BIOGRAPHICAL SKETCH

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NAME: Long, Helen Lauren

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

POSITION TITLE: Postdoctoral Trainee

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	Completion Date	FIELD OF STUDY
Indiana University, Bloomington, IN, USA	BA	05/2010	Speech & Hearing Sciences; Slavic & Eastern European Languages & Culture
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
University of Wisconsin, Madison, WI, USA	Postdoc	In progress	Communication Sciences and Disorders

A. Personal Statement

I am applying to the UW-Madison ICTR TL1 postdoctoral training program to support my training in clinical and translational research under the advisement of Dr. Katherine Hustad in the Waisman Center. Following two years in the Waisman T32 program, I am seeking one final year of postdoctoral training though the TL1 program to extend the translational nature of my programmatic line of research in the identification of vocal biomarkers of speech impairment in infants at risk for cerebral palsy (CP). This training is critical to support my development as a competitive, independent investigator at a research intensive university in a communication sciences and disorders department. My research questions are based in my clinical experience as a speech-language pathologist. I completed my doctoral training with Dr. D. Kimbrough Oller, a leading researcher in the field of infant vocal development. This experience instilled a strong theoretical framework to ground my study of vocal developmental trajectories in typically developing children and children at risk for communication impairments. I have received world-class mentorship from Dr. Katherine Hustad at the Waisman Center during the first two years of my T32 postdoctoral training. During this time, I have studied speech and communication developmental trajectories in older children with CP. I have also conducted preliminary studies examining vocal characteristics of infants at risk for CP. Through this work, we found early evidence of delays in the emergence of syllables with well-formed consonantal characteristics. We hypothesize that this may be early evidence of dysarthria, and reduced speech intelligibility. However, additional research is needed to quantify this work using acoustic measures. Throughout my pre- and postdoctoral training, I have contributed to 14 manuscripts (7 as first author) and 33 presentations (22 as first author) across 9 national and international annual conferences. To-date, my research has used subjective, perceptual methods to study child vocalizations. A key component of my work necessitates learning more objective methods of analysis, particularly instrumental acoustic analysis, to support the translational nature of my work for the future development of automated vocal detection tools. The proposed mentorship team—Dr. Hustad (Primary Mentor) and Significant Contributors: Drs. Bunton (Univ. of Arizona) and Mahr (data scientist, Hustad lab, Waisman Center)—are dedicated to support my training in acoustic parameters of infant vocalizations. This team is well qualified and available to support this project during the proposed time frame. A third year of postdoctoral training is critical to refine the clinical and translational nature of my research and ground my independence as an investigator at a research intensive university. Long-term, my work will directly inform the development of clinically translatable diagnostic tools to support the early detection of speech impairments in CP.

1. **Long HL**, Mahr TJ, Natzke P, Rathouz PJ, Hustad KC. Longitudinal change in speech classification between 4 and 10 years in children with cerebral palsy. Dev Med Child Neurol. 2022;64(9):1096-1105. doi: 10.1111/dmcn.15198. PMID: 35262181.
2. **Long, HL,** Eichorn, N, & Oller, DK. A probe study on vocal development in two infants at risk for cerebral palsy. Dev Neurorehab. 2022. doi: 10.1080/17518423.2022.2143923
3. **Long HL,** Hustad KC. Marginal and Canonical Babbling in 10 Infants at Risk for Cerebral Palsy. Am J Speech Lang Pathol. 2023 Feb 9;:1-15. doi: 10.1044/2022_AJSLP-22-00165. [Epub ahead of print] PubMed PMID: 36758205; NIHMSID:NIHMS1875472.

B. Positions, Scientific Appointments, and Honors

Positions and Scientific Appointments

2021-	Postdoctoral Researcher, Wisconsin Intelligibility, Speech, and Communication laboratory (PI: Hustad), Waisman Center, University of Wisconsin-Madison
2015-2020	Research Assistant, Origin of Language Laboratory (PI: Oller), University of Memphis
2014-2021	Speech-Language Pathologist, Invo-Progressus Therapy
2012-2014	Speech-Language Pathologist, Easter Seals Massachusetts
2011-2012	Research Assistant, Experimental Child Phonetics Laboratory (PI: Macrae), Florida State University
2009-2010	Research Assistant, Voice Physiology Laboratory (PI: Burnett), Indiana University-Bloomington

Other Experience and Professional Memberships

2023	Scientific Review Committee, Society for Research in Child Language Disorders, Conference
2022-	Postdoctoral Representative, Committee on Disability Access and Inclusion
2021	Scientific Review Committee, American Academy for Cerebral Palsy and Developmental Medicine, Annual Meeting
2021-	Speech and Language Sciences Review Committee, American Speech-Language-Hearing Association Convention
2021-	Scholarship Review Committee, American Academy for Cerebral Palsy and Dev. Medicine
2018-	Membership Committee, American Academy for Cerebral Palsy and Developmental Medicine
2020-	Ad hoc reviewer: J Speech Lang Hear Res; Dev Med Child Neurol; Dev Neurorehabil, etc.
2020-	Co-founding collaborator, CSDisseminate
2019-2021	Member, International Congress of Infant Studies (ICIS)
2018-	Member, American Academy for Cerebral Palsy and Developmental Medicine (AACPDM)
2013-	Member, American Speech-Language Hearing Association (CCC-SLP)
2009-2012	Member, National Student Speech-Language Hearing Association

Honors

2023	ASHA Lessons for Success
2022	ASHFoundation New Investigators Research Grant ($10,000)
2022-	NIH Loan Repayment Award
2022-	Waisman Center Morse Society Scholar
2021-	NICHD T32 Postdoctoral Program Awardee (PI: Hartley), Waisman Center
2021	ASHA Pathways Program
2020	Graduate Student Association President Service Award, University of Memphis
2020	Celebrate Student Success Award, University of Memphis
2020	OrthoPediatrics™ Scholarship, American Academy for Cerebral Palsy and Dev. Medicine
2019	S.P. Wong Award for Best Presentation in Statistical Application, University of Memphis
2015-2016	Al Chymia Shriners Award, Shrine School SLP Department ($25,000)
2012	Red Apple Award for Outstanding School Personnel, Southborough Education Foundation
2012	Outstanding 2nd Year Master's Student Award, Florida State University

2011 Dr. Avery Vaughn Scholarship Fund for Excellence, Florida State University
2006-2010 H. Fullmer Faculty Scholarship Award, Indiana University

C. Contributions to Science

1. **Evolutionary origins of language.** My doctoral dissertation examined how infants vocally signal information about their developmental capacity and progress to caregivers. Broadly, this work was conducted through an evolutionary-developmental biology (evo-dev) theoretical framework to support our understanding of how humans evolved to communicate using language. My dissertation revealed three key findings. First, infant vocal imitation is rare in the first year of life—yet highly salient to listeners—underscoring its potential to be used as a vocal signal of developmental information for caregivers. Second, infants produce nonsocial vocalizations ~3x more frequently than social ones, indicating independent vocal play as a primary driver of the development of articulatory properties of speech. Last, although infants vocalize the most during independent vocal play, we found that they produce their most developmentally advanced vocal forms during social periods, offering further support for infants' capacity to signal their most complex levels of ability to caregivers in periods of direct attention.

    a. **Long HL,** Oller DK, Bowman DA. Reliability of listener judgments of infant vocal imitation. Front Psychol. 2019 Jun 11;10:1340. doi: 10.3389/fpsyg.2019.01340. PMID: 31244735; PMCID: PMC6579846.
    b. **Long HL,** Bowman DD, Yoo H, Burkhardt-Reed MM, Bene ER, Oller DK. Social and endogenous infant vocalizations. PLOS ONE. 2020 Aug 5;15(8):e0224956. doi: 10.1371/journal.pone.0224956. PMID: 32756591; PMCID: PMC7406057.
    c. Oller DK, Ramsay G, Bene E, **Long HL,** Griebel U. Protophones, the precursors to speech, dominate the human infant vocal landscape. Philos Trans R Soc Lond B Biol Sci. 2021 Oct 25;376(1836):20200255. doi: 10.1098/rstb.2020.0255. PMID: 34482735; PMCID: PMC8419580.
    d. **Long HL,** Ramsay G, Griebel U, Bene ER, Bowman DD, Burkhardt-Reed MM, Oller DK. Perspectives on the origin of language: Infants vocalize most during independent vocal play but produce their most speech-like vocalizations during turn taking. PLoS One. 2022;17(12):e0279395. doi: 10.1371/journal.pone.0279395. PMID: 36584126; PMCID: PMC9803194.

2. **Infant vocal development in clinical populations.** During my doctoral training, I independently sought experiences to study early vocal development in infants at risk for communication disorders. The last paper in my dissertation examined canonical babbling in infants at risk for autism. Our findings suggested a potential robust internal motivation to produce a high rate of canonical syllables in both social and nonsocial contexts, even in the likely presence of autism. I also supported an external project evaluating vocal development in tuberous sclerosis. We found delayed canonical babbling and a low rate of their canonical syllable production compared to typical expectations. These findings indicate a critical need for further study of prelinguistic vocal patterns in more clinical populations relative to later outcomes.

    a. Gipson TT, Ramsay G, Ellison EE, Bene ER, **Long HL**, Oller DK. Early Vocal Development in Tuberous Sclerosis Complex. Pediatr Neurol. 2021 Dec;125:48-52. doi: 10.1016/j.pediatrneurol. 2021.08.009. PMID: 34628143; PMCID: PMC8557126.
    b. **Long, HL**. Endogenous and social factors influencing infant vocalizations as fitness signals. 2020. Doctoral dissertation, The University of Memphis.

3. **Speech, and communication development in cerebral palsy**. My postdoctoral training with Dr. Hustad has provided a unique opportunity to longitudinally examine speech and communication development in CP using an existing database of ~150 children ranging in ages from 6 months to 18 years (including ~50 infants with data under 24 months). During the first year of my postdoctoral experience, I studied communication and speech development in school-aged children with CP. Data from two studies in which I was involved has highlighted that children with any level of speech impairment require access to AAC as early as possible. These experiences have built the foundation to continue to develop a research program blending my doctoral and postdoctoral training to study vocal behaviors predictive of any level of speech impairment in CP, as young as infancy.

a. Koopmans C, Sakash A, Soriano J, **Long HL**, Hustad KC. Functional Communication Abilities in Youth With Cerebral Palsy: Association With Impairment Profiles and School-Based Therapy Goals. Lang Speech Hear Serv Sch. 2022;53(1):88-103. doi: 10.1044/2021_LSHSS-21-00064. PMID: 34767477.
b. **Long HL**, Mahr TJ, Natzke P, Rathouz PJ, Hustad KC. Longitudinal Change in Speech Classification Between 4 and 10 Years in Children with Cerebral Palsy. Dev Med Child Neurol. 2022;64(9):1096-1105. doi: 10.1111/dmcn.15198. PMID: 35262181.

4. **Preliminary studies of vocal production of infants at risk for cerebral palsy.** Throughout my pre- and postdoctoral experiences, I have led two preliminary studies examining vocal biomarkers of speech impairment in CP. First, I independently initiated a collaboration with a local neuromuscular clinic to study speech and language milestones in CP during my doctoral program. We found that children with more severe communication impairments have achieved fewer prelinguistic vocal milestones. I also independently initiated a case study examining vocal production in two infants at risk for CP during my doctoral training. Both infants produced a low proportion of advanced vocalizations between 5-16 months compared to a sample of ten typically developing infants. Last, I examined two types of vocalizations with different levels of devopmental complexity in ten infants at risk for CP from Dr. Hustad's existing laboratory dataset. We found a higher proportion of less developmentally complex syllables in infants later diagnosed or suspected of having CP, but a higher proportion of more developmentally complex syllables in infants whose motor delays later resolved. These studies offer preliminary support for the hypothesis that children later diagnosed with CP (and likely speech impairments) are likely to present with atypical vocal developmental patterns in infancy.
   a. **Long, HL,** Oller, DK, Romer, K, Friener, L, Warner, W, Spence, D, & Rhodes, LN. Pre-Speech and Early Speech Development of Young Children Diagnosed with Cerebral Palsy. [Abstract]. Dev Med Child Neurol, 2020 Oct;62,Suppl. 3:79-134. doi: 10.1111/dmcn.14662
   b. **Long HL,** Eichorn N, Oller DK. A Probe Study on Vocal Development in Two Infants at Risk for Cerebral Palsy. Dev Neurorehabil. 2023 Jan;26(1):44-51. doi: 10.1080/17518423.2022.2143923. PMID: 36335437; PMCID: PMC9822870.
   c. **Long HL,** Hustad KC. Marginal and Canonical Babbling in 10 Infants at Risk for Cerebral Palsy. Am J Speech Lang Pathol. 2023;1-15. doi: 10.1044/2022_AJSLP-22-00165. PMID: 36758205.

5. **Open science practices in communication sciences and disorders (CSD).** A secondary line of research in which I have enthusiastically participated throughout my training is in the study of the use and barriers of open science practices among CSD scientists. Our survey study revealed low knowledge but a high desire to understand and learn more about open science practices across CSD scientists. A second study examined the societal and scholarly impact of openly accessibile manuscripts published in the ASHA Journals, a publisher of four CSD journals. We found that fully open licensed manuscripts ("gold open access") and author-shared accepted manuscripts ("green open access") received more citations and higher altmetric scores—a measure of online attention—than "closed" or paywalled manuscripts. These studies highlight a growing need to incentivize and promote open science practices across scientists in the field of communication sciences and disorders.
   a. El Amin M, Borders JC, **Long HL,** Keller MA, Kearney E. Open Science Practices in Communication Sciences and Disorders: A Survey. J Speech Lang Hear Res. 2022 Nov 23;:1-20. doi: 10.1044/2022_JSLHR-22-00062. PMID: 36417765.
   b. **Long HL,** Drown L, El Amin M. The Effect of Open Access on Scholarly and Societal Metrics of Impact in the ASHA Journals. J Speech Lang Hear Res. 2023 Jan 4;:1-10. doi: 10.1044/2022_JSLHR-22-00315. PMID: 36599100.

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