

Babies: Citizens of the World

This brief is part of a series produced by the Graduate Center for the Study of Early Learning. The information was presented by Dr. Patricia Kuhl at a research symposium in February, 2020. Dr. Kuhl holds the Bezos Family Foundation Endowed Chair in Early Childhood Learning, Co-Director of the UW Institute for Learning and Brain Sciences, and Professor of Speech and Hearing Sciences at the University of Washington in Seattle. She is internationally recognized for her research on early language learning and bilingual brain development, for pioneering brain measures on young children, and for studies that show how young children learn. She presented her work at two White House conferences (Clinton White House in 1997 and Bush White House in 2001). Dr. Kuhl is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, the Rodin Academy, and the Norwegian Academy of Science and Letters. She is a Fellow of the American Association for the Advancement of Science, the Acoustical Society of America, the American Psychological Society, and the Cognitive Science Society. Dr. Kuhl was awarded the Silver Medal of the Acoustical Society of America in 1997.

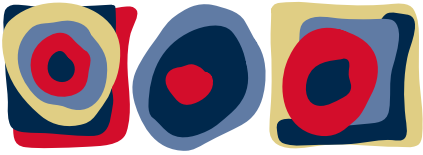
In 2008, Dr. Kuhl was awarded the Gold Medal of the Acoustical Society of America for her work on early learning and brain development. In 2011, she received the IPSEN Foundation's Jean-Louis Signoret Neuropsychology Prize, and in 2013 the William James Lifetime Achievement award.

The research symposium was sponsored by The W. K. Kellogg Foundation, Phil Hardin Foundation, University of Mississippi School of Education and North Mississippi Education Consortium. This brief will provide the reader with highlights from the speaker's presentation and interview on EdsUp! Podcast, which is sponsored by the Center. Reflections will be provided by Drs. Cathy Grace and Melody Musgrove, Co-Directors of the Center on how the information relates to Mississippi.

Dr. Patricia Kuhl's ground-breaking research on the development of baby brains has changed everything we once believed we knew about brain development and when children begin to learn. Over the past ten years there have been rapid advances in noninvasive techniques that examine language processing in young children. Dr. Kuhl has led the field in the use of Electroencephalography (EEG)/Event-related Potentials (ERPs), Magnetoencephalography (MEG), functional Magnetic Resonance Imaging (fMRI), and Near-Infrared Spectroscopy (NIRS) in studying infants' brainsⁱ. By using these techniques under various environmental conditions, she has been able to see, in real time, the various areas of the baby brain structurally change when stimulated by environmental events.

In an EdsUp! podcast interview, Dr. Kuhl explained the everyday experiences parents and caregivers provide for infants under the age of 12 months are actually providing the stimulation for mapping of various parts of the brain. This is why the brain is often compared to a computer: both are wired and ready to be programmedⁱⁱ. The programming of the baby brain is dependent on the experiences provided by the adults in the life of the child.

A term Dr. Kuhl uses that best describes the role of socialization in the development of the brain is "the social brain serves as a gate that activates learning through face to face connections". Workplace skills begin to form between the ages of birth through 12 months. At this point of development, a baby is a "citizen of the world". This means a child at this



Language Engagement with Infants Results in Developing the Architecture of the Brain

- The brains of infants are altered by listening to others speak.
- “Parentese” (the voice intonation and diction adults use when talking to babies) not only sounds better to infants and children, it teaches them something.
- Early speech skills predict later language skills^v.

age can discriminate sounds of different languages and actually become bilingual should their exposure to both languages be of equal intensity as they continue to grow. As adults, we are no longer “citizens of the world,” instead we are “culture-bound” listeners. We can hear distinctions between the sounds used in our own language, but have difficulty with the sounds of other languages, such as Mandarin or Frenchⁱⁱⁱ.

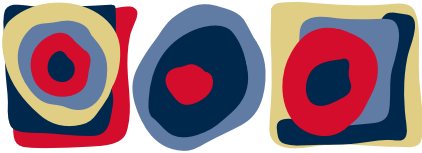
Research conducted on babies in her laboratory at the University of Washington reveals that infants demonstrate excellent skills at pattern recognition for speech. These studies have shown that babies (1) can discern vowel categories and sort syllables that vary across talkers and intonation contours after one training session, (2) perceptually sort syllables that vary in their initial consonant (those beginning with /m/ as opposed to /n/) across variations in talkers and vowel contexts and (3) perceptually sort syllables based on a phonetic feature shared by their initial consonants, such as a set of nasal consonants, /m/, /n/, and /N/, as opposed to a set of stop consonants, /b/, /d/, and /g/^{iv}.

Dr. Kuhl's years of research on the acquisition of language have given the field fundamental evidence that guides early childhood practice, both in the home and the classroom.

The three points highlighted on the left affirm interactive parenting behaviors and instructional strategies practiced by highly qualified teachers in early childhood programs serving babies. The adult's use of songs, rhymes and conversations with infants and toddlers does more than engages the child in play; it promotes the formation of brain architecture and the development of cognitive skills. Work force development skill building begins in infancy, not in teen years!

In Mississippi, numerous factors challenge the opportunities for young children in programming their brains to develop the language connections as described by Dr. Kuhl. As her work and that of other brain scientists substantiate, the process of building language skills and overall cognitive development begins in the home at birth. As always in Mississippi, the high percentage of children in poverty is a major barrier to addressing the overall healthy development of infants and toddlers. Numerous research studies support the negative impact poverty has with regard to the language advancement of children. Even though 70% of Mississippians with children 6 years and younger are employed, 30% of children under 6 live in poverty^{vi vii}. There are many factors contributing to this inconsistency; one major issue is the amount of earnings a worker receives when paid at the state's minimum wage.

In Mississippi, the minimum wage is \$7.25 per hour which is the same as the national rate^{vii}. The last time Mississippi raised the wage was in 2008, when it was raised \$0.70 from \$6.55 to \$7.25^{viii}.



The National Association for the Education of Young Children conducted a national survey of child care directors. In the report of their findings, they stated that “the Department of Labor found that more than 325,000 child care workers have lost their own jobs since February 2020; 55% of survey respondents who serve as directors reported that their programs had staff who had filed for full or partial unemployment. Another 1 in 5 reported that staff members had found new jobs, adding to a turnover rate that creates inconsistency, undermines quality, and undercuts the relationship development that is core to children’s success and well-being. As uncertainty continues to rage, respondents indicated that 18% of child care centers and 9% of family child care homes remain closed, while those who are open are experiencing dramatically reduced enrollment^{xii}.

When calculated over a 40 hour work week, the gross weekly wage would be \$290. After allowing for expenses related to food, rent, utilities, clothing and possible medical expenses, the dollars for child care are reduced to pennies.

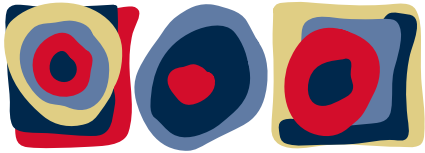
High quality early childhood education has been proven to boost the overall cognitive development and increase the likelihood of school and life success.

Mississippi’s state-funded pre-kindergarten collaborative program is rated along with three other states by the National Institute for Early Education Research as providing the highest quality program in the country as measured by the state program meeting all evidence-based quality benchmarks^{ix}. Regrettably, this same research institution ranks the state near the bottom with regard to the percentage of children with access to the program^x.

State funding for pre-kindergarten classes was inadequate prior to the impact of the COVID-19 pandemic, so it is not likely to be significantly increased for several years as the state attempts to recover from catastrophic budget losses.

According to the Mississippi Kids Count Data Book 2020, 30% of Mississippi’s children 0-6 years of age live in poverty in 2018 as compared to 26% in 2017^{xi}.

With the uncertainty of the survival of the child care industry in Mississippi and across the country, the future is uncharted. The concerns around spreading the virus through unprotected face to face contact and failure to abide by social distancing will have a significant impact on how young children are engaged by adults and their peers in child care centers. As the nation’s premier health specialists struggle with the most appropriate and scientifically based suggestions for children in congregate care, the demands of the “return to normal” work place schedule are contradictory to those outlined by health professionals.



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- ⁱⁱEdsUp! Podcast interview with Dr. Patricia Kuhl, February 2020, Retrieved <https://podcasts.apple.com/us/podcast/edsup/id1441849372>
- ⁱⁱⁱIbid
- ^{iv}Kuhl, P., Tsao, F., Liu, H.M., Zhang, Y., and De Boer, B. (2001) Retrieved [Margins_between_Disciplines/links/00b49526fd5ffa6341000000.pdf](https://www.sciencedirect.com/science/article/pii/S0896627310006811)
- ^vKuhl, P. (June, 2002) Born to Learn: Language, Reading, and the Brain of the Child, Paper Presented at the Early Learning Summit for the Northwest Region: Boise Idaho. Retrieved <https://www2.ed.gov/teachers/how/early/earlylearns summit02/kuhl.pdf>
- ^{vi}Social Science Research Center (2020) Mississippi Kids Count Data Book. Retrieved: <https://datacenter.kidscount.org/data/tables/5057-children-under-age-6-with-all-available-parents-in-the-laborforce?loc=26&loct=2#detailed/2/26/false/37,871,870,573,869,36,868,867,133,38/any/11472,11473>
- ^{vii}Retrieved: <https://www.minimum-wage.org/mississippi#:~:text=The%20current%20Mississippi%20minimum%20wage,may%20apply%20to%20certain%20workers.>
- ^{viii}Ibid
- ^{ix}National Institute of Early Education Research (2020) The State of Preschool 2019. Retrieved: http://nieer.org/wp-content/uploads/2020/04/YB2019_Executive_Summary.pdf
- ^xIbid
- ^{xi}Social Science Research Center (2020) Mississippi Kids Count Data Book. Retrieved: <https://datacenter.kidscount.org/data/tables/5650-children-in-poverty-by-age-group?loc=26&loct=2#detailed/2/26/false/37,871,870,573,869,36,868,867,133,38/17,18,36/12263,12264>
- ^{xii}National Association for the Education of Young Children (July, 2020). Holding on Until Help Comes: A Survey Reveals Child Care's Fight to Survive. Retrieved https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/our-work/public-policy-advocacy/holding_on_until_help_comes.survey_analysis_july_2020.pdf
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