

The background features a vertical gradient from light purple at the top to a deep blue at the bottom. Scattered across this gradient are numerous water droplets of various sizes, some with soft shadows and highlights, giving a sense of depth and texture.

LINGUISTIC GENIUS OF BABIES BY DR. PATRICIA KUHL

BRITTNEY SWOPE

MENTORSHIP PROJECT

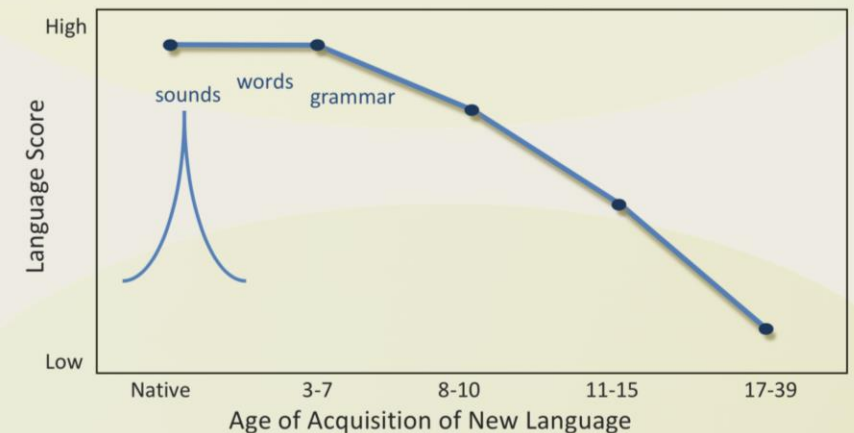
- MENTORSHIP YEAR THROUGH FONTBONNE
- EDUCATING COLLEAGUES
- THE LINGUISTIC GENIUS OF BABIES ONE DAY EARLY LEARNING CONFERENCE BY DR. PATRICIA KUHL THROUGH HEARING FIRST (VIRTUAL)
- THE INFORMATION: [HTTPS://WWW.HEARINGFIRST.ORG/LEARNING-EXPERIENCES/LINGUISTIC-GENIUS-OF-BABIES/LEARNING/68/SESSION/320/LESSON/1548](https://www.hearingfirst.org/learning-experiences/linguistic-genius-of-babies/learning/68/session/320/lesson/1548)
- TWO-PART PRESENTATION
- PART 1 - *EARLY LANGUAGE DEVELOPMENT: CONNECTING THE DOTS BETWEEN BRAIN DEVELOPMENT, “CRITICAL PERIODS” IN DEVELOPMENT, AND A CHILD’S COMMUNICATIVE SUCCESS*
- PART 2 - *BUILDING THE BABY BRAIN FOR LANGUAGE: WHAT IS OUR ROLE?*

PART 1- EARLY LANGUAGE DEVELOPMENT: CONNECTING THE DOTS BETWEEN BRAIN DEVELOPMENT, "CRITICAL PERIODS" IN DEVELOPMENT, AND A CHILD'S COMMUNICATIVE SUCCESS

- LANGUAGE HAS A CRITICAL PERIOD FOR LEARNING
- BABIES AND CHILDREN ARE LANGUAGE GENIUSES UNTIL AGE 7 AND AFTER PUBERTY THE ABILITY TO LEARN A SECOND LANGUAGE GOES WAY DOWN
- DR. KUHL STUDIES THE FIRST CRITICAL PERIOD IN DEVELOPMENT-BABIES TRY TO MASTER WHICH SOUNDS ARE USED IN THEIR LANGUAGE
- A BABY SITS IN MOTHER'S LAP AND DIFFERENT SPEECH SOUNDS ARE INTRODUCED



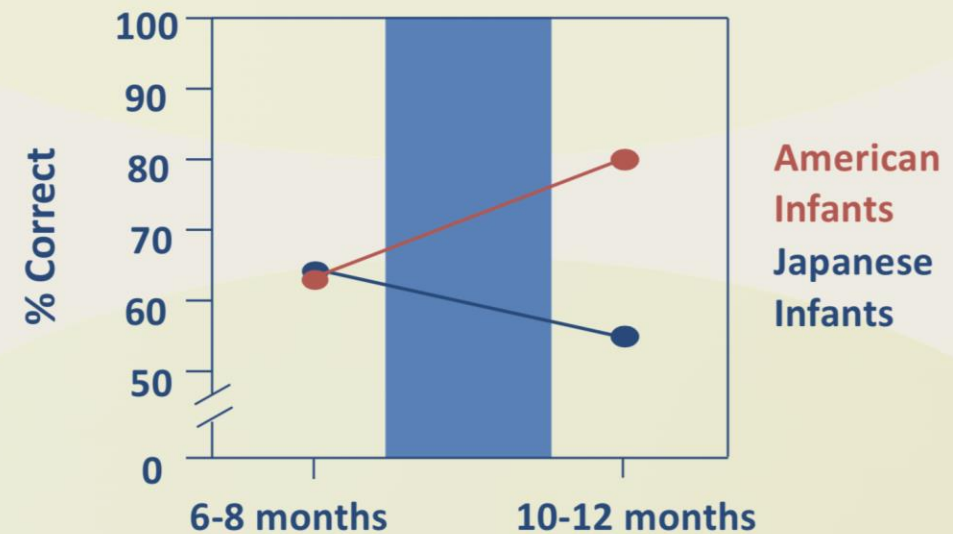
The 'Critical Period' for Language



- BABIES CAN DISCRIMINATE SOUNDS OF ALL LANGUAGES
- STUDY OF /RA/ AND /LA/ FOR AN AMERICAN AND JAPANESE BABY
- BABIES ARE LISTENING INTENTLY TO ADULTS AND TAKING STATISTICS

A 'Sensitive Period' for Speech Learning

Infant discrimination of /ra/ vs. /la/

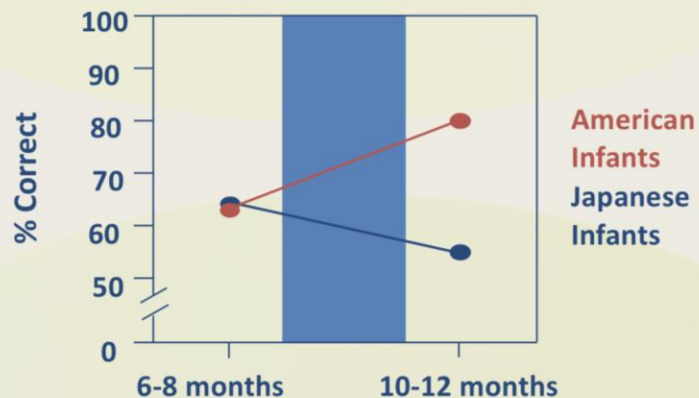


Kuhl et al., *Developmental Science*, 2006

- QUESTION: CAN BABIES TAKE STATISTICS ON BRAND NEW LANGUAGES?
- EXPOSING AMERICAN BABIES TO MANDARIN (DURING CRITICAL PERIOD)
- THE BABIES EXPOSED TO MANDARIN FOR 12 SESSION SWERE AS GOOD AS BABIES IN TAIWAN WHO'D BEEN LISTENING FOR 10 AND A HALF MONTHS
- BABIES ARE TAKING STATISTICS ON NEW LANGUAGES

A 'Sensitive Period' for Speech Learning

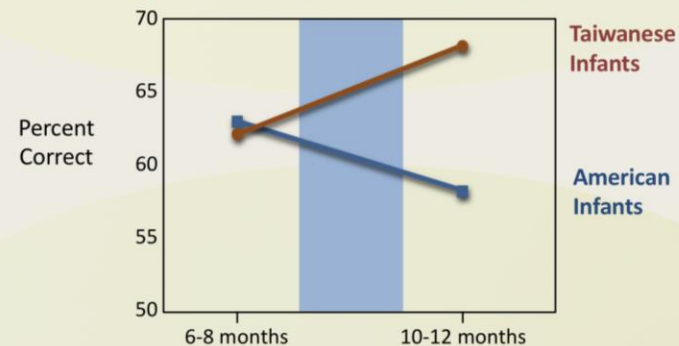
Infant discrimination of /ra/ vs. /la/



Kuhl et al., *Developmental Science*, 2006

Perception of Mandarin Chinese Sounds

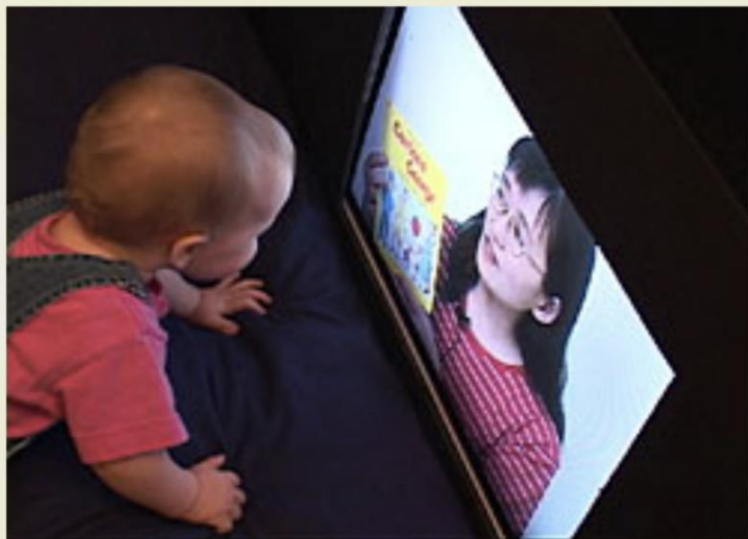
Intervention: 12 sessions, 25 minutes each,
4 different talkers (mean # of syllables = 33,000)



Kuhl, Tsao & Liu, *Proceedings of the National Academy of Sciences*, 2003

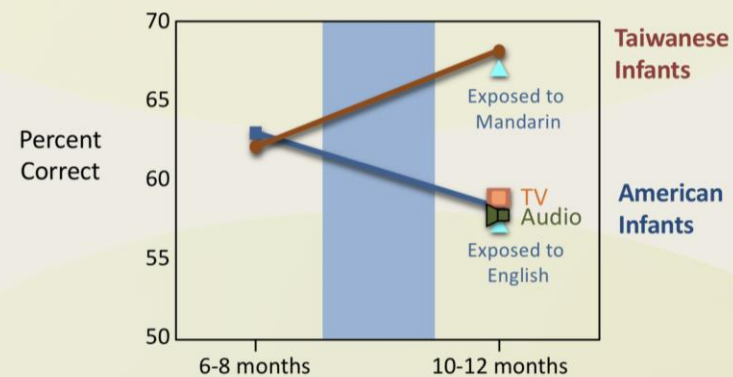
- DO INFANTS LEARN FROM A MACHINE?
- SAME STUDY, BUT OVER A TELEVISION SET
- INFANTS DID NOT LEARN FROM THE MACHINE.
- BABIES ARE SOCIAL AND NEED IT TO LEARN LANGUAGE

Do Infants Learn From a Machine?



Kuhl, Tsao & Liu, *Proceedings of the National Academy of Sciences*, 2003

Do Infants Learn Language From Video?



Kuhl, Tsao & Liu, *Proceedings of the National Academy of Sciences*, 2003

TWO IS BETTER THAN ONE

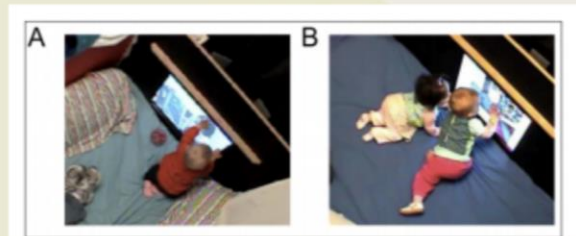
- ONE BABY MANIPULATING A TOUCH SCREEN
- TWO BABIES INTERACTING WITH A TOUCH SCREEN
- BABY LANGUAGE LEARNING IMPROVED
- THE STUDY

The Mere Presence of a Social Partner Improves Learning from Screens in Infancy

Two are better than one: Infant language learning from video improves in the presence of peers

Sarah Roseberry Lytle^{a,1}, Adrian Garcia-Sierra^b, and Patricia K. Kuhl^b

^aInstitute for Learning & Brain Sciences, University of Washington, Seattle, WA 98195; and ^bSpeech, Language, and Hearing Sciences, University of Connecticut, Storrs, CT 06269



Lytle, Garcia-Sierra, & Kuhl, 2018, *PNAS*

MAGNETOENCEPHALOGRAPHY

- A RELATIVELY NEW NEUROSCIENCE TECHNOLOGY THAT MEASURES MAGNETIC FIELDS GENERATED BY THE ACTIVITY OF BRAIN CELLS—TO INVESTIGATE HOW, WHERE AND WITH WHAT FREQUENCY BABIES FROM AROUND THE WORLD PROCESS SPEECH SOUNDS IN THE BRAIN WHEN THEY ARE LISTENING TO ADULTS SPEAK IN THEIR NATIVE AND NON-NATIVE LANGUAGES

Magnetoencephalography (MEG)



- THE STUDY
- MUSIC IN INFANCY LEADS TO BETTER PATTERN DETECTION SKILLS

Does Music Intervention Affect the Brain?



- The “waltz”
- Social environment
- 12 sessions over one month’s time
- Brain tests after exposure
- Track language development until 30 month of age

PART 2- BUILDING THE BABY BRAIN FOR LANGUAGE: WHAT IS OUR ROLE?

- PARENT'S EVERYDAY INTERACTION WITH CHILDREN BUILD THEIR BRAINS
- PARENTESE - NOT BABY TALK
- ADDITIONAL RESOURCE
- [HTTPS://WWW.HEARINGFIRST.ORG/EARLY-DEVELOPMENT](https://www.hearingfirst.org/early-development)



PARENT COACHING

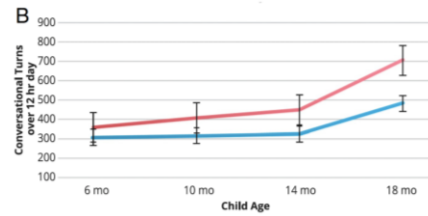
- [HTTPS://ONLINELIBRARY.WILEY.COM/DOI/ABS/10.1111/DESC.12762](https://onlinelibrary.wiley.com/doi/abs/10.1111/DESC.12762)
- [HTTPS://WWW.VROOM.ORG/](https://www.vroom.org/)

Parent Coaching for Language: Randomized Control Study

Parents coached when infants were 6, 10, 14, and 18 months

- Explain brain development, critical periods, and the value of language input
- Share feedback on the parental language measures: word count, conversational turns, proportion of “parentese”
- Listen to recorded samples from home recordings
- Vroom cards (to highlight opportunities to engage)
- Discuss the child’s next language milestone

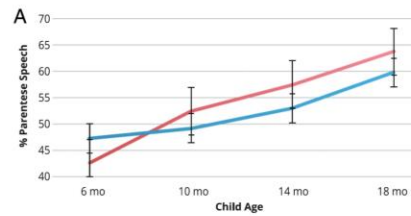
Parent Coaching Improves Child Language Outcomes: Conversational Turns Increase



■ Control ■ Intervention

Ferjan-Ramirez, Roseberry Lytle, & Kuhl, PNAS, 2020

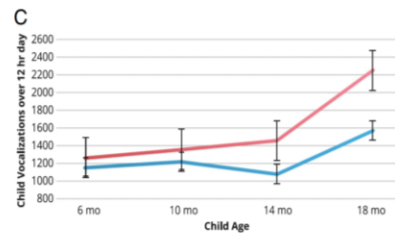
Parent Coaching Improves Child Language Outcomes: Parentese Increases



■ Control ■ Intervention

Ferjan-Ramirez, Roseberry Lytle, & Kuhl, PNAS, 2020

Parent Coaching Improves Child Language Outcomes Increase



■ Control ■ Intervention

Ferjan-Ramirez, Roseberry Lytle, & Kuhl, PNAS, 2020

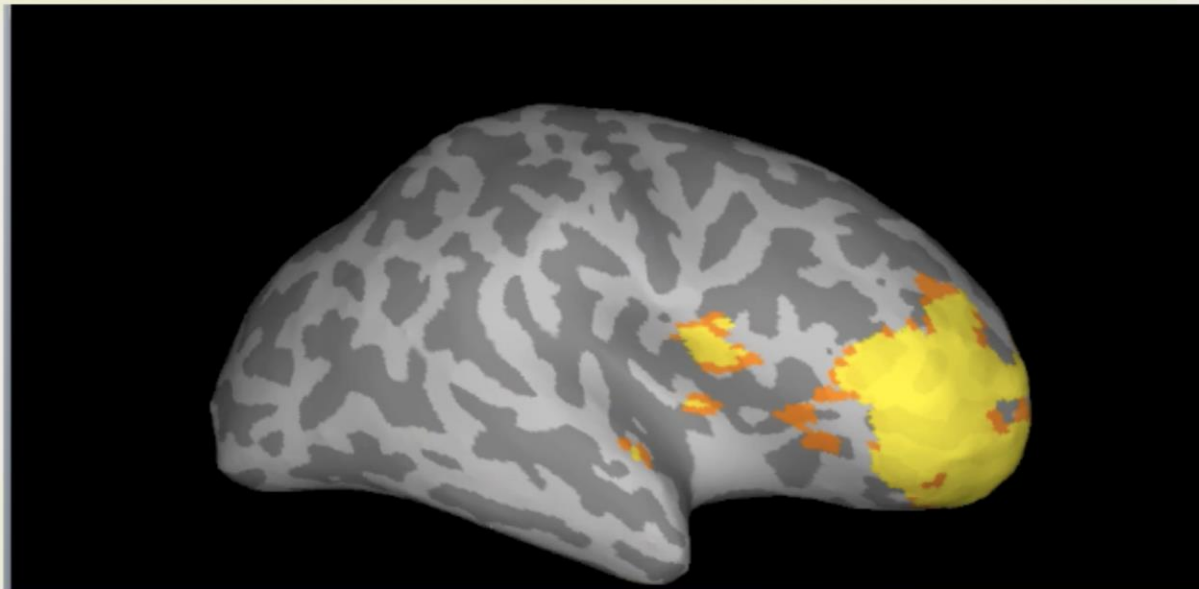
COACH, COACH COACH

- PARENT COACHING INCREASES CONVERSATIONAL TURNS AND ADVANCES INFANT LANGUAGE DEVELOPMENT

BILINGUAL

- [SPEECH DISCRIMINATION IN 11-MONTH-OLD BILINGUAL AND MONOLINGUAL INFANTS: A MAGNETOENCEPHALOGRAPHY STUDY](#)
- [HTTPS://WWW.YOUTUBE.COM/WATCH?V=TAYHJ-GEKQW&FEATURE=YOUTU.BE](https://www.youtube.com/watch?v=TAYHJ-GEKQW&feature=youtu.be)

Bilingual Babies Show Prefrontal Activation: Greater Cognitive Flexibility



Ferjan-Ramirez, Ramirez, Taulu, Clarke, & Kuhl, Developmental Science, 2017

FOREIGN LANGUAGE INTERVENTION IN MADRID'S INFANT EDUCATION CENTERS

<https://onlinelibrary.wiley.com/doi/abs/10.1111/mbe.12144>

Creating a Bilingual Education Program for Infants and Young Children

Brain-Based Method and Curriculum: SparkLing™

- High quantity of language input
- Parentese ” language input
- Highly social with games and activities
- Children encouraged to “talk ” (even if just “babbling”)
- Multiple native speakers
- Instruction is play-based, engaging!

- NAJA FERJAN-RAMIREZ & KUHL WORKED TOGETHER TO CONDUCT A FOREIGN LANGUAGE (ENGLISH) INTERVENTION IN FOUR PUBLIC INFANT EDUCATION CENTERS IN MADRID, SPAIN.

Classroom Activities



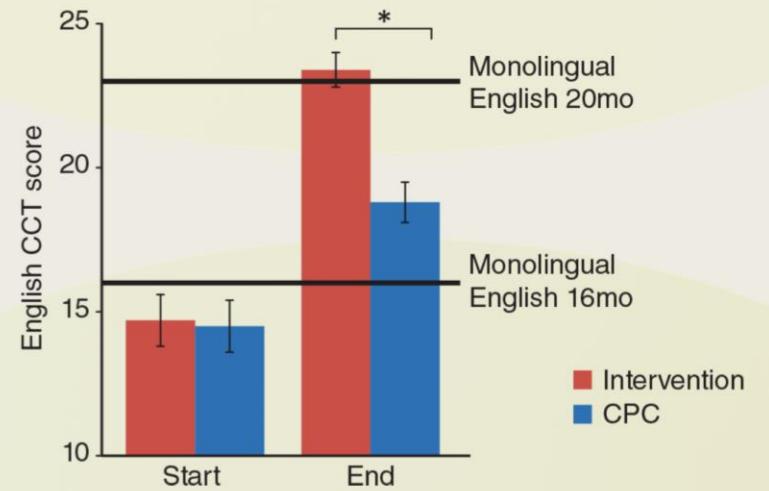
Naja Ferjan-Ramirez & Kuhl, *Mind, Brain, and Education*, 2017

Classroom Activities



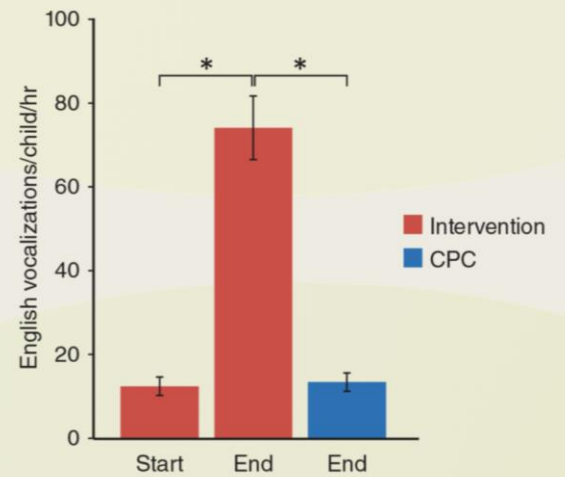
Naja Ferjan-Ramirez & Kuhl, *Mind, Brain, and Education*, 2017

English Word Comprehension Before and After



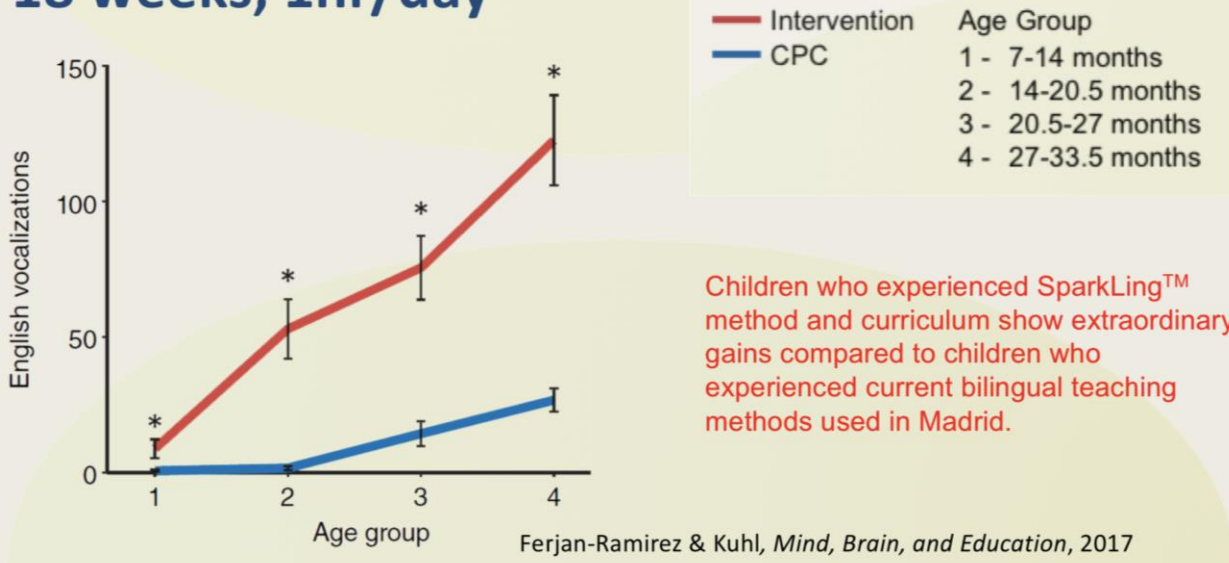
Ferjan-Ramirez & Kuhl, *Mind, Brain, & Education*, 2018

Child Vocalizations in English per hour/per day



Ferjan-Ramirez & Kuhl, *Mind, Brain, & Education*, 2018

I-LABS bilingual learning in school: 18 weeks, 1hr/day



Children who experienced SparkLing™ method and curriculum show extraordinary gains compared to children who experienced current bilingual teaching methods used in Madrid.

Ferjan-Ramirez & Kuhl, *Mind, Brain, and Education*, 2017

SPARKLING™ TRAINS LANGUAGE TUTORS ONLINE

- [HTTP://EXPD.UW.EDU/SEATTLELUNGPROJECT-RESEARCH-INTERN/](http://expd.uw.edu/seattlelungproject-research-intern/)
- A TUDOR TRAINING PROGRAM TO HELP BABIES LEARN A SECOND LANGUAGE THROUGH PLAY
- [HTTPS://ONLINELIBRARY.WILEY.COM/DOI/FULL/10.1111/MBE.12232](https://onlinelibrary.wiley.com/doi/full/10.1111/mbc.12232)