THE UNIVERSITY OF CHICAGO | Center for Early Childhood Research

Newsletter

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Who We Are

The Center for Early Childhood Research consists of several researchers in the Department of Psychology at the University of Chicago that share an interest in understanding how infants and children learn and develop. We investigate motor development, social understanding, language acquisition, early math and science learning, and more. Research methods include experimental studies, naturalistic observations, eye-tracking, and recording brain activity.

Laboratory Directors

Jean Decety
Irving B. Harris Distinguished Service Professor of Psychology and Psychiatry
Child NeuroSuite

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Infant Learning & Development Lab

Daniel Yurovsky
Assistant Professor of Psychology
Communication and Learning Lab

Have you recently moved?
Do you have a new baby?
Do you have friends who might be interested in our program?

We are always recruiting new participants. We have a wide range of studies for infants and children between the ages of 5-months through 11-years-old.

Please pass on our contact info
or sign up online:

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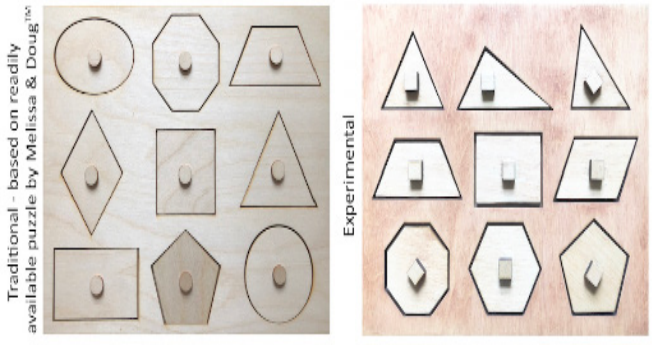
Fewer Shape Types in Puzzles Result in Higher Quality Parent-Child Shape Talk

Parents' spatial talk – describing shapes, along with sizes and locations of objects – predicts young children's spatial reasoning, which supports children's math. There are many toys designed for young children, such as books, blocks, and puzzles, that focus on shapes, and these materials can provide great opportunities for both parents and children to engage in rich talk about shapes and spatial concepts. However, commercially available puzzles typically only include one example of each type of shape, and little is known about how specific features of shape puzzles impact how parents and children interact with these puzzles.

In this project from the Cognitive Development Lab, headed by Dr. Susan Levine, we were interested in whether or not the number of examples of each shape in a puzzle (3 triangles in the same puzzle vs. only 1 triangle) would impact how parents and children play with the puzzle.

Children between the ages of 2.5 to 4 years old, and a parent, participated in this study at the University. Each parent and child had the opportunity to play with two shape puzzles for about 6 minutes each. Our traditional puzzle was modeled after shape puzzles that are currently on the market, with one example of each typical looking shape. The experimental puzzle we were testing had multiple examples of each type of shape, including atypical versions of the shapes.



Preliminary analyses of parent talk during the interactions showed that there was more shape labeling (e.g. circle, square, triangle) when playing with the traditional puzzle. However, parents used more number words (e.g. one, three, nine) and relational language (e.g. bigger, longer, fewer) when playing with our experimental puzzle that contained multiple versions of the same shapes. This suggests the experimental puzzle may offer more opportunities for comparing across different shape types and different versions of the same shape type. On average, the experimental puzzle also took longer than the traditional puzzle to complete, which suggests that the experimental puzzle might have been more difficult to complete and may have allowed more time for in-depth shape and math talk.

These findings suggest that the design of shape puzzles can impact how parents and children play with them. In particular, including multiple and different examples of the same shape in a puzzle can elicit richer shape and math talk from parents. This research highlights how critical it is to think about the best way to design math toys and materials to naturally foster more enjoyable and educational interactions between parents and children.

Does Race Affect Children's Moral Reasoning?

At the Child Neurosuite, we are studying the development of morality, social decision-making, empathy, and prosocial behavior, by combining behavioral economics and neuroscience methods. During the summer of 2018, 80 children aged 7-9 participated in a new study conducted by Elizabeth Huppert (Ph.D. student) and Professor Jean Decety to examine the effect of race on children's moral reasoning and prosocial behavior.

Children were given four toys that varied in value and were told that they could keep them or share any or all of the toys with another child. We examined whether children would divide the toys equally in amount between themselves and the other child (i.e. 2 and 2),

and whether they would divide resources equally in value (i.e. giving one higher-valued resource and one lower-valued resource to the other child and keeping one of each for themselves). Every child played this game twice, once with a same-race and once with an other-race recipient. We are interested in whether the race of the recipient in these behavioral economic games affects children's sharing decisions, and if so, whether differences in sharing are reflected in the amount of resources or the value of resources children share.

EEG is a passive, child-friendly method to record brain activity. It uses a stretchy net with sponges to pick up brain waves.

After playing the sharing games, electroencephalography (EEG) was used to measure brain waves in response to watching sad or neutral facial expressions from same-race and other race children. This technique allows us to capture brain activity in real-time, in particular to quantify both fast and slow neural processing of emotional expressions expressed by others. Analyses will determine the extent to which neural responses elicited by same-race and/or other-race sad facial expressions correlate with children's empathetic concern, as well as how they predict sharing behavior. This developmental social neuroscience approach helps us better understand the factors driving moral reasoning and prosocial behavior, and how sharing decisions may be influenced by group membership and social context.

How Do Children Learn Verbs?

The ability to learn words and generalize what they mean in various situations is an important skill. As adults, we know that the word "twist" can refer to a movement we make when opening a jar, or the way we move a doorknob to open a door. Understanding that the word "twist" can apply to an action we can make with many different objects is not as easy for children. When young children learn new verbs, they often associate the verbs with the object on which they learn, rather than the action itself. Thus, if a child learns to "twist" the top off of a jar, they may think that "twist" is linked to the jar.

In a study by the Goldin-Meadow laboratory, we investigated how different forms of movement experience during verb learning may affect children's ability to generalize. In our study, we asked whether children can learn verbs through doing actions on objects, through gesturing the same actions (i.e., doing the same action near an object), or through doing both actions and gestures. To test our hypotheses, children were asked to learn 4 novel words like "ratching" and "tiffing" by saying a word while doing an action or gesture.

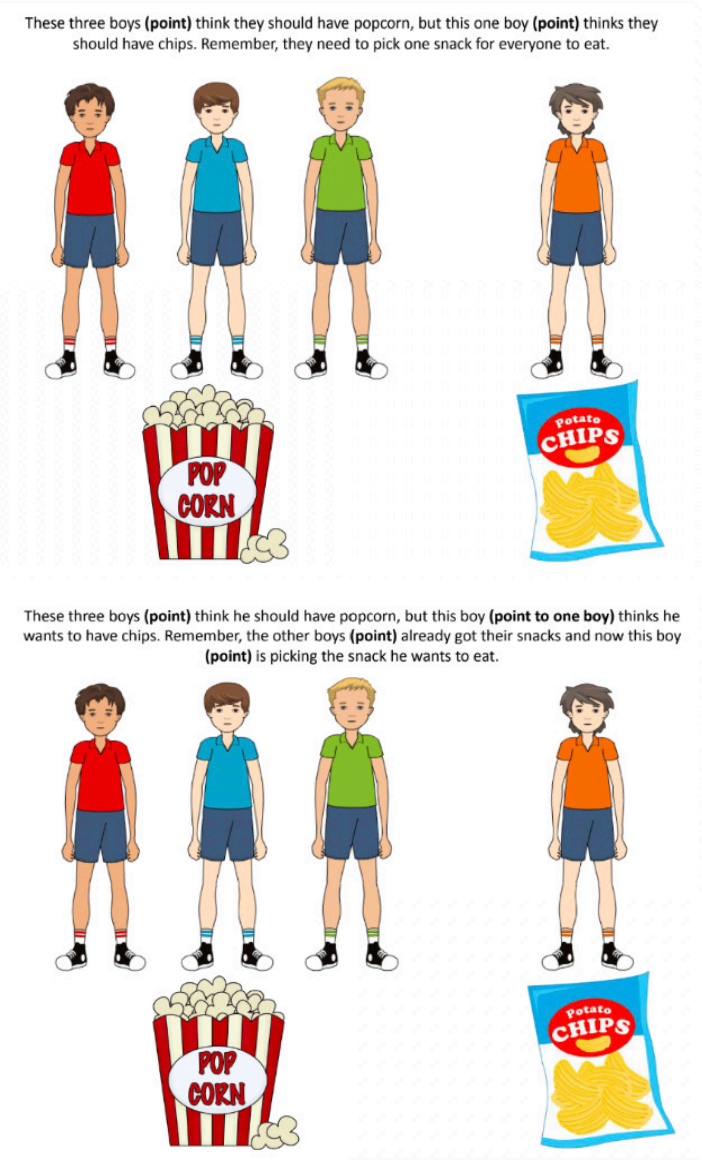
Learning through action

Learning through gesture

Some children learned all of the words through either action or gesture, while others learned half of the words through action and half through gesture. We found that children could learn through all of these different movement experiences, and once the words were learned, we tested whether children could generalize the words to new situations. In other words, we asked whether, after learning to "ratch" on a particular object, children could recognize the same movement being performed on a different object as "ratching." Our results suggest that experience with both movement types, either action and gesture alone or some combination of the two, can help children generalize verbs they have learned.

Do Children Think That Voting is a Fair Way to Make Decisions?

In our contemporary political system, voting is an integral way of coordinating collective action. Despite how crucial voting is as a process for group decision making, there has been very little work exploring how children think about voting and majority rule. In this project, Hannah Hok, Emily Gerdin & Dr. Alex Shaw were interested in how young children think about voting and majority rules as a way to make group-decisions.



Children between the ages of 4- to 10-years old were told stories about groups of kids in classrooms that had to make decisions together. In one story, children were making a decision about whether to eat popcorn or to eat chips. We asked children which snack a group should get: the snack that the majority wants or one that only one individual wants.

Children at all ages thought that the group should get what the majority wants. Importantly, we demonstrated that this effect is not merely driven by children thinking one should always go with the majority (or conformity). When the decision was about what snack an individual should get for herself, children thought that the individual should get the snack she wants, not the one that the majority think she should get. These results demonstrate young children know to use voting for enacting group decisions, but not a single person's decision.

Children's Understanding of How Others Manage Their Reputations

Imagine being introduced to two schoolchildren, Sam and Jessie. Sam really cares about what other people think of him; he wants everyone to think he gets the best grades in his class and that he's really smart. Jessie, on the other hand, doesn't really care about what other people think of him; he wants to learn a lot and do his best job on every school assignment.

As adults, we recognize that there is a clear difference between Sam and Jessie. That is, we expect different kinds of behavior from someone like Jessie, who genuinely wants to be smart, and someone like Sam, who simply wants to appear smart in order to obtain reputational benefits. While being able to distinguish between individuals with intrinsic or reputational motives is important for successfully navigating the social world, little is currently known about when children begin to make such distinctions.

To investigate this, Kayla Good, the lab manager of the DIBS Lab, and Dr. Alex Shaw conducted three studies in which four- to nine-year-old children were asked to make predictions about the behavior of stu-

dents who want to "be" smart versus merely "seem" smart. In Studies 1 & 2, children were asked which of these two students would 1) lie about failing a test and 2) ask for help in front of the entire class. Six- to nine-year-olds, but not four- to five-year-olds, predicted that the student who wants to "seem" smart would be more likely to lie to a peer about a failing grade and less likely to seek help publicly. In an ongoing follow-up study (Study 3), children's expectations for these students' help-seeking behaviors in public versus private are being compared. Thus far, children predict that those who want to "seem" smart will seek help privately, but not publicly. Overall, the findings suggest that, as early as age six, children understand how reputational motives can shape people's behavior.

ManyBabies Update: Studying Baby Talk and Replicating Research

Baby talk, or child-directed speech, seems to appear across languages and across cultures. When speaking with infants, adults will quickly change they way they talk to exaggerate their intonation, elongate certain words or sounds, repeat information, and much more. Over the last year, the Communication and Learning Lab (CaLLab) participated in a large-scale, multi-site project aimed at examining how infants engage with this type of speech, compared with more typical adult speech.

Working with collaborators at 68 labs throughout North America and Europe, researchers Ben Morris and Dr. Dan Yurovsky collected and contributed data to the project from infants between 9 and 14-months-old. Using an eyetracker (an infrared camera that measures where one is looking), the researchers assessed infant attention and interest while hearing prerecorded child-directed speech, compared with their interest while hearing prerecorded adult-directed speech. With contributions from all the labs, the project collected a remarkable amount of data with infants across a wide age range (5-14 months) and from diverse language and cultural backgrounds.

Leveraging the size of this project, one key goal was to investigate the replicability of infant studies, given the growing interest in studying methodological issues in psychology as a field. Across the participating labs, we replicated and extended previous findings demonstrating that infants have a strong preference for baby talk (compared to typical adult speech) and that this preference seems to increase with age, at least up to 14 months. Importantly, the participating labs also measured infant responses in different ways, allowing us to compare the results from 3 different methodologies that are commonly used with infants (eyetracking, looking-time, and head-turning). Due to the large scope of this project, data analysis is still ongoing to examine the precise role of methodological and cultural differences across labs, but this study will play a key role in helping us learn more about the very nature of infant research.

The Social Networks of Infants

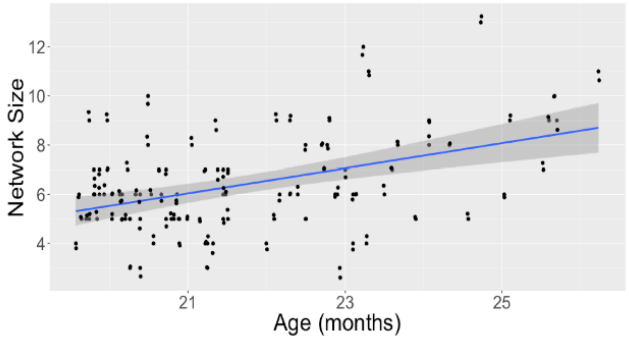
The relationship between social networks and social cognition has been studied widely in adolescents, adults, and primates. Previous studies exploring this relationship have measured network size to see how it relates to various social cognitive outcomes; for example, how social network size relates to changes in brain activity for adults and primates. While the relationship between social networks and behavior is understood in adults and adolescents, limited work has studied infants' social networks.

The intensity of infant social relationships can vary in different ways, such as the number and types of activities a person performs with an infant or how emotionally close an infant feels to a person. As yet, no study has explored how these factors vary across infant relationships or how different properties of infants' social networks could affect early social cognitive outcomes (i.e., how diversity of a social network could impact early social cognition).

To examine these various dimensions, we developed a new questionnaire: The Infant Social Relationship Questionnaire. The questionnaire has two main ob-

jectives: 1) to measure and quantify aspects of infants' social relationships and networks and 2) to explore whether these aspects vary across infant social relationships.

Data was collected from 98 infants who were approximately 2 years old. Through interviews, parents were asked to describe their infant's "typical week" of activities. Parents reported infants' total waking hours and a list of people their infant sees regularly. Then, parents provided basic demographic information for each person in their infant's network, and the following was computed for each relationship: the number of activities each person performs with the infant, how emotionally close the infant feels toward each person, the proportion of time the infant sees each person, and how many languages that person speaks.



Our initial analysis revealed two interesting findings. The first is that Network Size and the Age of Infant are positively correlated – as infants get older, their social networks get bigger. Children go through rapid cognitive changes during this time and we have evidence that their social worlds are rapidly changing too. Additionally, we found that our measures for the intensity of the relationship – time, emotional closeness, and number of activities – are related to whether or not a relationship is a kin relationship. This shows that our Questionnaire can accurately capture information about infants' social relationships.

What Affects Children's Ability to Reason Analogically? Update

When you ask a child, "How is a plant stem like a drinking straw?", they could respond in a variety of different ways. Some children, especially younger children, might focus on the appearance of the objects, and will say that both plant stems and drinking straws are long and skinny. Other children might focus on relational similarities: both are used to deliver liquids. The latter is known as an analogy, which is a kind of similarity in which the same system of relations holds across different objects. The ability to reason analogically is important for thinking and learning; children can use analogies to infer and apply new knowledge. As children get older, they shift from paying attention to perceptual/object features to relational features, known as the relational shift.

In Dr. Lindsey Richland's Learning Lab, we are currently examining different possible ways in which this relational shift occurs. More specifically, we are studying two factors that impact this shift: (1) children's executive functions, or the tools kids use to regulate their own thinking; and (2) the attention parents pay to perceptual versus relational similarities when socializing with their child. Additionally, we conduct experimental work that helps us understand how to support children in developing a relational mindset, or a mindset that allows them to focus on relational, as opposed to perceptual, similarities. Throughout our work, we focus on individual differences in children's analogical reasoning abilities, and we strive to understand how to strengthen children's ability to learn and reason from analogies.

Over the past few months, around 30 four-year-old children have come to the Learning Lab to engage in different picture games with our staff. These games examine how kids identify the similarities between different pictures. After completing these tasks, the participants are then asked to identify pictures they saw in previous tasks. Through this study, the Learning Lab hopes to discover more about how analogical reasoning develops in young children, adding to our previous research looking at analogical reasoning across the lifespan. Our study currently takes about

30 minutes to complete - if you have a 4 year-old who is interested in participating in our study, please feel free to reach out!

How do parents communicate with their children?

As social beings, humans communicate with each other constantly. In order for communication to be successful, we must be able to give and receive information effectively. Young children may have a harder time communicating in clear and succinct ways, but over time they become fluent conversationalists like us.

How do children develop these communication skills? Research has shown that parental input is important for some aspects of language development in children, but we do not yet know how parents might influence the development of children's communicative abilities.

The Communication and Learning Lab (CaLLab) is interested in finding the answers to these questions, and we are currently conducting a study looking at patterns of communication between parents and their children. For this study, we invite parent-child pairs to come into our lab and play a cooperative game on iPads. We record each session, and then transcribe and analyze the speech used during the game.

Results from our study will tell us how communication between parents and children change as children grow older. Ultimately, we hope that our study can help us understand the role parents play in their children's development of communicative skills. CaLLab needs your help to accomplish this goal! If you have a child aged 4, 6, or 8 years old, and are interested in participating, we would love to hear from you!

Thank you for your participation!

You and your child's contribution to our work is vital, and we appreciate every time you visit our labs. Thank you so much for your continued support of our research program!

Questions?

Please contact us or find more information on our website: babylab.uchicago.edu

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