

# thinklab Newsletter

Spring  
2017

## Hello from the UTD Think Lab!

We have been hard at work studying how children learn, think, and develop. As another school year comes to a close, we thought we would share some updates with you regarding our completed and ongoing research projects!

Inside this newsletter, you will find summaries of some of our most recent findings, publication updates, and lab news. Additionally, we have included some information about our current projects and upcoming testing plans. If you know another family or school that might be interested in participating in these projects—feel free to send them our way! We are always interested in working with families and their children.

We would like to thank you again for your participation in our research projects and continued support of our lab!

All the best to you and your family,  
The UTD Think Lab

## Contact Information

If you have any questions, would like to learn more about the lab, or would like to participate in one of our current studies, feel free to visit us at:

<http://www.utdallas.edu/thinklab/>

Like us on Facebook!

<https://www.facebook.com/UTDallas.thinklab/>

Call us at: **972-883-6075**

Or email us at [utdallas.thinklab@gmail.com](mailto:utdallas.thinklab@gmail.com)

## Think Lab Team Members

### Principal Investigator

Candice M. Mills, Ph.D.

### Team Leaders

Sydney Rowles, Doctoral Student

Kaitlin Sands, Doctoral Student

Laurie Smith, Undergraduate Student

### Research Assistants

Pranati Ahuja, Bhargavi Akkineni, Kirsten Anderson, Audon Archibald, Lauren Boone, Arisha Harrison, Sai Jonnalagadda, Grace McClure, Malvi Mehta, Grace Nguyen, Fajhr Quereshi, Landon Wright, Hershey Kumar, & Laurie Smith

## In this issue:

- **Does a child's reading level influence how much they trust text sources?**
- **What do preschoolers understand about biology?**
- **Is high-quality information really worth the wait?**
- **Evaluating circular and noncircular explanations<sup>1</sup>**

\* Numbers correspond to citations for our published articles -- listed on the last page!



## Does a child's reading level influence how much they trust text sources?

Current research suggests that young children may evaluate text sources of information (e.g., books) as more trustworthy than other sources of information. This may be due to the fact that young children have been taught that text is one of the most reliable sources of information. Yet, depending on their own level of reading, children may have differences in how they evaluate written sources of information compared to verbal sources of information (e.g., information spoken to them by someone). For example, early readers, who have first-hand experience with gathering information from text, may trust written information more than pre-readers, who have not yet had first-hand experience with reading information from text sources. We have been interested in further investigating this relationship between where children gather information from (text vs spoken language) and a child's reading ability (early reader vs pre-reader).

In our study, children ages 4-6 were asked to watch videos that contained unfamiliar objects that different adults were asked to name: one adult read the name from a text source (e.g., "This says that it is a "seebu"), and the other adult said the name out loud from memory (e.g., "I say that it is a "mido"). After the adults had given their answers to what the object's name was, children were asked which of the two names they believed the object was called. This process was repeated with four unfamiliar objects. Afterwards, children were tested with a reading-vocabulary test to assess their reading abilities to place them into either a pre-reading group or early-reading group. Children also answered some additional questions to measure how they think about text sources of information.

This study is ongoing, but preliminary results support that early readers and pre-readers perceive text information in different ways.

## What do preschoolers understand about biology?

"What makes it rain?" "Why do dogs need to eat?" "How do flowers grow?" Preschoolers ask a lot of questions, and at least some of their questions are in attempt to understand their biological world. Although we know from past research that 4- and 5-year-olds ask a lot of questions about biology, less is known about how young children make sense of the answers they receive from adults. Thus, it is important that children be able to recognize when they are given good and bad information so that they can take a more active role in their own learning.

In this project led by doctoral student Kaitlin Sands, we aim to discover if preschoolers can recognize the difference between good and bad biological explanations that they receive from other people. In this study, children hear stories and questions about different biological processes of a variety of animals. Then children hear some possible explanations about the biological processes. The explanations differ in quality and children must decide how well each of these explanations answers the question that was asked about that animal. For example, children may be told that when bees want to make honey, they slurp up sugary juices from flowers. Then they will be asked "How does a bee turn sugary juices from flowers into honey?" They will then be provided a number of explanations such as, "The bees create honey by using the sugary juices" and "The bees store the sugary juices in honeycombs and fan it with their wings until part of the liquid dries and the only thing left is honey." Children then get to say how well they think the explanations they heard answers the question. Once children hear about and rate all of the explanations for the different animal processes, they play a few different games that attempt understand how their prior exposure to animals and biology influences how they think about the different animals in the study.

We hope that this study will allow us to see what young children actually understand about biology during the early years so that we as adults may be able to better engage with young children about biology in ways that most enhance their learning.



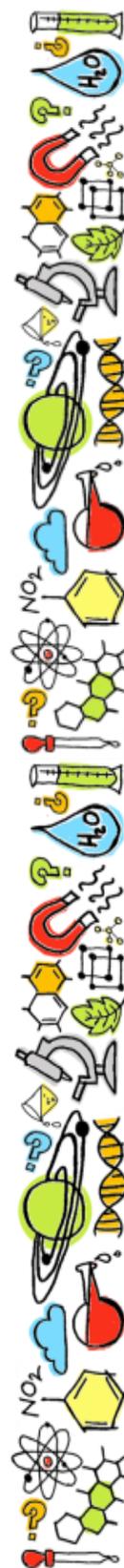
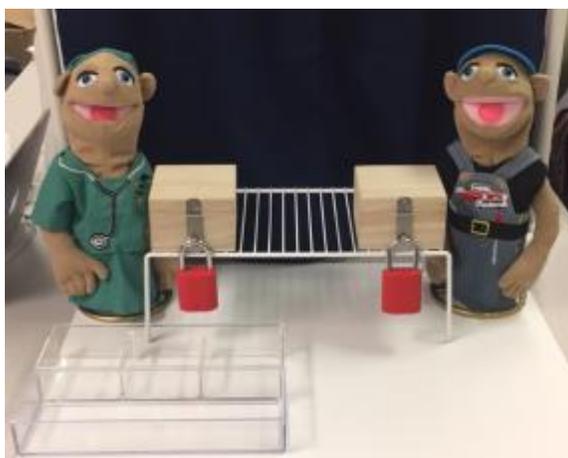


## Is high-quality information really worth the wait?

Preschool is a time where children are learning a lot of new information. There are many things that preschool children do know; indeed, they are incredible learners. That said, preschool children clearly do not know everything, and they may need to gather information from others with more experience. Children often go about gathering information by asking questions, and need to make decisions about who the best person to ask is. Along these lines, we know that 4- and 5-year-old children understand at least some things about expertise (e.g., understanding that a doctor knows about medicine), and recognize what questions an expert may be able to answer. But what if that expert is not easily accessible? For example, if children have to wait or have to complete some sort of task (e.g., finishing homework, doing chores) before they can gather information, will children think that gathering information from the best quality source is worth it?

For this ongoing dissertation project of doctoral student Sydney Rowles, we hope to understand how children gather information from experts when those experts are not equally accessible. Children are introduced to two puppets (a doctor and a car mechanic) and hear different questions. These questions fall into 3 categories: questions about medicine/the human body, questions about cars and vehicles, and questions about local government (and thus unrelated to either a doctor's or car mechanic's area of expertise). Children are able to decide which expert they want to answer each question for them. Importantly, children cannot freely choose between both experts equally: children can go to one of the experts immediately, and the other expert would come at a "cost". For this costly expert, children either need to wait for 30 seconds or they have to complete an effortful task (sorting pompom balls) before they can give them a question. After children assign all of the questions to the experts, the puppets answer those questions and children get a sticker for every correct answer. We want to see whether children are willing to pay a "cost" in order to gather the best quality information. Finally, children complete a number of "individual difference" measures, which tap into more general differences among children that may explain different responding patterns. Children will complete tasks measuring their verbal intelligence, working memory, and inhibition.

This study is still ongoing. So far, we are not seeing differences in the types of cost children are facing: children seem equally likely to pay the cost of waiting 30 seconds as they do the cost of sorting the pompom balls. Children so far are also much more likely to give a question to the puppet that does not come at a cost. That said, 80% of children were at some point willing to do what was necessary to get information from the more costly puppet. We will be continuing this project in the summer and fall to complete the study and better understand how children gather information from others when information is not equally accessible.





## Explanations and curiosity

Parents and teachers alike know that kids love to ask questions. However, the answers children receive may vary in quality depending on who is answering, what information is available, or even the kind of day they're having. These responses range from "I'm not sure" on a busy day to a very detailed explanation in easier moments. Depending on the kind of explanation, children may have different levels of confidence in the answer they get and may seek out a different explanation to satisfy their curiosity. This study is a follow-up to a study that was recently published. For this study, we wanted to look at how 7-10 year old children responded to explanations varying in quality.

In this study, children got to play a game on a tablet in which they heard explanations for various features of strange but real animals. They were shown a grid of 12 animals and were free to explore each animal. If a child clicked on an animal, they would hear a question about that animal, and then either a weak or an informative explanation. For example, if children heard the question, "How do racket-tailed drongos use their voices to steal food?", they might either hear "They use their voice to help them take food that they can eat" or "They copy alarm sounds of animals to scare them and steal their food". After rating the explanation, children could either click for more information and hear a detailed informative explanation or return to the main grid. We measured whether children were more likely to request more information in response to weak explanations than in response to simple informative ones. We also varied whether children could ask for more information for every animal or could only request information a certain amount of times, and thus had to selectively decide when and if they wanted to follow-up for more information.

Overall, as expected, children in this age range recognized that the simple informative explanations were better in quality than the weak explanations. Importantly, we also found that children were more likely to seek out more information after hearing a weak explanation than after hearing informative ones. Indeed, children appeared to recognize that the information they received was poor and wanted to hear more information to satisfy their curiosity. Interestingly, younger children only showed this pattern when they were able to seek more information after every animal, but not when their ability to follow-up for more was restricted. This is different from older children, who sought more information following circular explanations regardless of the level of restriction.

These findings may have important implications for how we approach education. Children are often under time and resource restrictions when in the school environment which may influence whether they are willing to seek more information following weak explanations. Elementary school curriculum may benefit from scaffolding children's ability to recognize when some explanations are weak and when/how to seek out further information so that children can actively guide their own learning.

This study was a preliminary study leading into our three-year grant through the **National Science Foundation!** We know that there are a lot of individual differences in how children evaluate explanations, and one of our goals of the grant is to better understand those individual differences. Another goal is to help children better recognize explanations that are weak with the hope that they will be motivated to learn more about the topic. In the final year, we will be working with a few local classrooms to help children better evaluate the information they receive. This project is in collaboration with Dr. Judith Danovitch from the University of Louisville. To stay up to date on this project, please visit our lab website at [www.utdallas.edu/thinklab/news/](http://www.utdallas.edu/thinklab/news/)



## Participate!

Families and schools with children between the ages of 4 and 10 are invited to join our research family! For our projects, children play games and/or hear short stories and answer some questions about them. Our studies involve a one-time session that lasts between 15 and 90 minutes, depending on the study. The sessions take place at our lab at Green Hall on UT Dallas's campus, where convenient free parking is provided. We also interview children at local daycares and after school programs. Most studies involve a small toy or gift for your child and parents receive helpful information about child development. Some studies taking place in our lab also include \$10-30 compensation for participation. Our families tell us that the experience is enjoyable and interesting for children, parents, and teachers!

## A big thank you to last year's participating programs!

C.A.R.E. Child Development Center  
Davenport Montessori  
Kaleidoscope Learning Center  
Messiah Lutheran Lambs  
North Star Learning Center  
Plano Day Care Center  
Spring Valley United Preschool

## About Us



The UTD Think Lab is located at the University of Texas at Dallas, and is under the direction of Dr. Candice M. Mills.

At the Think Lab at UTD, we seek to discover knowledge that will contribute to the healthy cognitive and emotional development of our children, and we are looking for schools, parents, and children to take part in important and fun research studies on child development. Much of our research focuses on issues related to the development of critical thinking skills. We believe that this research can help educators, families, and scientists understand important aspects of how children think, learn, and develop.

## Article Key

1. Mills, C. M., Danovitch, J. H., Rowles, S. P., & Campbell, I. L. (2017). Children's success at detecting circular explanations and their interest in future learning. *Psychonomic Bulletin & Review*, 1-13. doi:10.3758/s13423-016-1195-2

### Posters Presented This Year:

- Campbell, I. C., Mills, C. M., Corriveau, K. H., & Smith, L. M. (2017, April). *What factors lead children to trust text-based testimony over oral testimony?* Poster presented at the Biennial Meeting of the Society for Research in Child Development, Austin, TX.
- Sands, K. R., Mills, C. M., Rowles, S., & Campbell, I. L. (2017, April). *"Click for more info": Children's engagement in information seeking to close information gaps.* Poster presented at the Biennial Meeting of the Society for Research in Child Development, Austin, TX.
- Rowles, S., & Mills, C. M. (2017, April). *Preschoolers sometimes seek help from socially engaged informants over competent ones.* Poster presented at the Biennial Meeting of the Society for Research in Child Development, Austin, TX.



We would also like to take this opportunity to remind you about UTD's **Center for Children and Families**. The center aims to promote optimal child development with research focusing on three initiatives: parenting healthy families, strengthening interpersonal relationships, and enhancing thinking and learning. Through the center, you can find out more about other groups here at UTD doing research on child development. In addition, the Infant Development Program offers screenings for children under age two and consultations for parents who may be concerned about their children's development. You can find more information about the center and other programs online at: [ccf.utdallas.edu](http://ccf.utdallas.edu)

## Graduating Members

### Laurie Smith

*Psychology B.S. Fall 2016*

### Pranati Ahuja

*Neuroscience B.S. Spring 2017*

### Bhargavi Akkineni

*Psychology B.S. Spring 2017*

### Kirsten Anderson

*Child Learning & Development B.S. Spring 2017*

### Audon Archibald

*Arts & Technology B.A. Spring 2016*

*Child Learning & Development B.S. Spring 2016*