

# The University of Texas at Dallas Developments

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The University of  
Texas at Dallas

**School of Behavior and Brain  
Sciences**

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CALLIER CENTER  
FOR COMMUNICATION DISORDERS

MEET THE LAB TEAM  
*Spring 2023*

Faculty Advisor:  
Dr. Melanie J. Spence P.h. D



Isa Hernandez- Lab manager  
Naureen Amjad  
Haley Davis  
Nethra Giri  
Praniya Jakkamsetti  
Isha Kere  
Lasya Manne  
Anela Marat  
Preethi Sethuraman  
Anaum Rizvi

*Welcome*

TO OUR NEW LAB MEMBERS



PREETHI SETHURAMAN



ANELA MARAT



ISHA KERE

# The Effects of Maternal Depression on Linguistic Development

Anela Marat

The manner and the frequency of speech produced by the caregiver to their child are very important for language development and attention. Infant-directed speech (IDS) is a key component occurring in early infancy, which is when a caregiver uses exaggerated pitch, elongated words, and facial expressions to sustain and engage infant interaction. IDS serves as a marker for infant speech production, where infants who experience fewer IDS show poorer language development by the second year of life and engage in fewer social interactions. The more an infant is exposed to IDS, the sooner they can begin vocalizations such as babbling, processing the language they hear, and communicating their emotions in an effective way to the caregiver. A leading public health issue around the world today is Postnatal depression (PND) which is depression of the mother that occurs after childbirth. PND is very burdensome not only to the mother but has an immense negative impact on the parenting capacity as well as the infants' development of cognitive and emotional domains.

Gaining an understanding of the relationship between PND on infant-directed speech will provide insight into ways to mitigate the effects of PND before infants develop poor outcomes. Research from Lam-Cassettari and Kohlhoff (2020) aims to compare and measure maternal pitch, ratings of vocal effect, number of words, and vocal response timing, as well as quantity of infant responsiveness (babbling) at roughly 6 months of age. This particular age group is targeted because it is the age when children begin phonological processing and spend the most time with their maternal caregivers. It was hypothesized that depressed mothers are more likely to use flatter pitch, spaced-out responses, fewer words, and a lack of positive tone. The researchers expected that infants of depressed mothers would begin babbling and talking later than normal due to less presence of IDS.

The study had 26 mothers and their infants, roughly divided into the PND group and the non-PND group. In order to identify the well-being of the mother, an Edinburgh Postnatal Depression Scale (EPDS) questionnaire was given to identify symptoms of depression. All mothers in the study were the main caregivers, spoke English, were primarily of

Caucasian identity, and had healthy children with no medical conditions. The procedure involved unstructured free play between each mother and child in a quiet room, where the caregivers could interact with their child in any way they chose. During the second activity, toys and books were provided for utilization, and the mother was asked to play with the child just like at home. These interactions were audio recorded, and acoustic analyses of the mother's voice were performed using Praat Analysis software.

The results indicate that mothers in the PND (postnatal depression) group spoke significantly fewer words to their infant and that their infant made fewer response vocalizations than the non-PND group. Additionally, mothers in the non-PND group talked in a faster and more excitatory manner which overlapped with their infant's responsiveness. From this study, we can learn that mothers in the PND group say fewer words during free play, which means that depression interferes with the mother's ability to communicate and engage with their child in a coherent way that encourages language development. It is therefore important to evaluate and better the linguistic environment of infants in the care of mothers experiencing depression. To combat these effects, some strategies to consider are to increase the mother's energy levels, encourage mothers to speak in a short and high-pitched manner to their child and create more opportunities for a child to hear the infant-directed speech from others. Most importantly, seeking a sense of community during challenging moments will not only help the mother find comfort and guidance but also allow the infant to gain increased vocalization associated with the interaction.

#### Citation:

Lam-Cassettari C, Kohlhoff J (2020) Effect of maternal depression on infant-directed speech to prelinguistic infants: Implications for language development. PLoS ONE 15(7): e0236787. <https://doi.org/10.1371/journal.pone.0236787>



# The Importance of Sleep

Isha Kere

Sleep is a critical process for all age groups but is particularly critical during an infant's first year of life. Newborns tend to sleep around 16-17 hours per day, with this number decreasing with age to around 13-14 hours at 6 months of age and 9-11 hours once they near 12 months. In addition to the rote number of hours spent sleeping per day, infants' circadian rhythm settles as they age, which is accompanied by a greater portion of their sleep occurring at night. Past research has shown that despite individual and environmental differences, sleep developmental patterns are similar among typically developing infants. Sleep is significant for many developmental milestones, such as cognitive development and language acquisition. However, existing research surrounding this topic has not focused on infancy. Due to these gaps in research, Pecora et al. (2022) conducted a study investigating the short and long-term relationship between sleep and cognitive maturation.

Pecora et al. (2022) conducted a longitudinal study consisting of 156 infants of typical development to study the relationship between sleep and cognitive maturation. Mothers and infants were recruited through various modalities, including advertisements on social media, newsletters in magazines, and posters in pediatrician offices. Due to prior research documenting the importance of emerging milestones between 4 and 8 months of age, such as attention coordination, the study collected data points when infants were 4 months old and again at 8 months of age. A series of online questionnaires were completed by the mothers at both the 4-month and 8-month marks. The questionnaires included topics regarding socio-demographic information, sleep patterns, cognitive and language development, temperament, and physical activity. Several established, reliable questionnaires were used to assess each aspect. One major questionnaire used was the Developmental Profile 3 (DP3), which is used to assess child development in five areas, including physical, adaptive behavior, social-emotional, cognitive, and communication. Questions answered in each of these areas generate five separate scores for each subsection, along with a singular general development score. Lower scores on the DP-3 indicate potential delays in development. Some maternal practices that could potentially affect infants' sleep development, including exclusive breastfeeding, pacifier use, and co-sleeping, were also noted.

As predicted, results showed significant relationships between sleep and developmental outcomes. At 4 months of age, more time co-sleeping was associated with higher DP-3 Communication scores, which suggests that co-sleeping may support the development of vocalization abilities. This can be attributed to the fact that when co-sleeping, infants learn these behaviors to attract their parents' attention during night awakenings. However, this can also be attributed to the fact that parents who co-sleep are more likely to recognize these behaviors. Similar results were found at 8 months of age for co-sleeping. Co-sleeping at 8 months was associated with increased communication skills, such as language understanding. Additionally, 8-month-old infants who had increased sleep during the day achieved higher scores on the cognitive development scale of the DP-3. This denotes a positive relationship between sleep quality and cognitive maturation which shows that sleep quality can be improved with longer day naps. Although the study replicated the results found in previous studies regarding the positive relationship between sleep and cognitive maturation, it failed to establish a longitudinal relationship, likely due to the small window of development between the two chosen age groups. Apart from sleep, the study also found results regarding relationships between temperament and cognitive maturation. At 4 months of age, extroversion positively correlated with the DP-3 General Development score and the Cognitive and Adaptive Behavior subscales. At 8 months of age, infants with outgoing aspects of temperament achieved higher scores in cognitive and socio-emotional development, along with language understanding and action production. Infants who displayed an outgoing temperament at 8 months of age were more likely to seek out new experiences and show a preference for lively activities. Although the results of this study mimicked prior research results, the replication of results when studying the age group of 4-8-month-old infants emphasizes the importance of sleep for all age groups. The study provides great insight into the effects of sleep quality and temperament on cognitive maturation and places emphasis on the importance of integrating established nap schedules into infants' routines.

Citation:

Pecora, G., Focaroli, V., Paoletti, M., Barca, L., Chiarotti, F., Borghi, A. M., Gasparini, C., Caravale, B., Bombaci, I., Gastaldi, S., Bellagamba, F., & Addressi, E. (2022). Infant sleep and development: Concurrent and longitudinal relations during the first 8 months of life. *Infant Behavior and Development*, 67, 101719. <https://doi.org/10.1016/j.infbeh.2022.101719>

SPRING 2023

# LAB UPDATES!

## SWPA CONVENTION

This semester, our lab attended the Southwestern Psychological Association annual conference. We presented 5 posters with research proposals or completed projects. Our lab conducted projects on several topics, including:

- Infant's Perception of Faces and Speech
- Infant's Perception of Humor
- Monolingual Infant's Perception of Infant-Directed Speech Produced in English and Spanish
- Sibling's Impact on Humor Perception
- Deeper Levels of Processing Improve Recognition Accuracy for Inverted Faces



## URSA

Congratulations to Isa Hernandez for her recent research presented at the Undergraduate Research Scholar Award (URSA) Poster Competition. Isa was a recipient of this competitive award supporting undergraduate research projects—her research project, *Acoustic Differences Between Infant-Direct Speech Produced in English and Spanish*, compared the acoustic properties of infant-directed speech produced in English and Spanish.

# Lab News

## CONGRATULATIONS, 2023 GRADUATES



### Naureen Amjad

Naureen is graduating from UT Dallas with a master's in Psychological Sciences. After graduation, she will be working as an ABA specialist helping kids with autism. In her free time, she will also start her marriage and family therapy (MFT) licensure in hopes of working with children and families in the future.

### Isa Hernandez

Isa is graduating with a B.S. in Psychology and Child Learning and Development. She will also be graduating with BBS Honors, requiring the completion of an independent research project and a written thesis. In Fall 2023, she will begin her master's program in Developmental Science at The University of Edinburgh. After graduating, she hopes to work with at-risk children and their families.





# Lab News

CONGRATULATIONS, 2023 GRADUATES



## Anaum Rizvi

Anaum is graduating with a B.S. in Psychology and Child Learning & Development. In the Fall, she will continue attending UT Dallas to pursue her M.S. in Speech-Language Pathology. She hopes to work with a pediatric population with bilingual and multicultural backgrounds.

## Anela Marat

Anela is graduating with a B.S. in Psychology and Child Learning and Development. After graduation, she plans to take a gap year and apply to medical school in hopes of working in the pediatric field!



# THANK YOU!

Thank you to our graduating seniors for all your hard work in the lab! We will miss all of you and wish you the best. We can't wait to see all the wonderful things you accomplish.

A special thank you to Isa Hernandez and Anaum Rizvi. We are grateful for Isa's contributions to the lab since January 2021 and for her role as lab manager this year! We are also very appreciative for all of Anaum's contributions to the lab and her active role in the lab since August 2021.



## CURRENT STUDIES

This semester our lab conducted three online projects:

- Infant Response to Faces and Speech
- Infants' Perception of Humor
- Infants' Perception of English and Spanish.

# CURRENT STUDIES

UT DALLAS  
THE INFANT LEARNING PROJECT

## PARTICIPANTS NEEDED!

HELP US LEARN MORE ABOUT HOW  
BABIES DEVELOP LANGUAGE-  
LEARNING SKILLS

This study aims to understand if infants can recognize the difference between baby talk and adult talk AND if both auditory and visual components are needed to differentiate the two types of speech.

THIS STUDY IS OPEN TO 4-.5-, AND  
7-MONTH-OLD-INFANTS!

VISIT

<https://lookit.mit.edu/studies/ef8f23fc-43f1-4ae0-9964-932bbc332e24/>

SCAN FOR STUDY LINK



For more information, contact the  
Infant Learning Project  
([infantlearningproject@utdallas.edu](mailto:infantlearningproject@utdallas.edu))

# CURRENT STUDIES

**UT DALLAS**  
**THE INFANT LEARNING PROJECT**

Participants Needed!

## **HELP US LEARN ABOUT BABIES AND THEIR NATIVE LANGUAGES**

This study aims to understand the difference in preferences of monolingual infants when they are presented with English and Spanish.

### **WE INVITE YOU TO PARTICIPATE IF:**

- Your baby is around 6 months or 10 months
- Your baby is exposed mostly to English **OR** mostly to Spanish
- Parent has access to a laptop

### **SCAN FOR STUDY LINK!**



**OR**

### **VISIT**

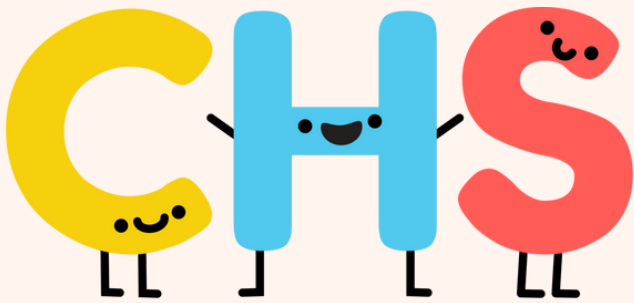
<https://lookit.mit.edu/studies/0213ece6-e682-421c-a79a-66c4c9741905/>

For more information, contact **Isa Hernandez** (isa.hernandez@utdallas.edu) or **the Infant Learning Project** (infantlearningproject@utdallas.edu)

RESEARCH  
OPPORTUNITIES  
FROM HOME



## Children Helping Science



**ChildrenHelpingScience.com**

Dr. Candice Mills from UT Dallas is one of six scientists from six universities who joined forces to launch the Children Helping Science project. This website has studies you and your child can participate in from your home. There are studies for all families, and each study indicates who it is for, so you can find the perfect one for your child to help science.

## Lookit the online child lab

Your family can contribute to research about how children learn by doing fun activities together right in your web browser. You can participate with your child from any computer with a webcam.

Visit: <https://lookit.mit.edu/> to get started!



**THANK YOU!**