Fall 2012

Conceptual Development Lab

University of Michigan

Dear Parents,

We are writing to describe ongoing research projects at the Conceptual Development lab at the University of Michigan. In our studies, we examine children's early language and concepts. Childhood is a period of remarkable learning and growth, and the ages from toddlerhood through early elementary school involve particularly exciting changes, for children and their families! During this period of development, children are learning words, organizing experiences into categories, and forming intuitive "theories" about the world around them.

If you have previously participated in our research, we are very grateful for your help! Thanks to your participation, we are constantly making new discoveries about the nature of children's thinking. We also wish to thank the National Institutes of Child Health and Human Development, the National Science Foundation, and the University of Michigan, which help support this work.

This newsletter describes some of the studies we are currently working on or recently completed. We hope that you and your child enjoy your visit(s) to our lab!

Susan A. Gelman

Susan A. Gelman
Heinz Werner Collegiate Professor in Psychology

In This Newsletter

Community Outreach

We had a great time this year attending local events and sharing our research with families! You may have seen us with Potted Harry crafts at the Farmers Market, the Ann Arbor Book Festival, or the Ann Arbor Summer Festival. Recently, we participated in the Ann Arbor Art Fair! At the Art Fair, we made bubble wands with kids while discussing our studies with families. We'd like to thank all those who came out to see us! Follow us on Twitter or like us on Facebook to learn about future events!

Ann Arbor Book Festival

Ann Arbor Art Fair

Ann Arbor Farmers Market

Thinking About Gender

Most of us, including children, are familiar with the stereotype that dolls are "for girls" and trucks are "for boys." It turns out that this stereotype is reflected in children's and parents' implicit judgments. In our study of the development of gender concepts, we ask both parents and their 5- to 7-year-old children to perform a sorting task on a computer. Sometimes, participants are asked to sort girls with dolls, and boys with trucks (the "stereotype-consistent" task), but sometimes, participants are asked to sort boys with dolls, and girls with trucks (the "stereotype-inconsistent" task). Both parents and children are slower to perform the stereotype-inconsistent task, suggesting that the gender-toy stereotype is represented implicitly, and interferes with participants' speed of sorting.

In addition to measuring parents' and children's implicit gender-toy stereotypes, children also tell us about their conscious (or explicit) gendered preferences. We then look to see whether there is any relationship between the strength of participants' implicit stereotype with our measures of explicit gender concepts. Interestingly, the strength of parents' implicit gender-toy stereotype does appear to predict children's gender-stereotyped activity preference, such as liking make-up if the child is a girl, or liking cars if the child is a boy. Because this research is correlational, we can't make any claims about causation. It's possible that parents' implicit stereotypes influence children's preferences, but it's also possible that a very gender-stereotyped child could strengthen a parent's implicit gender-toy associations. We look forward to continuing this research to better understand how implicit and explicit cognition about gender develops across childhood.

My Heart Made Me Do It

If you had to get a heart transplant, would it make you uncomfortable to know your new heart was going to come from someone who was very mean? Psychologist Bruce Hood and colleagues found that adults were very unhappy with the idea of getting a heart from a violent criminal (the epitome of a mean person!). And in a study we conducted with Dr. Sarah-Jane Leslie (Princeton University), we found that adults are concerned that they might become more like the donor. For example, they are worried that if they receive a criminal's heart, they may start to posess criminal characteristics.

Do children also show this kind of "essentialist" reasoning when thinking about transplants? Of course, we would not want to ask children about criminals, but we did ask 4- to 7-year-old children to predict whether a heart transplant would cause them to take on characteristics of a mean kid, as well as a nice kid, a smart kid, and a not-so-smart kid. Data collection is ongoing, but so far, data indicate that children endorse the possibility that a heart transplant will lead the recipient to become more like the donor. We are excited about following up on this result to determine what this indicates about children's essentialist reasoning.

Understanding Ownership

Learning to give gifts, borrow things, and make purchases are important life skills that children must master. In a variety of studies, we explore how children develop these skills by giving them objects and asking children to give objects to other people, and then testing children's memory for which object belongs to which person. This task can be tricky, but children are surprisingly good at it. Furthermore, children's memory for owner-property pairs is better than their memory for simple labels. These studies seek to understand how children think about ownership in order to gain insight into the more complex social and economic environment that older children and adults experience every day.

A brother and sister looking through a picture book ("Learning from Siblings").

Children's Inductive Inferences

Consider the following scenario from a young child's life. Isabel and her mother are looking at pictures of animals. The mother points to a horse and says, "That's a horse. It eats hay." The next day, while driving in the country, the mother says, "Look there's a horse. What does that horse eat?" Isabel pipes up from her car seat, "Hay!" This is an example of an inductive inference. Isabel generalized that if one horse eats hay, then it is likely that another horse also eats hay.

Children's ability to reason about categories in this way is incredibly accurate, even at very young ages. For example, children draw inferences from one bird to another, even when they look very different (e.g., crow and flamingo). When told, "This bird feeds its babies mashed-up food and this bat feeds its babies milk," children will infer that the other bird feeds its babies mashed-up food too. So children infer that the two birds share the same property despite the fact that the appearance of the crow is more similar to the bat than to the flamingo.

There are two different explanations for how children are able to make inductive inferences in this way: the *conceptual* account and the *similarity* account. The conceptual account claims that labels denote categories and that categories guide children's inferences. The similarity account claims that labels are just one aspect of the perceptual similarity between two items. When two items share the same label then they have a higher level of perceptual similarity, and thus are more likely to promote inductive inferences.

In the current study, we examined children's inductive inferences in a task in which the category labels and the perceptual similarity of the categories were in opposition to each other. We introduced children to two novel categories, *ziblets* and *flurps*, so that past knowledge of the categories would not affect their inferences.

Our results showed that children made inferences based on category membership when they were taught that *ziblets* and *flurps* were two different kinds of animals, ones that live in trees and ones that live in the desert, respectively. Children inferred that two ziblets, for example, are likely to share the same properties in the same way that they inferred that two birds share the same properties.

However, we also found that whether children based their inferences upon the categories depended on the structure of the categories presented. We found that when the categories were arbitrary, with little conceptual coherence, children used perceptual similarity for the inferences, instead of the category. Thus, children are sensitive to the structure of the categories in the task. These findings support the conceptual account for children's inductive inferences because it shows that children are sensitive to the structure of the category and not merely to whether two items share the same label or appearance.

Learning about Categories

Young children learn new facts everyday, and are thus faced with the task of figuring out how to extend their knowledge to new situations. Parents may guide this process through the language they use. For example, a parent might use a specific statement and say, "This dog likes to play fetch," indicating that fetch is an activity unique to the particular dog, or the parent might use a general statement and say "Dogs like to play fetch," conveying that this activity relates to the category 'dogs.' Interestingly, with specific statements, the label used to refer to the item does not affect its meaning (e.g., "This dog likes to play fetch" and "This animal likes to play fetch" are equivalent). With general statements, however, the label is important because it does affect the meaning (e.g., "Dogs like to play fetch" and "Animals like to play fetch" are not equivalent).

To see whether children are sensitive to the differing roles of labels in general and specific sentences, we used two memory tasks where preschoolers and college students (as a comparison group) were asked to look at pictures of either animals or people, and to remember the novel facts they heard about each picture. In the first task, we asked participants to remember each sentence after a two-second delay. In the second task, participants waited four minutes after hearing all of the sentences, and then were asked to remember each sentence one by one.

We found that with a short memory delay, preschoolers and adults appropriately recall the category information better for general than specific sentences. However, after a long delay, preschoolers lose this sensitivity. These findings suggest that the effects of language on memory change over time.

Reading Together!

Reading books together is an opportunity for parents to share ideas and teach their children new concepts. In this parent-child interaction study, we hope to better understand the way parents help their children understand that some items are more authentic than others. For example, a tie owned by Martin Luther King, Jr. may have special significance and value, compared to an old tie at a garage sale. Parents and children (ages 3.5-4.5 and 5.5-6.5) read a series of three books together. Each book asked the child to help the story's protagonist decide between a series of similar paired items across different contexts.

We are examining how children judge authentic objects of different kinds, and what kinds of explanations they provide for their choices. Analyses are ongoing, but thus far suggest that there may be developmental change in how children understand and discuss these items. For example, some of the younger children focus on superficial characteristics of objects, such as desiring an object because it looks new, they like it, or it is more functional. In contrast, some of the older children focus on the authenticity and historical value of objects, such as desiring an object because of a famous or historical association of the object.

Here are some examples of how different aged children respond when asked whether a new dress or a dress owned by the Queen of England should be placed in a museum:

Parent: "Which one of these dresses should Jessie pick for the museum? Why?"
Child (age 4): *(points to new dress)*. "Because it's yellow."

Parent: "Okay, which one of these dresses should Jessie pick for the museum and why?"
Child (age 6): "This one should go." *(points to Queen of England's dress)* "'Cause it reminds them of the queen."

Older children also more accurately judge which objects are appropriate for placement in a museum. It will therefore be especially interesting to learn how parents discuss authenticity with children at different ages.

Can I Have That Toy Dog?

Very early in life, children start using the word "Mine!" but the thoughts and intuitions behind this word are complex. The question in the current study is how such concepts of ownership develop. Do children recognize that some objects are special – perhaps because they have a special history? How are parents' attitudes about objects transmitted to their children? Does a child's culture or family structure affect their concepts of ownership?

Parents read and discussed a book of ten stories to their young child - either 2 or 4 years of age. The books contained stories about two young children and a potential transfer of their toys. For example, in one story, a stranger tricks a boy and switches the boy's special toy giraffe that he's had since he was a baby with another toy giraffe. We are interested in how children and parents discuss different kinds of ownership transfers, and how parents' own attitudes about objects and ownership might affect how children think about these situations. We are also interested in how these conversations may differ for younger versus older children.

We are still analyzing the results of this study. But we can already see a wide range of interesting discussions, from both parents and children. More results will appear in our next newsletter!

What's the Point?

Children learn a lot during face-to-face interaction with their parents. Of course what parents *say* makes up a big part of communication, but their gestures can also carry important information. In a study of parents and their two-year-old children, we specifically looked at what kinds of gestures parents use when talking about categories in general (e.g., "Birds fly") vs. particular individuals (e.g., "This bird flies"). To do this, we asked parents to talk about a series of animals with their two-year-old children. Then we transcribed what parents said and also described what they were doing with their hands while they were talking. We discovered that when parents were talking about specific individuals, they provided more pointing, tapping, or holding gestures. In contrast, when parents were talking about general categories, they tended not to use these gestures.

In another part of this study, we examined whether the gestures parents made carried any information to an observer. To investigate this, we took brief, 10-second portions from the video footage of the parent-child interactions and removed the sound. Then we showed the clips to University of Michigan undergraduate students and asked them to guess what parents were talking about, based only on what they could see. Observers were more accurate in guessing conversation topics when viewing clips about specific individuals (which featured more gestures) than clips about general categories (which featured fewer gestures).

We interpret these results as showing that parents are careful to mark when they're talking about specific instances, probably because children are already skilled at thinking about general categories. That is, children have no problem learning that a property true of one instance of a category is true of the other instances; instead, the harder task for the child is to understand when a property should be restricted to an individual.

Ongoing Studies

A number of studies are currently ongoing, with children at a range of ages. Here are descriptions of some of the studies we are currently running. If you would like to participate in these or other studies, please call us at (734) 647-2589 or e-mail conceptlab@umich.edu

Learning From Siblings

How do siblings learn from one another? Do children adjust their speech depending on whether they are interacting with an older or younger sibling? This study aims to see if older children adopt a teacher role when interacting with younger siblings, and if younger children look to older siblings for insight on the world around them.

In this single-visit study, children are asked to participate in a few fun tasks, in pairs. The tasks include interacting with one another while playing with animal toys or looking at a book together.

We are looking for families with three children between the ages of 3 to 13 years old. If you are interested in participating, please contact us for additional information about this study!

All, Some, and Numbers

How do children understand what the words "some" and "all" mean? Do children process information differently when discussing whole categories of things (such as "apples") compared to a subset of a category, noted by a number or quantified statement (such as "some of these apples" or "three of the apples")?

We are investigating whether memory for facts differs based upon the wording used to introduce the facts. Is it easier to remember facts when talking about a group as a whole, some members of the group, or a numbered statement about a group? We are also interested in how children define the words "some" and "all."

In this single visit study, children between the ages of 3 and 5 play a few short games with a researcher that involve answering questions about a set of pictures or remembering facts about animals.

Understanding Value

Do children understand the value of things? How do children make judgments about what is worth the most money? At what age do children really begin to understand the value of objects? This study aims to understand the ways children think about the value of objects, and how it differs for item type, for example, an original painting versus an exact replica.

In this single visit study, children (ages 5 – 7 years old) play a short game with a researcher. The game involves looking at and labeling objects and pictures, and making judgments about price and value. Results will be in the next newsletter.

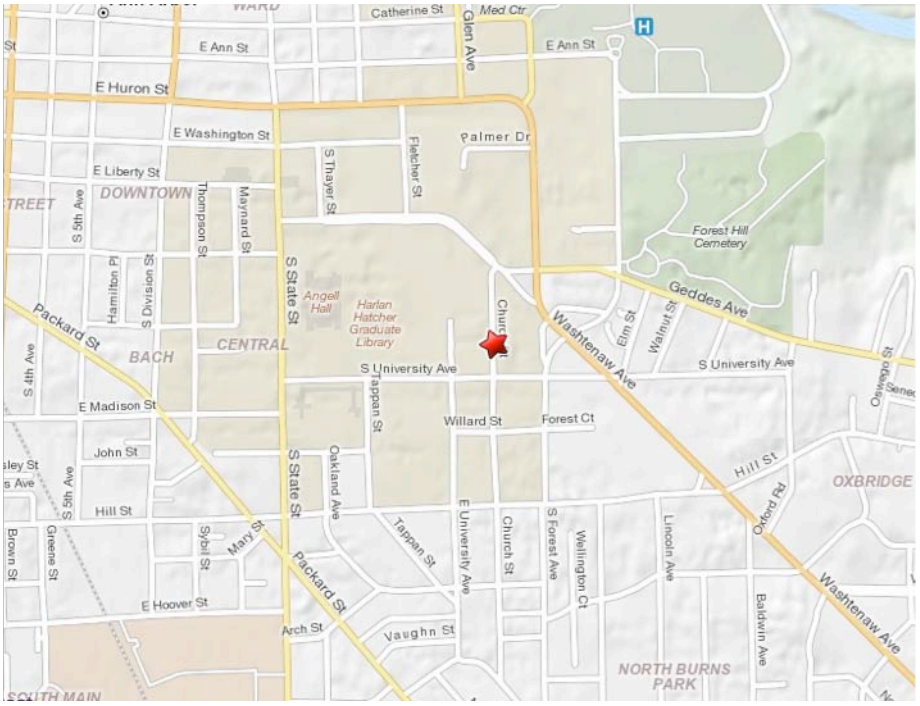
Abracadabra!

What do children think about magic? Is it real? If so, how does it work? From the Tooth Fairy to Harry Potter, both children and adults are entranced by the notion of magic.

We are interested in not only what children think about magic, but *how* they think about it. In this study, 4-year-old children participate in a few short tasks with a researcher aimed to figure out their thoughts about magic.

Contact Us!

If you'd like more information about our studies, or to participate in a study, please contact Sarah Stilwell at conceptlab@umich.edu or call (734) 647-2589. We are located in B464 East Hall at 530 Church Street, Ann Arbor, MI 48109.



If you schedule a lab visit to participate in one of our studies, we provide free on-campus parking for the session, and your child receives a small gift for participating. You will also be compensated $10 for each child who participates in a study. Additionally, any other siblings are more than welcome to come along during your visit! Our research staff are happy to play with your other children in our playroom while your child completes the study.

Recent Publications

Brandone, A. C., Cimpian, A., Leslie, S.-J., Gelman, S. A. (in press). Do lions have manes? For children, generics are about kinds rather than quantities. *Child Development*.

Frazier, B. N., Gelman, S. A., Kaciroti, N., Russell, J. W., & Lumeng, J. C. (2012). I'll have what she's having: The impact of model characteristics on children's food choices. *Developmental Science, 15(1),* 87-98

Gelman, S. A. (in press). Concepts in development. In P. D. Zelazo (Ed.), *The Oxford handbook of developmental psychology*. New York: Oxford University Press.

Gelman, S. A., & Frazier, B. N. (2012). Development of thinking in children. In K. Holyoak & R. Morrison (Eds.), *Oxford handbook of thinking and reasoning* (pp. 513-528). New York: Oxford.

Gelman, S. A., Manczak, E. M., & Noles, N. S. (in press). The non-obvious basis of ownership: Preschool children trace the history and value of owned objects. *Child Development*.

Gelman, S. A., & Rhodes, M. (in press). "Two-thousand years of stasis": How psychological essentialism impedes evolutionary understanding. In K. S. Rosengren, S. Brem, E. M. Evans, & G. Sinatra, *Evolution challenges: Integrating research and practice in teaching and learning about evolution*. Cambridge: Oxford University Press.

Gelman, S. A., Ware, E. A., Manczak, E. M., & Graham, S. A. (in press). Children's sensitivity to the knowledge expressed in pedagogical and non-pedagogical contexts. *Developmental Psychology*.

Gelman, S. A., & Ware, E. (2012). Conceptual development: The case of essentialism. In E. Margolis, S. Stich, & R. Samuels (Eds.), *Oxford handbook of philosophy of cognitive science*(pp. 454-479). Oxford University Press.

Lane, J. D., Wellman, H. M., & Gelman, S. A. (in press). Informants' traits weigh heavily in Young children's trust in testimony and in their epistemic inferences. *Child Development*.

Leslie, S.,-J. & Gelman, S. A. (2012). Quantified statements are recalled as generics: Evidence From preschool children and adults. *Cognitive Psychology, 64(3),* 186-214.

Meyer, M., Leslie, S. -J., Gelman, S. A., & Stilwell, S. (in press). Essentialist beliefs about organ transplants in the United States and India. *Cognitive Science*.

Nguyen, S. P., & Gelman, S. A. (in press). Generic language facilitates children's crossclassification. *Cognitive Development*.

Noles, N. S., & Gelman, S. A. (2012, in press). Effects of categorical labels on similarity judgments: A critical analysis of similarity-based approaches. *Developmental Psychology*.

Noles, N. S., & Gelman, S. A. (in press). Preschool children and adults flexibly shift their preferences for auditory versus visual modalities, but do not exhibit auditory dominance. *Journal of Experimental Child Psychology*.

Noles, N. S., Keil, F. C., Bloom, P., & Gelman, S. A. (in press). Children's and adults' intuitions about who can own things. *Journal of Cognition and Culture*.

Tardif, T., Gelman, S. A., Fu, X., & Zhu, L. (2012). Acquisition of generic noun phrases in Chinese: Learning about lions without an '-s'. *Journal of Child Language*, *30*, 1-32.

Thank You!

We would like to thank all of our wonderful Undergraduate Research Assistants and Research Staff for their hard work and dedication in making our research possible!

Beth Anastasia, Cara Brennan, Chhavi Chaudhry, Lisa Chen, Natalie Davidson, Melanie Greenspan, Selin Gülgöz, Megan Helfand, Heather Hennrick, Courtney Hsing, Christina Koch, Dayana Kupisk, Jonathan Lane, Meredith Meyer, Nicholaus Noles, Ingrid Sánchez, Sarah Stilwell, Margaux Stanton, Gladys Yee-Kim Tan, Arber Tasimi, Alexandra Was