BERKELEY EARLY LEARNING LAB

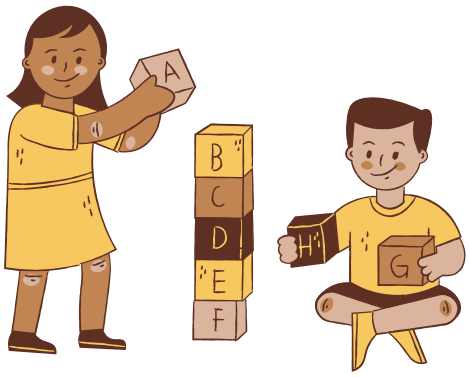
FALL 2020 NEWSLETTER

Thank you for your contribution to developmental science!

Dear Parents, Children, Teachers, and Directors,

Thank you very much for participating in our research for the past year, especially given all the challenges of 2020! Our research is made possible by the generosity of families, schools, and museums like yours, and we greatly appreciate your support. The overarching theme of our research is on children's learning: What types of learning mechanisms are available to infants and children, and how do they use them in different domains of learning, e.g., cognitive, language, and social development? We have found that young learners have remarkable learning capacities; they are rational, constructive learners who can evaluate evidence and build new knowledge and concepts, much like scientists do. This newsletter highlights some of the studies your child or student may have participated in during the past year and gives an overview of our findings.

If you have any questions about our research, please feel free to contact us at babylab@berkeley.edu, and please feel free to visit our lab website (babylab.berkeley.edu) for our publications.



Best wishes,

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How do children direct their attention in order to learn?

Researcher: Ruthe Foushee • foushee@berkeley.edu

Children are surrounded by a wide variety of potential sources of language-learning — how do they decide when to 'tune in' and when to 'tune out'? In this study, children controlled how long they listened to the narration for a picture book, presented on the screen of an eyetracker. Half of the children heard a story that was 'just right' for a preschooler, while the other half heard a story that was significantly more complex, and included words unfamiliar even to most adults. We measured how long children in the two groups listened to the story, as well as where they looked, to see if children exposed to the 'just right' story showed evidence of paying more attention to it than children exposed to the much more complex story. Finally, we measured children's learning. We found that children in the two groups indeed showed different patterns of attention to the two stories, and furthermore, that children who voluntarily paid more attention learned more from the story! These results suggest that children may play an active role in determining the information in their environments from which they learn.

How do children choose their playmates?

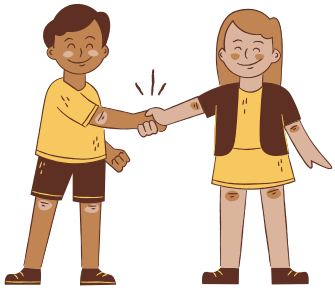
Researcher: Rongzhi Liu • rongzhi_liu@berkeley.edu

This study explores how children use statistical information to learn about their social environment and choose their playmates. In this study, children imagined that they had just transferred to a new classroom. Half of the children were told that most of the children in the new classroom were nice; the other half were told that most of the children in the new classroom were mean. They also interacted with a specific child from the classroom. Some children interacted with a child who showed nice behaviors (e.g., sharing a sticker with the participant). Other children interacted with a child who showed mean behaviors (e.g., not sharing any sticker with the participant). Then, we asked children to choose their playmates. We found that children were able to rationally combine both the classroom information and the behaviors of the individual child in their choices.

What do children believe about certain traits?

Researcher: Roya Baharloo • roya_baharloo@berkeley.edu

Young children form their beliefs about the world in many ways—for example, through media, school, friends, etc. In this study, we explore children's beliefs about certain traits—such as smartness and niceness—and see how they change throughout childhood. In this study, children played a series of guessing games in which they heard stories about different people and then asked to guess who the person from the story was. We found that 5-7 year old children might already attribute these traits differently to different racial groups, suggesting that early education and intervention on diversity and inclusion may be important.

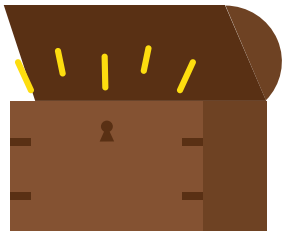


Can children design informative experiments as scientists do?

Researcher: Yuan Meng • yuan_meng@berkeley.edu

Scientists design experiments to test hypotheses. Good experiments generate outcomes that differentiate between different hypotheses rather than confirming whichever hypothesis we currently believe. Can children design informative experiments intuitively? We examined this question in a light bulb game, where three lightbulbs are connected one way or another. Only one lightbulb turns on different lightbulbs under different hypotheses whereas the other ones make the same things happen. Much like adults, children from 5 to 11 mix the informative and the confirmative strategies when choosing which lightbulbs to turn on to help them distinguish the structures. In our ongoing study, we have some new evidence suggesting that asking children to explain their own choices can help them design more informative experiments.

How do children manipulate the information they have to extract the information they need?



Researcher: Stephanie Alderete • salderete@college.harvard.edu

This study investigates how children use their understanding of possibility to make decisions. In this study children try to find gold coins hidden in treasure chests. To maximize the number of coins they collect children must use their understanding of possibilities to figure out how likely they are to find a gold coin in each treasure chest. In the second part of the game, we look to see if children's emotion of surprise is in line with their level of certainty around how likely they are to find a gold coin in a treasure chest. For example, are young children surprised when a gold coin is not in the treasure chest they felt certain it would be in? In running this study, we hope to better understand children's use of possibilities and its relation to children's sensitivity to uncertainty and probability.

How do children figure out the rules of the world?

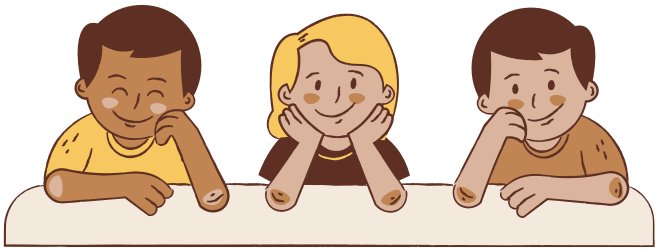
Researcher: Gwyneth Heuser • gheuser@berkeley.edu

The world can be a big, confusing place, especially for children. Yet somehow, children seem to figure out the "rules" of how everything works by the time they are adults. This study examined how children figure out the rules of the world by generating their own data to test their own hypotheses - what we call "active learning." Children aged 7-10 played a game on a laptop computer where they were shown building blocks that worked in different ways, depending on how they were set up. The children tried to figure out the rule that governed how those blocks worked. As it turns out, adults are only slightly better at this task than children! Children tend to come up with more elaborate rules ("the blocks have to be blue AND large AND stacked up"), and children test rules less systematically than adults do. Still, children's accuracy at this task was surprisingly high. These results suggest that children are able to generate useful data on their own to figure out how things work in the world and to guide their own learning and development.

Can children learn from belief-violating evidence?

Researcher: Rongzhi Liu • rongzhi_liu@berkeley.edu

Through their observations in everyday life, children have learned various principles that govern how objects move and how people behave. For example, a ball could not pass through a solid wall, and agents would choose the shortest path to reach their goal. This study investigates whether children can revise their beliefs when they are shown evidence that contradicts these principles. Half of the participants in this study were shown evidence that violated their prior beliefs (e.g., an object passes through a solid wall in a video clip); the other half were shown evidence that were consistent with their prior beliefs (e.g., an object is stopped by a solid wall). Then, children were asked to make a few predictions. We found that seeing a small number of violations of a certain principle was enough to revise children's beliefs. Those who saw belief-violating evidence were more likely than those who saw belief-consistent evidence to make predictions according to their new beliefs (e.g., objects could pass through a solid wall at least in the game world). Indeed children are flexible learners who can learn from new evidence quickly.



Thank you once again for you and your child's contribution to science and learning!

Find our lab at:

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Find the UC Berkeley Developmental Labs at:

devlabs@berkeley.edu • devlabs.berkeley.edu

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