

Bauer Memory at Emory Lab



2024 Newsletter

404-712-8330

memory2@emory.edu

<https://scholarblogs.emory.edu/bauerlab/>



The Bauer Memory Lab is excited to share all of our accomplishments and discoveries from this past year with you! Herein, you will find descriptions of our new and ongoing projects, as well as updates on the projects detailed in previous newsletters. The current newsletter also includes updates on our lab members' careers and achievements.

The past year, we have been busy with both in-person and online research! We've been excited to invite families into Emory's Child Study Center to participate in eye-tracking studies and into our virtual laboratory for book reading and virtual museum studies. Our experimenters have loved the opportunity to connect with participants both remotely and in the psychology building.

Using these various methods throughout the past year, we have continued to investigate and address our research questions surrounding memory and development. Thanks to your participation and support, we have lots of exciting findings to report within this newsletter!

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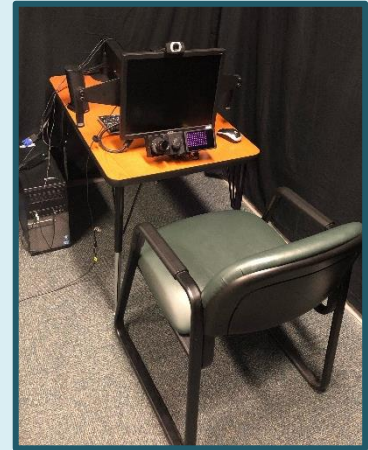
What We Do in Our Lab

In the Bauer Lab, we are curious how people learn and remember the knowledge that they obtain throughout their lifetime. We are also interested in how people generate their own knowledge based on separate instances of learning. These types of questions are important for broadening our understanding of how individuals build a full knowledge base, from childhood into adulthood.

In order to study these types of questions, The Bauer Lab utilizes many different research methods and tools, from eye-tracking and behavioral tasks to book reading and museum walkthroughs!

In the past couple of years, we have diversified our methods to include in-person, hybrid, and online formats. In person, we are able to use eye-tracking technology to answer questions about children's memory and how it develops. Even virtually, we're able to administer many tasks we would do in person with participants, such as learning, language, and memory tasks.

Much of the research performed in the Bauer Lab focuses on memory and learning, often through a developmental lens.



One of the eye-trackers used in our lab



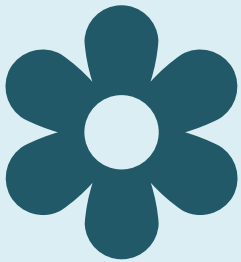
Emory Psychology building

THANK YOU!

None of this research would be possible without you! We are so thankful for your continued support of our studies. It is your participation and interest that allows us to make exciting discoveries such as those covered in this issue!

FORMING A KNOWLEDGE BASE

As was mentioned on our first page, we are interested in the development of memory, especially as it pertains to adding new information to our knowledge base. Much of the research in the lab investigates the different skills and processes that affect how children learn, remember, and use new information—skills that are especially important in a school setting!



In particular, we at the Bauer Lab are interested in how children combine information learned at different times and in different contexts and then generate new understandings, a skill that is critical to building this knowledge base across one's lifespan. Our lab calls this process *knowledge integration*. One of the goals of this research is to better understand how this skill develops over the school-age years, as well as to investigate the ways in which we can promote and facilitate its development.

This line of work began in 2009, and since then, we have gained a great deal of information about how children combine new facts through pictures, stories, single sentence facts, and games.

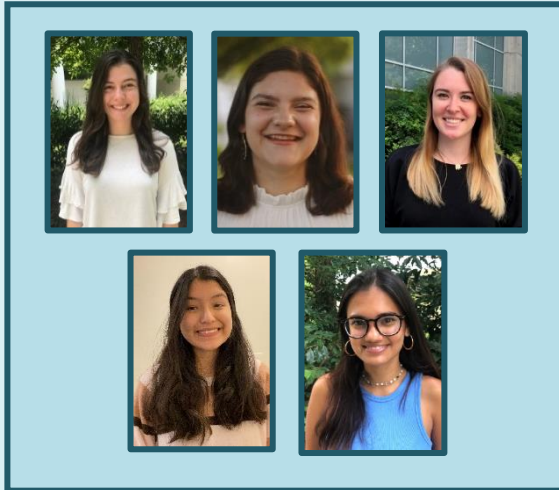
Knowledge Integration Example:

Children come into the lab (or participate online) and meet with a researcher who presents the child with a series of facts (either learned from a PowerPoint or learned from reading a story).

For example, a child might learn that a corolla is the name for the bunch of flower petals on a flower. Then, after a short break, the child might learn that flower petals are used to make perfume. At the end of the session, we ask the child a series of questions (i.e., What is the corolla used for?). In order to answer these “integration” questions, one must put the two related facts together to create (or self-derive) a third, “new” fact (i.e., the corolla is used to make perfume).



Eye Tracking Study



For Lucy's dissertation study, we were interested in how children build a knowledge base over time. We also wanted to explore the memory sub-processes underlying children's ability to build knowledge through memory integration. In order to investigate these questions, we used eye tracking technology to gain a deeper understanding of how elementary and middle school children learn from the world around them. During the study, children were asked to look at pictures and listen to facts while their eye movements were recorded. Some of these facts were related and could be combined to generate new knowledge. By analyzing the eye gaze patterns, we determined when children recognized these facts were related and how effectively they connected related information over time. This research offers novel insights into the various ways children process and use information to construct new knowledge. Lucy currently is preparing a report of this work for publication in a journal.

We are also interested in how factors like school quality, community involvement, and individual cognitive strategies impact children's learning. For another study, we used information such as school-level reading and math proficiency to assess school quality, extracurricular activities and socioeconomic status to assess community involvement, and scores from standardized tests of verbal comprehension and working memory to assess cognitive strategies. Overall, we found that the individual cognitive strategies used by the children were most influential for children's learning. This suggests that individual learning strategies and abilities like verbal comprehension might be more important to children's learning than environmental influences like school quality or community involvement. That being said, environmental influences might still play an important role in children's learning and/or overall health, and future research should investigate how these factors might influence different learning outcomes when measured in different ways. Some of this work has just been published in the journal *Memory*.

School, Community, and Cognitive Influences



Book Reading Study

In other work, we asked whether parent-child book reading could support memory integration in 5-7-year-old children. We had parents and children read a storybook with opportunities to integrate facts across topics. For example, on one page, the book taught “otters communicate by squealing.” Then, on a different page the book taught, “the animal that communicates by squealing lives in groups called rafts.” We found that the more parents and children worked together to integrate related facts, the higher children performed on tests of memory integration. Additionally, when questions about the facts were included in the books, parents and children integrated more facts together. This work shows that children’s memory integration can be supported by parent-child book reading. Children can gain more knowledge from books when parents and children talk during book reading and connect information across pages! We are excited to have published this work in the *Quarterly Journal of Early Childhood Education*.



Museum Learning



Just out in the journal *Cognitive Development*, we explored how children learn with their caregivers from informal educational settings. We partnered with Emory’s Carlos Museum and asked caregivers to visit two different virtual museum exhibits with their children. We then asked children questions about what they learned from each exhibit. We were curious what information children recalled directly from their experience. We also asked more challenging questions to see the different types of inferences children were able to make from the information they learned (e.g., memory integration and inferential reasoning). We found that caregiver-child conversation during the museum visit, as well as children’s reflections after the museum visit, related to children’s learning in the museum. This study helped us to learn about how and to what extent children learn from informal educational experiences.

Staff Updates

The lab's graduate student, Lucy, successfully defended her dissertation in March of 2024, and graduated with her doctorate in May of this year! Her dissertation was titled "Semantic knowledge: Mechanisms of accumulation and variability in outcome." Lucy has recently accepted a position as a research fellow in the Child Development and Disability branch at the Centers for Disease Control and Prevention. She is excited to contribute to their work aimed at ensuring the health and healthy development of children and adults with disabilities.



The lab's post-doctoral researcher, Hilary, is headed to a new position! In the fall, she will start as an Assistant Professor in the Department of Psychology at Lawrence University. In this position, Hilary will start her own research lab and be teaching courses such as Research Methods, Cognitive Psychology, and Senior Capstone. She is excited to continue her current lines of research, develop new research questions and studies, and mentor undergraduate students inside the classroom and the laboratory!

One of our lab coordinators, Katie, graduated with her master's in public health in December of 2023. Her master's thesis was titled "Cognitive, school, and community factors that influence knowledge acquisition." Katie has recently accepted a position as a Research Epidemiologist at Children's Healthcare of Atlanta on the Aflac cancer and blood disorders team. She is excited to work with health care providers and researchers to better understand outcomes of childhood cancers like leukemia and Hodgkin's lymphoma.



The lab's other lab coordinator, Greer, will be starting a doctorate program in the fall! They will be joining Dr. Channing Mathews' lab in the Community Psychology area at the University of Virginia. In this lab, Greer will be studying racial-ethnic identity formation, as well as investigating STEM engagement and achievement within youth of color populations. Greer is excited to continue strengthening their research skills in this new scholarly endeavor!

Thanking our Undergraduate Research Assistants

Many wonderful undergraduate students have worked in our lab this past year. They provided support to all aspects of our research, from entering data to running sessions with participants. We are very grateful for them, and we could not have done all the research without them!



Britney Del Solar
Maria Grosso Zelaya
Lexi Bortnick
Colleen Baskin

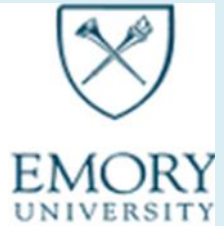


Again, thank YOU for participating in our research! Our efforts would not be possible without such willing and enthusiastic participation!





EMORY UNIVERSITY
child study center



Do you know any other families who might be interested in participating in child development studies at the Emory Child Study Center? Please call 404-727-7432, email childstudies@emory.edu, or visit <http://psychology.emory.edu/child-study-center/index.html>

