor Speech Conference, Santa Barbara, CA, United States.

Complete List of Published Work in MyBibliography:
https://www.ncbi.nlm.nih.gov/myncbi/1RMPzPxaXG8Qm/bibliography/public/

D. Additional Information: Research Support and/or Scholastic Performance

Scholastic Performance

YEAR	COURSE TITLE	GRADE
	FLORIDA STATE UNIVERSITY	
2010	Professional Tools in Speech Language Pathology I	A
2010	Speech and Swallowing Disorders	A
2010	School-Age Issues	A
2010	Lab in Adults with Speech and Language Diagnoses	A
2010	Seminar in Differential Diagnosis	A
2010	Beginning Speech Language Pathology Practicum	S
2011	Professional Tools in Speech Language Pathology II	A
2011	Neurolinguistic/Cognitive Disorders	A
2011	Management of Hearing Impairments	A
2011	Foundations in Developmental Communication Disorders	A
2011	Advanced Clinical Practicum	A
2011	Voice Disorders	A
2011	Advanced Clinical Practicum	A
2011	Lab in Child Speech-Language Diagnostics	A
2011	Seminar in Dysphagia	A
2011	Community Clinical Practicum	A
2011	Fluency Disorders	A
2011	Clinical Practicum in the Schools	A
2011	Counseling of Speech Language Disorders	A
2011	Augmentative Communication Systems	A
2012	Motor Speech Disorders	A
2012	Community Clinical Practicum	A
2012	Seminar in Neuropathology	A
2012	Introduction to the Atmosphere	A
2012	Speech-Language Pathology Internship	S
	THE UNIVERSITY OF MEMPHIS	
2015	Independent Project in Speech Language Pathology	A
2015	Phonological Disorders	A
2015	Language Disorders in Children	A
2015	Speech Science	B
2015	Independent Reading in Speech Language Pathology	A
2015	Early Childhood Development	A
2015	Statistical Methods in Applied Education I	A
2016	Seminar in Communication Sciences	A
2016	Independent Project in Speech Language Pathology	A
2016	Statistical Methods in Applied Education II	A
2016	Seminar in Experimental Psychology	A
2016	Professional Preparation for Scientists	A
2016	Qualitative Methods in Education	A
2016	Behavioral Analysis & Case Design	A
2016	Independent Reading in Speech Language Pathology	A
2016	Research Design & Methods	A
2016	Behavioral Neuroscience	A
2017	Neurological Bases in Communication	B

YEAR	COURSE TITLE	GRADE
2017	Professional Preparation for Scientists	A
2017	Nonparametric Statistics in Applied Education	A
2017	Independent Reading in Speech Language Pathology	A
2017	Independent Project in Speech Language Pathology	A
2017	Seminar in Communication Sciences	A
2018	Independent Project in Speech Language Pathology	A
2018	Multivariate Methods in Education	A
2018	Seminar in Cognitive Science	A
2018	Professional Preparation for Scientists	A
2018	Teaching Experience	S
2019	Comprehensive Examination	S
2020	Dissertation	S

Florida State University: A grade of "S" indicates satisfactory completion of coursework (pass). Passing is D or better.
The University of Memphis: A grade of "S" indicates satisfactory completion of coursework (pass). Passing is D or better.

E. Additional Information: Extramural Research Support Currently Under Review

N/A

F. Additional Information: Extramural Research Support Not Funded

F31 DC018468 Helen Long (PI) 2019/04/08
Infant Vocal Development of Clinical Populations in Social and Non-Social Contexts
The goal of this research proposal was to longitudinally assess the effect of parent interaction and endogenous activity on prelinguistic vocal development in typically developing infants as well as those in two clinical populations, autism and cerebral palsy.
Role: PI

New Century Scholars Doctoral Scholarship, ASHFoundation 2019/05/08
Infant Vocal Development in Typically Developing and Clinical Populations
This research plan sought to evaluate the influence of parent interaction and endogenous vocal activity on prelinguistic vocal development in infants at 6, 9, and 12 months of age.
Role: PI

PhD Student Scholarship, CAPCSD 2019/11/15
Prelinguistic Speech, Language, and Communication Profiles in Infants At-risk for Cerebral Palsy
This research proposal aims to compare early prelinguistic speech, language, and communication development in young children diagnosed and at-risk for CP to typically developing children using valid parental report assessments already designed for clinical use.
Role: PI

G. Additional Information: Intramural Research Support

N/A

Research Interest

In 150 words or less, provide a summary of your research interest(s)

The long-term goal for my research career is to study the emergence of prelinguistic vocal development in infants and young children with neurodevelopmental disorders such as cerebral palsy (CP). This line of research aims to evaluate 1) early indicators of speech impairments during the first year of life, and 2) vocal developmental patterns that persist throughout early childhood in nonverbal or low verbal children. By studying the trajectory of preverbal abilities in this population, we have the potential to improve clinical diagnostic decision-making and treatment planning for children with complex communication needs.