

The Center for Early Childhood Research



THE UNIVERSITY OF
CHICAGO

July 2013

<http://babylab.uchicago.edu>

2013 Newsletter

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What is the Center for Early Childhood Research?

At the Center for Early Childhood Research at the University of Chicago we are interested in understanding how infants and young children make sense of the physical and social world, learn language, and begin to develop mathematical and spatial reasoning abilities. We seek to understand how new abilities emerge during early development, and how these early steps set the stage for thinking and learning in the complex academic and social environments that children will encounter later in childhood.



What's New at the Center for Early Childhood Research!

We would like to introduce a new lab at the Center for Early Childhood Research!

We are happy to announce that Professor Lindsey Richland and the Learning Lab have recently joined the Center for Early Childhood Research. Dr. Richland joined the Department of Comparative Human Development in 2011, and examines children's higher order thinking and memory development. She also studies classrooms in the US and internationally to develop new tools for improving mathematics and science teaching. The Learning Lab is currently running studies for 5- to 11-year-olds.



Come in for a New Study at the Cognitive Development Lab!

We are interested in how children's understanding of numbers relates to their ability to play spatial games (e.g. read maps, draw shapes, make designs out of blocks). We are looking for children who have recently completed kindergarten (5-6 years old) and third grade (8-9 years old).

Have you recently Moved?

Email:
babylab@uchicago.edu

We always welcome new participants!

Do You have a new Baby?

Phone: (773) 834-9791

We have a wide range of studies for infants and children between the ages of 5-months through 11-years-old. If you have friends and family who may be interested in participating in our studies, please pass on our contact information or pick up a brochure in one of our labs!

Is your toddler unemployed?

Website:
<http://babylab.uchicago.edu>

Let us know so we can update our database!



Development of Social Cognition Lab

Dr. Katherine Kinzler

[Http://dsclab.uchicago.edu](http://dsclab.uchicago.edu)



How do children think about food, germs, and illness?

When is it safe to share food with another person? Adults might think of double-dipping as a serious social faux pas among casual acquaintances, but as perfectly acceptable among friends or family members. When do young children start to think about food as a way to possibly spread germs and illnesses? Jasmine DeJesus is asking these questions in a series of studies with 3- to 8-year-old children. She shows children videos of two people who each eat a snack. One person puts a new spoon into her food when she is done; the other person sneezes into her bowl and puts her licked spoon into the food. Then, children are given a chance to try the snacks they saw the actors eat (applesauce). We measure how much of each food children eat (if any) and ask them how yummy they think each food is. Jasmine finds that children begin to prefer the clean food at around 5 years of age, while 3- and 4-year-olds seem to enjoy both foods equally.

Jasmine is interested to see whether there are contexts in which 3- and 4-year-olds might differentiate between clean and contaminated foods. In future studies, Jasmine will show 3- and 4-year-olds similar eating events, but this time actors will either speak in English or in a language that children have never heard before. If children view language as a guide to social group membership, hearing people speak in different languages might increase their sensitivity to contamination.



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Seeing What Others See

Interacting effectively with other people requires understanding their intentions. While this may seem trivial, understanding another person's intentions sometimes requires inhibiting your own knowledge, which can be difficult. For instance, in a study designed by Zoe Liberman and Samantha Fan, participants sat across the table from an experimenter, who asked them to move objects around a 4 x 4 grid, of which four squares were occluded with opaque slats. Objects in the occluded squares were blocked from the experimenter's view but clearly observable to participants. The experimenter then asked the child for help moving toys around the grid. To succeed on some trials, children had to take the experimenter's perspective and choose the target object that was visible to the experimenter, rather than the distractor object, which was a better exemplar, but was hidden from the experimenter's view. We measured the number of times each participant chose the target object. Interestingly, while most children were able to understand the experimenter's instructions on at least some of the test trials, we found an effect of language background. Children who were bilingual, or regularly exposed to (but not fluent in) another language chose the target object over the distractor on significantly more

trials. This suggests that exposure to more than one language may facilitate social communication. One possible reason for this finding is that children who hear more than one language may have unique social experiences that require them to monitor the language patterns of others. This regular foreign exposure may enable children to better understand the speaker's intended meaning and allow them to communicate effectively. In future research we plan to further investigate this question by looking at bilinguals performance in other communicative tasks as well as studying what factors may help monolinguals understand communicative interactions more effectively.



Come participate in our fun new study!

Zoe and Sam are starting to look at a similar question in younger children! In the baby version of this perspective taking game, your 14- to 17-month old infant will sit on your lap as we introduce them to a few sets of toys. During the game, we will place a small barrier on the table between your infant and an experimenter. Then, the experimenter will request toys and we will look at whether your infant is more likely to reach towards toys that are seen by the experimenter or ones that are hidden from her view. While we don't know how infants will react to this game, we try to make it fun! We are looking for babies of many different language backgrounds, so please let your friends know about us if they have infants this age who sometimes hear a non-English language! We look forward to updating you on the progress of this study in our next newsletter.



Angle Understanding

Can preschoolers learn a geometry problem that stumps even high school students? Dominic Gibson and Eliza Congdon show that children as young as 4 years old can learn how to properly compare angle sizes if they are given the right kind of lesson. Students in elementary, middle, and even high school often mistakenly believe that the size of an angle is determined by the length of its sides or its overall area rather than the measure of rotation. What might cause this misconception? In the English language, “angle” can refer either to the rotation between two lines or the entire angle-figure. So in this study, researchers came up with a nonsense word, “toma”, to refer to the entire angle figure (and its overall size), and used the word “angle” to refer only to the measure of rotation. Using two labels (instead of one) to refer to the two meanings of “angle” helped children identify the relevant meaning when making judgments about the size of angles. In other words, children can learn a lot more than one might think when they are given the right instruction!



Cognitive Development Lab



Dr. Susan Levine

<http://www.spatiallearning.org/>

Early Engineering Lessons

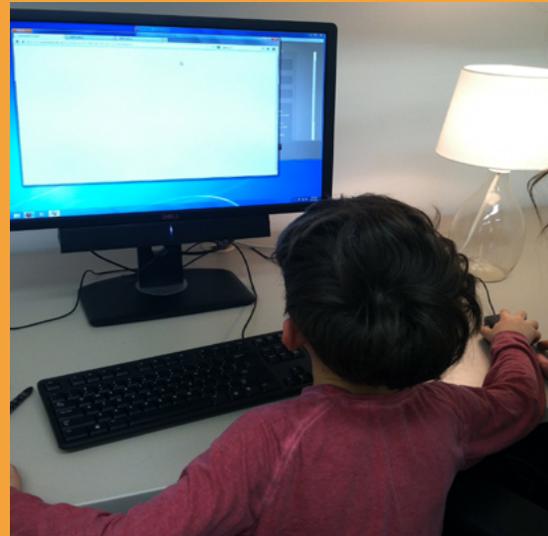
Lauren Applebaum studies the use of comparison in teaching and learning early engineering concepts, such as the importance of triangles in strong structures (e.g. truss bridges). Comparison can be used to highlight the relationship between a single triangle and larger structures that use triangles for stability. For example, triangles can make structures, like bridges, strong. And, a truss bridge is made up of a series of triangles. In order for children to be able to fully understand this concept, the student needs to understand how a solitary triangle is related to a truss bridge. Past research has shown that while teachers use comparison and analogies during instruction, they tend not to direct students' attention to the important relationships. To see if cues to the relationship between a triangle and a truss bridge can promote learning, Lauren has been studying classrooms of students in grades 3-6 during a lesson about building bridges at the Museum of Science and Industry (MSI) in Chicago. A museum staff member teaches one of two versions of the lesson to each class. In both versions of the lesson the museum facilitator teaches students terminology important to building bridges, and he includes a short instruction on triangles in truss bridges. During the experimental lesson, the facilitator overlays a wooden triangle on top of a wooden truss to highlight the relationship between the triangle and the truss. In the control lesson, he introduces both the triangle and the truss but he does not overlay them. Results from this study suggest that highlighting relationships through overlay can help students understand the relationship between a triangle and a truss bridge. To see if cues to comparison can also help children understand early physics concepts, Lauren has begun working on another lesson at MSI on simple machines.



Learning Lab



Dr. Lindsey Richland



<http://learninglab.uchicago.edu>

What do children and adults see when they look at a scene?

Whenever a child looks at a picture of a realistic scene, there are lots of pieces of information they could notice. What they pay attention to may change with age, brain growth, and experiences with their cultures. This project seeks to understand how these changes unfold over time, and how culture may impact the way children view their world. In this study, we first introduce children and their parents to our puppet friend, who wears a blindfold, and we show them a set of pictures. We then ask both the children and their parents to describe the pictures to the puppet, since he can't see them himself. Afterwards, the children solve problems and play short computer games that measure their developing memory and attention skills. In order to better understand the role of culture, we are inviting families from three different groups to complete the same activity. There are studies that suggest there may be variations in how cultures informally teach their children to shape their visual system, so we are examining differences in the way participants from the three groups describe the scenes and solve the problems. One group of participants are English-speaking families in the Chicago area. A second group are children from Japan, temporarily living in the suburban Chicago region who attend a Japanese language school. Third, we are running the same study in a city in southern China. We plan to compare these to see what visual information children of different ages and cultures find interesting and worth their attention.



Learning Lab

Dr. Lindsey Richland

<http://learninglab.uchicago.edu>

Can a Teacher's Gestures Help Students Succeed in Classroom Mathematics?

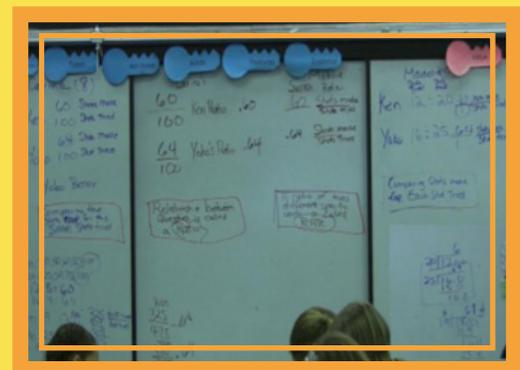
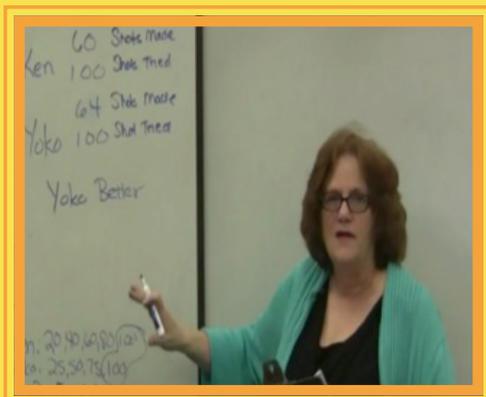
This study is the first of five projects in our research that explores how students learn. We are interested in understanding both how students draw mathematical connections and how educators can support this important learning process. The "Gesture in the Classroom" study investigates the effect of using gesture to illustrate connections between concepts. In particular, we are interested in whether using comparative gestures (such as pointing between two related ideas) increases students understanding of difficult concepts. Participants will be shown a prepared video of a math lesson on rate and ratio. The lesson content is the same in all videos, but the gestures the teacher uses are different. Students will be randomly assigned to either the "gesture" or "no gesture" video lesson, and complete pre- and post-tests. In this way, we hope to assess whether teacher's use of comparative gestures helps students to understand complex mathematical concepts. By investigating specific methods for teaching difficult math concepts that could be used in a live classroom context, we hope to provide support for specific teaching strategies that can help teachers communicate comparison and scaffold understanding.

Where are they Now?

Dea Hunsicker, who earned her P.h.D at the University of Chicago is currently a post doctoral researcher here. Dr. Hunsicker works on a project exploring the role of gesture in the acquisition of noun phrases in typically developing children learning English and exploring the development of phrases built around nouns in Nicaraguan homesigning children

Naveen Khetarpal, who earned his P.h.D at the University of Chicago is currently a post doctoral researcher here. Dr. Khetarpal investigates the development of language and spatial skills in normally developing children and children with early brain injury.

Liz Gunderson, who earned her P.h.D at the University of Chicago is currently an Assistant Professor at Temple University. Dr. Gunderson's research focuses on the cognitive and socio-emotional factors that affect young children's academic achievement, especially in the domain of mathematics.





Children Learning through Direct and Observed Actions

Sometimes children are directly taught how to do something new, and other times they observe the novel actions of others. Do these different ways of acquiring information lead to different kinds of learning? Laura Shneidman is investigating this question in a series of studies. In one study, 18-month-old and 2-year-old children were taught how to operate a series of new toys and then given an opportunity to use the toys themselves. One group received instruction from a person who directly spoke to them, while another group observed (but did not interact with) the person performing the actions. Children attended to both of these events equally, however, at 18 months of age, children were more likely to imitate the novel actions when they were directly addressed as compared to when they simply observed. By two years of age, children imitated equally from directed and observed contexts. Currently, Laura is investigating how children might learn new words from directed and observed contexts, and how children's attention to the actions learned in these contexts may differ.



Infant Learning and Development Lab

Dr. Amanda Woodward

[Http://woodwardlabuchicago.edu](http://woodwardlabuchicago.edu)



Understanding Intention through Eyetracking

One way to examine children's understanding of intentions and goals is to investigate whether they can make visual predictions about others' behaviors using an eye-tracking procedure. Eye-tracking studies involve showing children short videos on an eye-tracking computer monitor. The computer uses infrared cameras to record precisely where on the screen children are looking as they watch these videos.

In Sheila Krogh-Jespersen's study, 14- to 16-month-old infants watched as a woman either reached for and grasped or brushed the back of her hand against one of two toys. Then, the objects switched locations and the woman started to act but paused with her air in mid-air and waited. Sheila measured whether infants visually predicted where her hand would reach to, either the toy the woman had acted upon or to the toy that was now in the same location that she had previously acted upon. Infants at this age were more likely to predict that she would continue to act upon the same toy when they had watched her grasp the toy than when she had brushed the back of her hand against it. Thus, infants take into account how purposeful a person's actions are when anticipating future behaviors.

In another study, Courtney Filippi examined whether 13-month-old infants use the shape of a person's hand to generate action predictions. When infants came in for this study she showed them videos of a hand reaching for one of two objects. In one video, the shape of the hand matches the object that it reaches for and in the other video the shape of the hand doesn't match the object. Overall, we've found that babies can use hand shape to make predictions but that's not the only information that they use! Babies also attend to other sources of information, such as the direction of movement. This work suggests infants can flexibly attend to many different cues in order to anticipate future behaviors.



Infant Learning and Development Lab

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Understanding Children's Preferences

Understanding what other people might be thinking is an important way young children can explain, interpret, and predict other people's actions, helping them navigate their social interactions. Laura Garvin and Rebecca Schmidt are especially interested in exploring young children's developing ability to reason about other people's preferences.

In one study, Laura Garvin investigated how children figure out what other people like and dislike. Her work builds off previous work showing that preschoolers can use the statistical regularities in someone's choices to predict their preferences – in particular, when a puppet repeatedly chooses an uncommon toy from a box containing a lot of one kind of toy and very few of another, children infer that the puppet chose this uncommon toy on purpose and predict that it really likes that toy. However, her most recent findings show that children are better able to use the puppet's choices to predict what it likes when they are given a hint beforehand that the puppet's choices might have something to do with its preferences, demonstrating that preschool children are sensitive to the way information is presented when trying to solve complicated problems.

After we figure out that someone has a preference for something, what do we do with that information? In another study Rebecca Schmidt investigated what Inferences older children make based on their knowledge of another person's preferences. Kindergartners and a group of adults were told that a bunny puppet liked a toy cow and were asked whether they thought the bunny would like it at different points across his life, if he would like similar toys too, and if other characters that had things in common with the bunny would also like the cow toy. She found that although adults and children are both

likely to think someone will hold the same preference across short periods of time, children are less likely than adults to generalize this preference to different objects and people. She concluded that although young children tend to be slightly more conservative in their judgments than adults, both age groups reason about preferences in remarkably similar ways.

Together, these studies show that children develop a remarkable ability through the preschool years to use a person's actions to predict what they are thinking, and by age five, children are capable of making sophisticated inferences about other people's minds based upon very little information. Through this and future work, they hope to continue investigating how children develop the ability to use what people do to predict what they think, allowing them to become full and competent participants in their social world.





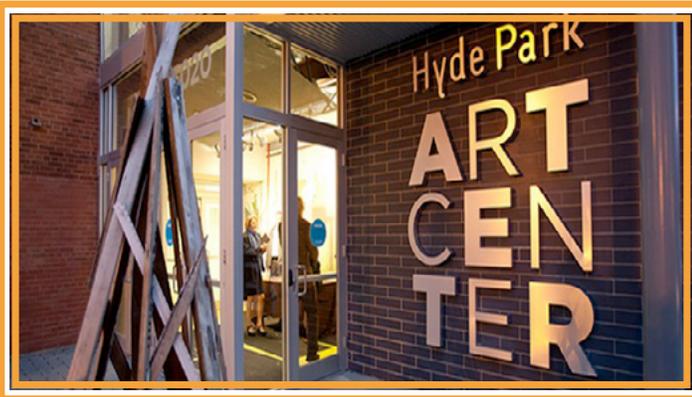
We are pleased to share our news of several partnerships around the Chicagoland area and fun activities for parents and children!



Museum of Science and Industry

<http://www.msichicago.org/>

We are currently running studies for preschoolers at the museum!



Hyde Park Art Center

<http://www.hydeparkart.org/>

The Hyde Park Art Center has many fun and exciting programs for children of all ages. Check out their newsletter!

FIT 4 MOM[®]

Fit 4 Mom

<http://chicago.fit4mom.com>

Fit4Mom Chicago offers fitness programs for every stage of motherhood!



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 support in our research program!



Questions?

Please contact us or check out our website at:

<http://babylab.uchicago.edu/>

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