The University of Texas at Dallas

INFANT LEARNING PROJECT

Spring 2021

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Infant Learning Project

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www.facebook.com/infantlearningproject
Congratulations!

SARAH REHMAN
M.S. in Communication Disorders

Sarah hopes to complete her clinical fellowship and work as a Speech-Language Pathologist in the adult medical rehabilitation setting with a focus on culturally and linguistically diverse populations. Her time with the lab has been meaningful to her growth as a clinician.

SPRING 2021

Infant Learning Project Team

Faculty Lab Director
Dr. Melanie J. Spence, Ph.D.

Research Assistants
Madeline Hale
Ginni Strehle
Isa Hernandez
Samia Razvi
Kailllin Lawler
Sarah Rehman

Congratulations!

MADELINE HALE
B.S. in Neuroscience and Speech-Language Pathology & Audiology

Madeline will attend the University of Wisconsin-Madison for a combined MS/PhD in speech-language pathology. Her research will focus on cognitive-communication changes found in normal aging and neurodegenerative diseases, specifically Alzheimer’s disease dementia.
The Benefits of Parent-Child Interaction in Interactive Settings

ISA HERNANDEZ

As children develop, much of their knowledge is derived from interactions with their parents. Research has previously shown the benefits of parent-child interaction to children’s causal reasoning, but most have been carried out in laboratory settings. A study conducted by Willard et al. in 2019 investigated the effects of exploration versus explanation on children’s causal reasoning. Causal reasoning is the process of identifying the relationship between a cause and its effect. Parent-child interactions were measured outside of the laboratory in an interactive children’s museum so researchers could investigate any effects in a real-world setting. Exploration can be defined as “the process by which individuals act on the world in ways that generate information from others of the environment.” (Willard et al. 2019, p. e598) and explanation can be defined as “the verbal information individuals generate about causal mechanisms, causal relations and underlying causal principles that govern those relations.” (Willard et al. 2019, p. e598). Previous literature on exploration and explanation has described them independently, each producing different learning outcomes. Throughout development, children are naturally inclined to explore ambiguous (unclear) situations and ask questions to receive causal explanations from adults. There is evidence that an interaction between exploration and explanation ultimately leads to children’s causal learning.

Willard et al. sought to investigate the interaction between explanation and exploration in a real-world environment. Parent-child pairs interacted at a children’s museum exhibit and parents were given an “instructional intervention” (Willard et al. 2019, p. e599). Essentially, researchers gave instructions to parents to guide their children either toward explanation or exploration. Several aspects of parent-child interaction were measured; parents’ behavior changes between the exploration instructions and explanation instructions, whether the changes parents made in their behavior affected their children’s behavior or their type of learning and how child and parent behavior affected children’s performance on follow-up tasks testing children’s causal reasoning.

References


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Sixty-five parent-child pairs participated in the study; children ranged in age from 4 years old to 6 years old. 30 of the children were females and the remaining 35 were males. Forty-four of the parents were females and the remaining 21 were males. All parent-child pairs were recruited at the museum. Data was collected in a free-play gear exhibit at the Austin Children’s Museum between April and September of 2013. Fifteen unconnected gears were laid on a table (additional gears were available nearby) and parent-child pairs were invited to play with the gear exhibit for 3 minutes while being videotaped. Gears were used because of their unique ability to connect and move together. The pairs were randomly assigned to one of three conditions: baseline, encouraging explanation, and encouraging exploration. Parents received an instruction card with directions for their assigned condition. Following the 3-minute parent-child interaction, children were taken to a separate room to complete follow-up procedures. There were three follow-up procedures given to each child. The first was designed to assess the children’s memory and was included as a control. The second task assessed the children’s understanding of causal reasoning and the final task was a measure of generalization; children were given a similar set of gears to the one in the exhibit and given 4 minutes to build a machine.

The results of this study revealed several important factors. First, parent-child interactions were influenced by instructions given to parents prior to the free-play session. Second, the way parents behaved influenced the way their children interacted with the gear exhibit. Finally, researchers were able to predict how children would understand and create machines in follow-up tasks based on the type (exploration or explanation) of interactions with their parents in the gear exhibit. In the explanation condition, children spent more time spinning the gears and less time connecting gears when compared to the baseline condition (Willard et al. 2019). Moreover, the more explanatory questions parents asked their children, the more time children spent spinning the gear. In contrast, children within the exploration condition spent more time connecting gears and creating complex machines in comparison to the baseline condition. Despite these differences, the condition type (exploration or explanation) did not affect follow-up task performance. However, other aspects of the parent-child interaction did affect the children’s performance on follow-up tasks. For example, the more time children spent struggling while exploring the gear exhibit, the more likely they were to answer follow-up questions regarding memory and simple mechanisms correctly. In contrast, the more time parents spent “troubleshooting” (fixing gears for their children) the less time their children persist in follow-up tasks where they ran into problems.

Willard’s research ultimately emphasizes the importance of “open-ended” engagement between parents and their children (Willard et al. 2019, p. e614). Willard encourages parents to let their children remain in control when exploring and allow them to solve any problems they may run into during exploration. By doing this, parents can increase the amount of time their children persist when running into difficult tasks. Willard’s research pointed out the importance of exploration guided by the child rather than the parent and its positive effects on children’s causal reasoning.
In this study, we explored how mother’s talk about the mental states of 5-month-old children (i.e., their emotions, desires, beliefs) affects the child’s language development at 2 years of age. We also studied if there was a link between the child’s mental-state language and their vocabulary size when they were 2 years old.

While we found no link between the mother’s mental-state language at 5 months and the child’s vocabulary size or mental-state speech at 2 years, this suggests that mother’s mental-state language may be more impactful later in the child’s development. It gives us a better look at the overall timeline of how their language skills may form. Also, we discovered that 2-year-old children with larger vocabulary sizes talked about mental states more frequently. Taken together, our findings shed light on the developmental trajectory of mental-state language in children.

Presented April 7 by Samia Razvi
Presented April 9 by Madeline Hale

With the increasing use of technology to communicate, heightened by the COVID-19 pandemic, infants are increasingly participating in virtual interactions to build relationships with relatives separated geographically. In this exploratory study we investigated the changes in acoustic properties of infant-directed speech from in-person versus video chat interactions. Specifically, we analyzed the mean and range of the fundamental frequency of mother’s speech to their 5-month-old infant in a free-play situation and over a Skype conversation, as well as during a Skype call with an adult. We found that the two measures did differ significantly between when the mother spoke to an adult versus speaking to her infant in either situation. However, there was no significant difference found between mothers’ speech to their infant in the face-to-face and Skype interactions. These results suggest that mothers’ speech to infants over video chat conveys some of the salient prosodic properties of IDS that communicate emotion and direct attention.
What's Coming up in the Lab?

Participation in Upcoming Studies for the Infant Learning Project

We are planning on beginning a virtual study on face perception with 10-year-olds by the end of this summer.

Coming up this fall, we are conducting a virtual study on the Lookit platform concerning humor and social perception in infants 4-12 months old.

If you have any questions or would like more information about our upcoming studies, please email infantlearningproject@utdallas.edu.

Thank you!

We greatly appreciate all of the infants & parents who have participated in our studies. Without you, our research would not be possible!
Children Helping Science

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!

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