



School of Communication  
Sciences and Disorders

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January 19, 2021

Postdoctoral Training Program Advisory Committee  
Waisman Center Intellectual and Developmental Disabilities Research Center  
1500 Highland Avenue  
Madison, WI 53705

To Sigan Hartley, PhD:

I am pleased to submit the attached application in consideration for the postdoctoral training program in intellectual and developmental disabilities research at the University of Wisconsin-Madison under the advisement of Katherine Hustad, PhD, CCC-SLP.

The goal of my proposed postdoctoral training is to study prelinguistic speech development in young children with cerebral palsy. This objective is deeply rooted in my clinical experiences as a speech-language pathologist (SLP) and in my research training during my doctoral program at the University of Memphis.

As an SLP, I worked at a school for children with complex communication needs, many of whom had autism and cerebral palsy. When asked by parents and colleagues about speech prognoses of these children, I quickly realized that there is a lack of research on pre-speech and early speech development in these populations, especially young children with cerebral palsy. This realization led me to first pursue a PhD under the advisement of Dr. D. Kimbrough Oller, one of the leading scientists in the field of infant vocal development. My doctoral work provided a strong foundation in my understanding of the emergence of speech in typical development. In the proposed postdoctoral training program, I plan to extend my research to study early signs of speech impairments in cerebral palsy under 24 months of age with one of the top researchers of communication development in this population, Dr. Katie Hustad.

This postdoctoral experience will provide invaluable time and resources to initiate an independent research career in this area. Following this training program, I will be a competitive applicant for tenure-track research faculty positions in the field of communication sciences and disorders.

Your time and consideration of this application is greatly appreciated.

Sincerely,

*Helen Long, PhD, CCC-SLP*

Helen Long, PhD, CCC-SLP

**Post-Doctoral Training Program in Intellectual and Developmental Disabilities Research  
Application for Admission**

**Date of Application:** 1/19/2021

**CONTACT INFORMATION**

**Name:** Long, Helen, L  
(Last, First, Middle Initial)

**Gender:** F

**Current Mailing Address:** Street: 256 Lombardy Pl Apt 1

City: Memphis

State: TN

Zip Code: 38111

Phone (incl. area code): (617)

997-6055

**E-mail address where you can be reached now and in the future (Please list a gmail, yahoo or other address you will keep permanently vs. your current institutional email):**

helenlong@outlook.com

**Permanent Home Address** (if different than above)

Street: See above City:

State:

Zip/Postal Code:

Phone (include area or country codes):

**PERSONAL INFORMATION**

**Date of Birth:** 04/24/1988 **Place of Birth:** Huntsville, AL, USA (City, State, Country)

**Citizenship:** *NIH requires postdocs in this program to be U.S. citizens, non-citizen nationals, or permanent residents by the time of appointment. Please check one:*

- ☒ U.S. Citizen  
☐ Non-Citizen National ([explanation of this status](#))  
☐ Permanent Resident

**Ethnicity:** (specify only if you are a US citizen or permanent resident) [optional]

- ☐ Hispanic/Latino Origin  
☒ Not of Hispanic/Latino Origin

**Race:** (specify only if you are a US citizen or permanent resident) [optional]

- ☐ American Indian or Alaska Native (A person having origins in any of the original peoples of North and south America, including Central America, who maintain tribal affiliation or community attachment)  
Tribal Affiliation:  
☐ Black or African American (A person having origins in any of the black racial groups of Africa)  
☐ Asian (A person having origins in any of the original peoples of the far east, southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, The Philippines, Thailand, and Vietnam)  
☐ Native Hawaiian or other Pacific Islander (A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific islands)  
☒ White (A person having origins in any of the original peoples of Europe, the Middle East, or North Africa)  
☐ Biracial or Other Ethnic Specify:

## **EDUCATION**

List all post-secondary colleges and graduate and professional schools you have attended, including UW-Madison, beginning with most recent:

Institution	Location (city, state, country)	Field of Concentration	Degree granted or expected (Diploma, certification)	Dates Attended
University of Memphis	Memphis, TN, USA	Communication Sciences & Disorders	PhD	Jan 2015 - Dec 2020
Florida State University	Tallahassee, FL, USA	Speech-Language Pathology	MS	Aug 2010 - Aug 2012
Indiana University	Bloomington, IN, USA	Speech & Hearing Sciences; Slavic Languages & Culture	BA	Aug 2006 - May 2010

**Dissertation Title:** Endogenous and social factors influencing infant vocalizations as fitness signals

**Current status in doctoral program** (check one):

- ☒ Successfully defended dissertation – list date: 10/14/2020, graduated 12/2020  
☐ Dissertation written – date defense is scheduled:  
☐ Dissertation research completed - anticipated date of defense:  
☐ Other (please explain)

**Members of your dissertation committee and department affiliations (specify chair):**

Name	Department Affiliation
1. <u>D. Kimbrough Oller (Chair)</u>	<u>School of Communication Sciences &amp; Disorders</u>
2. <u>Dale D. Bowman</u>	<u>Department of Mathematics</u>
3. <u>Naomi Eichorn</u>	<u>School of Communication Sciences &amp; Disorders</u>
4. <u>Ulrike Griebel</u>	<u>Department of Biology</u>
5. _____	_____

**References (3-4):** Please list the individuals you have asked to submit letters of recommendation (full name, title, and E-Mail address). One letter should come from your dissertation chair. Letters should be sent by each individual as a pdf directly to Dr. Sigan Hartley, PhD., at [schafer@waisman.wisc.edu](mailto:schafer@waisman.wisc.edu):

1. D. Kimbrough Oller, PhD, [koller@memphis.edu](mailto:koller@memphis.edu) (dissertation chair)
2. Katherine Hustad, PhD, CCC-SLP, [katie.hustad@wisc.edu](mailto:katie.hustad@wisc.edu)
3. Naomi Eichorn, PhD, CCC-SLP, [neichorn@memphis.edu](mailto:neichorn@memphis.edu)
4. Gordon Ramsay, PhD, [gordon.ramsay@emory.edu](mailto:gordon.ramsay@emory.edu)

**Please indicate how you learned about this position.** It is important for future recruitment of postdocs to this program.

Shared by anticipated postdoctoral research mentor, Katie Hustad

**To complete your application:** Submit this form as part of one pdf containing all of the information listed on the website in the order indicated to Sigan Hartley, PhD at [schafer@waisman.wisc.edu](mailto:schafer@waisman.wisc.edu).

## **INFORMATION ABOUT DISABILITY ACCOMMODATION FOR COMPLETING THIS APPLICATION**

Consideration for this position requires completion of this application, as well as submitting all other materials in pdf format, as described in the job posting. Phone contact may be necessary for finalists. If you need a reasonable accommodation in order to complete the application materials or participate in a phone conversation, you may contact Eric Schafer at 608-263-2328. *Note that you are not required to indicate whether or not you need an accommodation to perform the traineeship.*

An individual with a disability is defined by the Americans with Disabilities Act (ADA) as a person who has a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment. Please see the ADA website for questions and answers about job applicant accommodations: <http://www.eeoc.gov/facts/jobapplicant.html#accommodation>.

The Waisman Center encourages qualified individuals with disabilities to apply.

## HELEN L. LONG, PhD, CCC-SLP

### Research Assistant

University of Memphis

School of Communication Sciences and Disorders

[hlong@memphis.edu](mailto:hlong@memphis.edu)

[www.helen-long.com](http://www.helen-long.com)

### EDUCATION

PhD	2020	<b>University of Memphis</b> , Memphis, TN, USA Communication Sciences and Disorders Origin of Language Laboratory, D. Kimbrough Oller, PhD
MS	2012	<b>Florida State University</b> , Tallahassee, FL, USA Speech-Language Pathology Experimental Phonetics Laboratory, Toby Macrae, PhD, CCC-SLP
BA	2010	<b>Indiana University</b> , Bloomington, IN, USA <i>Majors:</i> Speech and Hearing Sciences, Slavic and Eastern European Language and Cultures; <i>Minors:</i> Psychology, Linguistics Voice Physiology Laboratory, Teresa Burnett, PhD, CCC-SLP

### RESEARCH AREAS OF INTEREST

Evolutionary origin of language; prelinguistic vocal development; early indicators of speech and language impairments; developmental disorders of primary interest: cerebral palsy, autism

### PUBLICATIONS

- Gipson, T. T., Ramsay, G., Ellison, E. E., Bene, E. R., **Long, H. L.**, & Oller, D. K. (in submission). Early vocal development in tuberous sclerosis complex.
- Burkhardt-Reed, M. M., **Long, H. L.**, Bowman, D. D., Bene, E. R., & Oller, D. K. (in submission). The relative roles of voice and gesture in early communication development. *BioRxiv*, [Preprint].  
[doi.org/10.1101/2020.12.07.415232](https://doi.org/10.1101/2020.12.07.415232)
- Long, H. L.**, Ramsay, G., Bowman, D. 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](https://doi.org/10.1101/2020.10.09.333872)
- Long, H. L.**, Bowman, D. D., Yoo, H., 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](https://doi.org/10.1371/journal.pone.0224956)
- 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](https://doi.org/10.1016/j.cub.2020.03.049)
- Oller, D. K., Caskey, M., Yoo, H., Bene, E. R., Jhang, Y., Lee, C.-C., Bowman, D. 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](https://doi.org/10.1038/s41598-019-51352-0)
- Long, H. L.**, Oller, D. K., & Bowman, D. D. (2019). Reliability of listener judgments of infant vocal imitation. *Frontiers of Psychology*, 10, 1340. [doi.org/10.3389/fpsyg.2019.01340](https://doi.org/10.3389/fpsyg.2019.01340)

## MANUSCRIPTS IN PREPARATION

- Oller, D. K., Ramsay, G., Bene, E. R., **Long, H. L.**, & Griebel, U. (in preparation). Speech-like sounds dominate the human infant vocal landscape.
- Long, H. L.**, Eichorn, N., & Oller, D.K. (in preparation). Canonical babbling development in infants at-risk for cerebral palsy: A multiple case study.

## DOCTORAL DISSERTATION

- Long, H. L.** (2020). *Endogenous and social factors influencing infant vocalizations as fitness signals*. [Unpublished doctoral dissertation]. University of Memphis. <https://osf.io/5ck6u/>

## CONFERENCE PRESENTATIONS

- Hidecker, M. J. C., & **Long, H. L.** (2020, November 19-21). *Understanding communication disorders in cerebral palsy using the ICF framework from the World Health Organization* [Seminar]. American Speech-Language Hearing Association Annual Convention, San Diego, CA. (Conference canceled)
- Long, H. L.**, Allen, E., Friener, L., Eichorn, N., & Oller, D. K. (2020, November 19-21). *Assessing language emergence in cerebral palsy using the LENA Developmental Snapshot* [Poster]. American Speech-Language Hearing Association Annual Convention, San Diego, CA. (Conference canceled)
- \***Long, H. L.**, Burkhardt-Reed, M. M., & Oller, D. K. (2020, October 22-23). *Quantifying the nature of vocal and gestural activity in infants across the first year* [Poster]. 2020 Many Paths to Language (mPaL) Virtual Workshop.
- \*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 74<sup>th</sup> Annual Meeting.
- \***Long, H. L.**, Oller, D. K., Romer, K., Friener, L., Warner, W., Spence, D., & Rhodes, L. N. (2020, September 23-26). *Pre-speech and early speech development of young children diagnosed with cerebral palsy* [Poster]. Virtual American Academy of Cerebral Palsy and Developmental Medicine 74<sup>th</sup> Annual Meeting.
- \***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.
- \***Long, H. L.** & Oller, D. K. (2020, July 6-9). *Do infants use more social or non-social protophones? An opinion survey and observational study* [Poster]. Virtual International Congress of Infant Studies XXII Bicentennial Congress.
- Long, H. L.**, Ramsay, G., & Oller, D. K. (2020, May 28-30). *The influence of interaction on advanced vocal stages in typical and atypical social development* [Poster]. Symposium on Research in Child Language Disorders, Madison, WI. (Conference canceled)
- 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
- Long, H. L.**, Ramsay, G., Bowman, D., Yoo, H. J., Burkhardt-Reed, M. M., Bene, E. R., & Oller, D. K. (2019, November 21-23). *Assessing infant vocal production across interactive and non-interactive contexts in ASD and typical development: Preliminary data from the University of Memphis/Emory University sibling study* [Symposium]. American Speech-Language Hearing Association Annual Convention, Orlando, FL.
- Long, H. L.**, Eichorn, N., & Oller, D. K. (2019, November 21-23). *Possible early indicators for speech impairments in infants at risk for cerebral palsy* [Poster]. American Speech-Language Hearing Association Annual Convention, Orlando, FL.

- Yoo, H. J., Ha, S., Bowman, D., Ramsay, G., **Long, H. L.**, Lee, C.-C., & Oller, D. K. (2019, November 21-23). *A cross-language investigation of clustering of infant vocalizations across the first year of life* [Poster]. American Speech-Language Hearing Association Annual Convention, Orlando, FL.
- Burkhardt-Reed, M. M., **Long, H. L.**, & Oller, D. K. (2019, November 21-23). *Gesture in early communication development: Relative roles of voice and gesture across the first year of life* [Symposium]. American Speech-Language Hearing Association Annual Convention, Orlando, FL.
- Oller, D. K., & **Long, H. L.** (2019, November 7-10). *Endogenous production of vocal precursors to speech across the first year* [Symposium]. Boston University Conference on Language, Boston, MA.
- Long, H. L.**, Bowman, D., & Oller, D. K. (2018, November 15-17). *Reliability of listener judgments of infant imitation* [Poster]. American Speech-Language Hearing Association Annual Convention, Boston, MA.
- Long, H. L.**, & Oller, D. K. (2017, November 9-11). *Vocal matching and imitation in infancy* [Poster]. American Speech-Language Hearing Association Annual Convention, Los Angeles, CA.
- Long, H. L.**, & Oller, D. K. (2017, November 9-11). *Vocal imitation and matching in infants* [Symposium]. American Speech-Language Hearing Association Annual Convention, Los Angeles, CA.
- Lee, C.-C., Chen, L. M., Chen, L. W., Lin, Y. C., **Long, H. L.**, & Oller, D. K. (2017, November 9-11). *A preliminary study of mean duration of utterance and vocalization rate in infants with cerebral palsy* [Symposium]. American Speech-Language Hearing Association Annual Convention, Los Angeles, CA.
- Lee, C.-C., **Long, H. L.**, Jhang, Y., Yoo, H. J., Chen, L. M., & Oller, D. K. (2016, November 17-19). *Effects of social & non-social circumstances on canonical babbling ratios in English- & Chinese-learning infants* [Poster]. American Speech-Language Hearing Association Annual Convention, Philadelphia, PA.
- Long, H. L.**, Oller, D. K., Ramsdell-Hudock, H., & Bene, E. (2016, November 17-19). *Imitative and vocally adaptive behavior in infants through twelve months* [Poster]. American Speech-Language Hearing Association Annual Convention, Philadelphia, PA.

\*Virtual presentations publicly available at: <https://osf.io/6w2nq/>

## CONFERENCE PRESENTATIONS IN SUBMISSION/PREPARATION

- Yoo, H., Ramsay, G., Bowman, D. D., Ha, S., **Long, H. L.**, & Oller, D. K. (2021, May 5-8). *Phonatory control in typically developing infants and infants at risk for autism*. [Research Panel]. Annual Meeting for the International Society for Autism Research, Boston, MA.
- Long, H. L.**, Ramsay, G., Bowman, D. D., Burkhardt-Reed, M. M., & Oller, D. K. (2021, May 5-8). *Social and endogenous motivations of canonical babbling development in infants at low and high risk for autism*. [Research Panel]. Annual Meeting for the International Society for Autism Research, Boston, MA.
- Long, H. L.**, Ramsay, G., Bowman, D. D., Burkhardt-Reed, M. M., & Oller, D. K. (2021, June 3-5). *Social and endogenous motivations in the emergence of canonical babbling: An autism risk study*. [Research Panel]. Symposium on Research in Child Language Disorders, Madison, WI.

## INTRAMURAL PRESENTATIONS

### University of Memphis

- Long, H. L.** (2020, October 14). *Endogenous and social factors influencing infant vocalizations as fitness signals*. Dissertation Defense. School of Communication Sciences and Disorders, University of Memphis.
- Long, H. L.**, Oller, D. K., Bowman, D. D., Ramsay, G. (2020, October 2). *Social and endogenous motivations in the emergence of canonical babbling: An autism risk study*. PhD Research Colloquium, School of Communication Sciences and Disorders, University of Memphis.

- Long, H. L.,** Oller, D. K., Bowman, D. & Ramsay, G. (2020, April 16-17). *Social factors influencing advanced vocal development in typical and atypical development*. University of Memphis Student Research Forum.
- Long, H. L.** (2020, March 20). *Vocal development in cerebral palsy: State of the science and future directions*. PhD Research Colloquium, School of Communication Sciences and Disorders, University of Memphis. (Series canceled)
- Long, H. L.,** Eichorn, N., Bowman, D., & Oller, D. K. (2019, April 12). *A preliminary analysis of prelinguistic vocal development in infants at-risk for motoric disorders*. IIS Research Speed Date, Institute for Intelligent Systems, University of Memphis.
- Long, H. L.,** Eichorn, N., Bowman, D., & Oller, D. K. (2019, March 25). *A longitudinal evaluation of canonical babbling development in infants at-risk for cerebral palsy: A multiple case study*. University of Memphis Student Research Forum.
- Long, H. L.,** Bowman, D., & Oller, D. K. (2018, March 28). *Assessing listener perceptions of vocal imitation using measures of reliability*. University of Memphis Student Research Forum.
- Long, H. L.,** & Oller, D. K. (2017, October 27). *Vocal imitation and matching in infants*. CSD Research Colloquium [Pre-Candidacy Project], School of Communication Sciences and Disorders, University of Memphis.
- Long, H. L.,** & Oller, D. K. (2017, March 27). *Overall proportions of vocal matching and social directivity of infant protophones at 3, 6, and 10 months*. University of Memphis Student Research Forum.

## INVITED TALKS

- McDaniel, V., **Long, H. L.,** Yoo, H., Patro, C., & Constantino, C. (in preparation). *Insight on the transition following doctoral work: Professional preparation as an early career research scientist*. PhD Research Colloquium, School of Communication Sciences and Disorders, University of Memphis.
- Long, H. L.,** Ramsay, G., Bowman, D., Burkhardt-Reed, M. M., & Oller, D. K. (2020, November 30). *Social and endogenous motivations in the emergence of canonical babbling: An autism risk study*. Laboratory seminar at the Eleanor J. Gibson Laboratory of Developmental Psychology, Cornell University.
- Long, H. L.,** Oller, D. K., Romer, K., Friener, L., Warner, W., Spence, D., & Rhodes, L. N. (2020, September 23). *Pre-speech and early speech development of young children diagnosed with cerebral palsy*. Poster Crawl with Past Presidents, American Academy of Cerebral Palsy and Developmental Medicine 74<sup>th</sup> Annual Meeting.
- Long, H. L.,** Eichorn, N., Bowman, D., & Oller, D. K. (2019, April 25). *Using GEEs to evaluate longitudinal vocal development in infants at risk for cerebral palsy*. S. P. Wong Applied Statistics Research Day, Department of Mathematics, University of Memphis.
- Long, H. L.** (2019, April 19). *Tips and strategies for submitting an F31 proposal*. PhD Research Colloquium, School of Communication Sciences and Disorders, University of Memphis.
- Long, H. L.** (2019, March 28). *Why I decided to get a graduate degree*. Graduate School Lightning Talks, University of Memphis.
- Hinds, V. & **Long, H. L.** (2014, September 19). *Strategies for teaching augmentative and alternative communication in the schools*. Professional Development Day for Speech-Language Pathologists and Speech Therapists, Shelby County Schools, Memphis, TN.

## WORKSHOPS

- Spratford, M., **Long, H. L.,** Harold, M. P., & Kearney, E. K. (2021, January 11 & 14). *Improve research dissemination through access: Self-archiving 101*. Event hosted by CSDisseminate.

**FUNDING SUPPORT**

Al Chymia Shriners donation to Shrine School. Awarded to SLP departmental use for purchase and installation of assistive technology eye gaze devices for 15 classrooms. 10/15-5/16. \$25,000.

**RESEARCH MENTORING****Graduate SLP student research projects**

University of Memphis, 3 students 2019 – 2021

**AWARDS AND HONORS****University of Memphis**

Graduate Student President Service Award, GSA 2020

Celebrate Student Success Award, GSA 2020

S.P. Wong Award for Best Presentation in Statistical Application, Dept. of Mathematics 2019

**Florida State University**

2012 Outstanding 2<sup>nd</sup> Year Master's Student Award, School of CSD 2012

Dean's List, College of Communication and Information 2011 – 2012

Dr. Avery Vaughn Scholarship Fund for Excellence 2011

**Indiana University**

Mortar Board Senior National Honor Society 2009 – 2010

Dobro Slovo National Slavic Honor Society 2009 – 2010

Dean's List, College of Arts and Sciences 2009 – 2010

H. Fullmer Faculty Scholarship Award 2006 – 2010

Direct Admit Program, College of Arts and Sciences 2006 – 2008

**Travel awards**

OrthoPediatrics© Travel Scholarship, AACPDM Conference 2020

Kathy Yorkston Student Travel Award, Motor Speech Conference 2020

Dean's Research Travel Award, School of CSD, Univ. of Memphis 2020

Scholarly Travel Award, IISSO, Univ. of Memphis 2015 – 2020

Graduate Student Travel Award, GSA, Univ. of Memphis 2015

**Professional**

ASHA Award for Continuing Education (ACE) 2017, 2020

Red Apple Award, Southborough Education Foundation, MA 2012

**TEACHING EXPERIENCE****University of Memphis****Lecturer**

AUSP 4300: Autism Communication and Socialization, 3 cr. Fa 2018

AUSP 7991: Clinical Research Colloquium: Introduction to Research, 1 cr. Fa 2017

**Teaching assistant**

AUSP 7500: Evaluating Research in CSD, Naomi Eichorn, PhD, CCC-SLP 2017, 2020

AUSP 7308: Augmented and Alternative Communication, Vicki Haddix, MS, CCC-SLP Sp 2017

AUSP 4010: Autism: Communication & Socialization, Kim Oller, PhD Sp 2016

**Guest lecturer**

**Long, H.** (2018, December 4). "Development of the Speech Systems." A USP 7003: Anatomy & Physiology of the Speech Mechanism. School of CSD, University of Memphis.

Haddix, V. & **Long, H.** (2017, November 9). "Collaboration in School-Based Settings." A USP 7200: Intro. to Clinical Practice in SLP. School of CSD, University of Memphis.

**Long, H.** (2017, September 5). "Anatomy & Physiology of Swallowing Disorders." A USP 7209: Dysphagia & Related Disorders. School of CSD, University of Memphis.

**Long, H.** (2017, June 26). "Single-Subject Research and Client Performance." A USP 7500: Evaluating Research in Communication Sciences. School of CSD, University of Memphis.

**Long, H.** (2017, July 24). "Qualitative Research and Patient Preferences." A USP 7500: Evaluating Research in Communication Sciences. School of CSD, University of Memphis.

**Long, H.** (2017, April 12). "Cerebral Palsy: Overview and Case Study." A USP 7010: Neurological Bases of Communication Disorders. School of CSD, University of Memphis.

**Long, H.** (2016, February 22). "Interviewing children with cognitive-linguistic deficits." EDPR 7006: Interviewing Children for Research Purposes. Dept. of Coun., Ed. Psych., & Res., University of Memphis.

**Long, H.** (2016, February 17). "Autism spectrum disorder: Assessment and treatment." A USP 4010: Autism: Communication & Socialization, School of CSD, University of Memphis.

**Florida State University****Distance learning teaching assistant**

SPA 5211: Voice Disorders, Richard Morris, PhD, CCC-SLP	Su 2012
SPA 5254: Acquired Neurolinguistic Cognitive Disorders, Joanne Lasker, PhD, CCC-SLP	Sp 2012
SPA 5204: Phonological Disorders, Toby Macrae, PhD, CCC-SLP	Fa 2011
SPA 5009: Language Development and Intervention, Jenny Brown, PhD, CCC-SLP	Su 2011
SPA 5113: Clinical Phonetics, Shannon Hall-Mills, PhD, CCC-SLP	Sp 2011
SPA 5012: Introduction to Communication Sciences; Kerry Lenius, PhD, CCC-SLP	Fa 2010

**CLINICAL EXPERIENCE****Active licensure and certification**

CCC-SLP, American Speech-Language Hearing Association	2013 –
TN Board of Speech-Language Pathology Licensure	2014 –
TN School Services Personnel/Educator's Certification	2017 –

**Employment****Speech-language pathologist**

Invo-Progressus Healthcare, Shelby County Schools, Memphis, TN	2014 –
Global Teletherapy, Tennessee Virtual Academy, TN	2018 – 2019
Easter Seals Massachusetts, State-wide school and medical contracts, MA	2012 – 2014

**Assistive technology team member**

Shelby County Schools, Memphis, TN	2015 – 2018
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**Clinical supervision****Graduate student supervisor**

University clinic diagnostics, Memphis Speech and Hearing Clinic, 4 students	2016 – 2017
Shelby County Schools, Memphis, TN, 1 student	2015

**Clinical fellowship supervisor**

Shelby County Schools, Memphis, TN, 3 fellows

2017 – 2019

**PEER-REVIEW ACTIVITIES****Manuscript reviewer**

Journal of Pediatric Rehabilitation Medicine, 1 paper

2020

**Scientific conference reviewer**

AACPDM Annual Meeting

2021

**SERVICE AND OUTREACH****Professional**[CSDisseminate](#), Co-Founding Creator

2020 –

AACPDM Membership Committee, Member

2020 –

ASHA S.T.E.P. Program, Mentor

2014 – 2015

**University of Memphis**

Institute for Intelligent Systems Student Organization (IISSE), Member

2016 –

Faculty appointments committee, PhD Student Representative

2019 – 2020

Grievance committee, PhD Student Representative

2018

CSD research colloquium speaker series, Coordinator

2018

Dean search committee, PhD Student Representative

2017

Graduate Student Association (GSA), CSD Department Representative

2016 – 2017

CSD curriculum committee, PhD Student Representative

2016 – 2017

**Indiana University**

Best Buddies IU Chapter, Leadership Committee, Membership Coordinator

2008 – 2010

Czech Club, Treasurer

2008 – 2010

Judicial Board, Juror/Internal Affairs Chair

2006 – 2010

**Community**

TN Achieves Program, Mentor

2014 – 2015

Special Session for Adults with Disabilities, Camp McDowell, Counselor/Adult Staff

2004 – 2012

**Media coverage**

Featured in *The Future of CSD Education: PhD Student Profiles*. (2020, December). Now Hear This! News from CSD newsletter, School of Communication Sciences and Disorders, University of Memphis.

Featured in *Meet Our Founders*. (2020, October). @CSDisseminate, Instagram.

Featured in *Why I Decided to Get a Graduate Degree*. (2019, March). Graduate School Lightning Talks. University of Memphis.

**PROFESSIONAL MEMBERSHIPS**

American Speech-Language Hearing Association (ASHA)

2013 –

ASHA Special Interest Group 02: Neurogenic Communication Disorders

2020 –

American Academy for Cerebral Palsy and Developmental Medicine (AACPDM)

2018 –

International Congress of Infant Studies (ICIS)

2019 –

American Academy for the Advancement of Science (AAAS)

2020 –

National Student Speech-Language Hearing Association (NSSLHA)

2009 – 2012

**LAST UPDATED:** 1/5/2021

## **Personal Statement**

### **Interest and goals in postdoctoral training and future plans**

The Waisman postdoctoral research training program is designed to foster research success through mentorship and training of promising early career research scientists in intellectual and developmental disabilities. Through participation in this program, I aim to 1) receive mentorship from faculty in my area of interest as I develop an independent line of research, 2) increase my publication record as an early career scientist, and 3) receive additional training in external grant writing and professional development. Meeting these goals will contribute to my success following this experience as I seek out a tenure-track faculty position in a communication sciences and disorders department with primary responsibilities in research.

My early professional career began as a speech-language pathologist working with children who had complex communication needs secondary to diagnoses such as autism or cerebral palsy. Through this experience, I found limited evidence on the trajectories of speech development in this population to assist in anticipating clinical outcomes. These findings led me to pursue doctoral research training under the advisement of Dr. D. Kimbrough Oller at the University of Memphis to develop a foundational understanding of the typical emergence of prelinguistic vocal stages in human infants. A postdoctoral fellowship will allow me to extend this research scope to study developmental patterns and the trajectories of emergent communication in children with developmental disabilities. My primary disorder of interest is cerebral palsy. For this reason, I seek to pursue postdoctoral mentorship from Dr. Katherine Hustad. Dr. Hustad is an ideal mentor for this line of research as one of the leading researchers in the field of communication sciences and disorders studying communication development in children with cerebral palsy.

At present, I have contributed to nine publications out of Dr. Oller's laboratory (three in submission, two in preparation) including three published first-authored publications. I am also collaborating on several preliminary investigations of early vocal development in disorders such as cerebral palsy (Long et al., 2020), autism (Long et al., in submission), and tuberous sclerosis (Gipson et al., in submission). A postdoctoral fellowship through the Waisman Center is a perfect opportunity to gain additional experience studying a range of intellectual and developmental disabilities. In order to become a competitive applicant for research faculty positions, this experience will provide dedicated time and necessary resources to expand my research scope and publication record as I develop an independent research career beyond my predoctoral work.

During my doctoral training I was given the unique opportunity to use longitudinal and observational research methods. Through a postdoctoral fellowship, I will gain additional experience collecting data and publishing studies using experimental methods. Last, I aim to build my skillset in grant writing and to outline a productive early research career plan during a postdoctoral fellowship to prepare for a smooth transition into a faculty position. Research scientists at the Waisman Center have a longstanding history of grant funding and a productive publication history; therefore, participation in this fellowship will provide invaluable training to follow a similar path of success.

**Current research interests in the area of intellectual and developmental disabilities**

My primary research interests are in the area of prelinguistic vocal development in infants and young children with neurodevelopmental disorders such as cerebral palsy (CP). Approximately 50-90% of older children with CP also present with reduced speech intelligibility (Mei et al., 2014; Nordberg et al., 2013). The severity of speech impairments in CP can be highly variable across individual children and therefore difficult to predict at early ages (Hustad et al., 2015; Lee et al., 2014). One previous study showed clear differences in

speech and language development in this population as young as two years of age (Hustad et al., 2014). Hustad and colleagues (2016) also found that communication in children with CP at two years of age was highly predictive of communication abilities at four years of age. However, there is limited evidence assessing prelinguistic developmental patterns in this population under 24 months of age.

There exists a longstanding line of research on prelinguistic vocal development and its stages prior to the emergence of first words around 12 months (Koopmans-van Beinum & van der Stelt, 1986; Oller, 1978, 2000; Stark, 1980). Early infant speech-like vocalizations or “protophones” (Oller, 2000) are considered infrastructural; in other words, mastery of early vocal stages is crucial to the development of more advanced stages, including the production of first words (Nathani et al., 2006; Oller et al., 2016; Stark, 1981). These sounds become increasingly advanced across the first year of life in the phonatory, articulatory, and intonational domains, and transition through stages of cooing, marginal babbling of syllables with slow transitions between the consonant and vowel, and eventually canonical babbling.

Canonical babbling is defined as the production of syllables with mature, well-formed transitions between the consonant and vowel. Its onset typically occurs between 6-10 months of age. This stage is well known to be a robust indicator of typical speech development (Nathani et al., 2006; Oller et al., 1998), with many studies evidencing delays in the presence of neurodevelopmental disorders affecting speech development such as Down syndrome (Lynch et al., 1995; Nyman & Lohmander, 2018) and apraxia of speech (Overby et al., 2019, 2020), as well as other developmental disorders such as autism (Lang et al., 2019; Patten et al., 2014), Fragile X syndrome (Belardi et al., 2017), and William syndrome (Masataka, 2001).

There have been several cross-sectional studies evaluating canonical babbling development in infants and young children with cerebral palsy. Levin (1999) found delays in

the onset of the babbling stage in six out of eight infants observed at 11-12 months of age. In a retrospective study using medical histories of 46 children with CP, Otapowicz et al. (2005) found “cooing” was delayed in 50% of children. Moreover, 96% of these children with delayed cooing were later diagnosed with dysarthria. Lohmander et al. (2017) found that infants with reduced rates of canonical babbling were at a higher risk of receiving a clinical speech and language diagnosis compared to controls. Finally, Nyman & Lohmander (2018) observed canonical babbling delays in 28% of 10-24 month olds in a “neurodevelopmental delay group” which consisted of infants with CP, Down syndrome, and other genetic syndromes. There is a great need for additional evidence assessing the longitudinal emergence of pre-speech and early speech development in CP under 24 months of age for its predictive value of later speech impairments. Furthermore, additional research is needed to study vocal patterns that persist throughout early childhood in this population to help clinicians in anticipating speech outcomes.

I have two broad questions targeting my research area of interest. The first question seeks to longitudinally study prelinguistic vocal stage development in infants under 24 months of age. I have begun an initial investigation observing canonical babbling in two infants at-risk for CP between 5-16 months of age using home audio recordings (Long et al., 2020). These infants demonstrated an atypical emergence pattern and a lack of a convincing babbling onset by 10 months. Additional research is needed to longitudinally assess vocal stage emergence and mastery of early speech milestones in young children with cerebral palsy for the purposes of diagnostic decision making and clinical treatment planning throughout early childhood. Questions of this nature can be studied using experimental or observational methods and parent report tools. Parent questionnaires are a reliable method of measurement of childhood milestones (Bodnarchuk & Eaton, 2004; Lyytinen et al., 1996; Oller et al., 2001) which can be implemented easily in clinical settings

in person or via teleconferencing as needed, such as those used in the preliminary studies described below.

The second question aims to longitudinally assess vocal patterns that persist throughout early childhood in children presenting with significant speech delays. I have begun an initial investigation on this topic studying pre-speech and early speech milestones in children up to age five. For this study, I independently initiated a collaboration between the University of Memphis and a local neuromuscular clinic in Memphis, Tennessee. Specifically, we used the *LENA Developmental Snapshot* (Gilkerson & Richards, 2009), a parent questionnaire assessing children's early speech and language milestones, and the *Vocal Development Landmarks Interview* (Ambrose et al., 2016; Moeller et al., 2019) to identify a child's present stage of vocal development based on the types and frequencies of their vocalizations. At the beginning of a postdoctoral fellowship, I can begin writing manuscripts using the existing data on 23 children with CP between 1-4 years of age and 32 same-age, typically developing children as I integrate into a postdoctoral research laboratory.

In summary, my future scope of research aims to evaluate 1) prelinguistic indicators of later speech impairments in neurodevelopmental disorders such as cerebral palsy during the first 24 months of life, and 2) atypical vocal developmental patterns that persist throughout early childhood in nonverbal or low verbal children up to age five. By studying the trajectory of preverbal abilities in these populations, we have the potential to improve clinical diagnostic decision-making and treatment planning for children with complex communication needs.

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### **Dissertation Abstract**

Long, H. L. (2020). *Endogenous and social factors influencing infant vocalizations as fitness signals*. [Unpublished doctoral dissertation]. University of Memphis.

My dissertation evaluated the role of social and endogenous prelinguistic vocalizations as vocal fitness signals in human development. It consists of three studies. The first investigated the reliability of listener judgments of the degree of infant vocal imitateness in parent-infant vocal turn pairs as a measure of the saliency of potential vocal fitness signals. Participating listeners demonstrated moderate to high intra- and inter-rater agreement, suggesting vocal imitation has the potential to be used as a signal of fitness to caregivers in early development. The work also showed that vocal imitation in infancy is rare. The second study sought to quantify the extent to which infants produce vocalizations socially (directed to a caregiver) vs endogenously (not directed to a caregiver) in laboratory settings where parents either attempted to engage them or talked with another adult. The infants produced three times as many vocalizations endogenously as socially in both circumstances. High rates of endogenously produced sounds may result from evolutionary pressures to signal wellness to caregivers through vocalization. Extensive independent vocal play may offer infants the opportunity to explore sensorimotor characteristics of the vocal system and provide the raw material that parents can use in face-to-face interactions. The third study examined social and endogenous motivations in the emergence of advanced vocal forms. Specifically, it compared canonical babbling ratios of infants at low and high risk for autism across high and low levels of both vocal turn taking and vocal play. Both groups showed a tendency to produce more canonical babbling during high turn taking and high vocal play. The findings highlight a potentially robust internal social motivation for

vocalization, even in the presence of likely social-cognitive differences such as risk for autism. High rates of endogenously produced canonical syllables in high-risk infants support the idea of robust evolutionary pressures for infants to signal fitness through vocalization. Furthermore, differences in vocal production across contexts can inform our understanding of the importance of both vocal interaction and independent infant exploration of vocalization. This dissertation offers perspective on the ways in which social and endogenous factors reveal natural selection pressures on fitness signaling in the human infant.

## Publications

*\*First-authored dissertation manuscripts included in application.*

### Published

**\*Long, H. L.**, Bowman, D., Yoo, H., 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](https://doi.org/10.1371/journal.pone.0224956)

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](https://doi.org/10.1016/j.cub.2020.03.049)

Oller, D. K., Caskey, M., Yoo, H., Bene, E. R., Jhang, Y., Lee, C.-C., Bowman, D. 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](https://doi.org/10.1038/s41598-019-51352-0)

**\*Long, H. L.**, Oller, D. K., & Bowman, D. (2019). Reliability of listener judgments of infant vocal imitation. *Frontiers of Psychology*, 10, 1340. [doi.org/10.3389/fpsyg.2019.01340](https://doi.org/10.3389/fpsyg.2019.01340)

### In submission

**\*Long, H. L.**, Ramsay, G., Bowman, D. 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](https://doi.org/10.1101/2020.10.09.333872)

Burkhardt-Reed, M., **Long, H. L.**, Bene, E. R., & Oller, D. K. (in submission). The relative role of voice and gesture in early communication development. *BioRxiv*, [Preprint]. <http://doi.org/10.1101/2020.12.07.415232>

Gipson, T. T., Ramsay, G., Ellison, E. E., Bene, E. R., **Long, H. L.**, & Oller, D. K. (in submission). Early vocal development in tuberous sclerosis complex.

### In preparation

Oller, D. K., Ramsay, G., Bene, E. R., **Long, H. L.**, & Griebel, U. (in preparation). Speech-like sounds dominate the human infant vocal landscape.

**Long, H. L.**, Eichorn, N., & Oller, D.K. (in preparation). Canonical babbling development in infants at-risk for cerebral palsy: A multiple case study.