Bauer Memory at Emory Annual Newsletter

2021

We at the Bauer Memory Development Lab are excited to share with you the work we have accomplished over this past year. This newsletter is an opportunity for us to express our appreciation and gratitude for our participants and the families who have helped us with each and every one of our child development studies. Without you, we would not be able to do our science, so thank you so much for your ongoing interest and participation!

Despite having worked remotely for much of the past year, our lab has been very busy! We have launched multiple studies with sessions that take place entirely over Zoom, and others with surveys that can be taken online. We are looking forward to resuming in-person research, returning to technologies such as eye-tracking and meeting face-to-face with participants. However, we are grateful for the ways we have been able to continue our work, and we have enjoyed connecting with participants remotely as we wait for a safe time to resume. We appreciate the flexibility and enthusiasm of our participants who have helped us collect data in these new ways.

In this newsletter, you will find descriptions of new and ongoing projects from last summer to now, as well as new results from studies described in our previous newsletters.

Several lab members have experienced career and life developments since last year. Jessica officially graduated from her doctoral program in May and is continuing her role as a post-doctoral fellow in the Bauer lab. Julia passed her qualifying exams and is continuing in her pursuit of the PhD. As always, we celebrated the graduation of several of our undergraduate research assistants and schedulers this spring, as well as the successful defense of several of their honors theses. Finally, we have begun a gradual transition back to in-person work in Emory's Psychology building. Other updates on the lab such as professional conferences attended this year can be found on page 8. We are so excited to share our work with you!

Inside this issue:

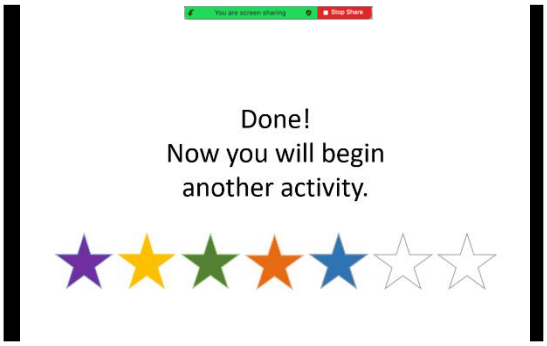
For more information about projects, findings, or ways to contribute, call us at (404) 712-8330, visit our website, or email us at memory2@emory.edu

What We Study

Much of the work in the Bauer Lab investigates memory and learning. We want to find out more about how people learn and remember knowledge about the world around them. What are the factors that underpin this process? How can we optimize learning? We are interested in both how individuals differ from each other, and how people differ from themselves at different ages, changing and developing over the lifespan. Many questions remain about how we connect the dots between facts we learn directly to fill in the gaps and generate a full knowledge base.

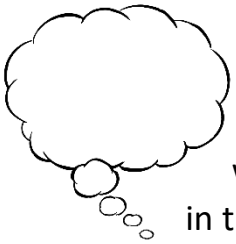
Development from infancy to adulthood

Researching Remotely



Our child development studies have shifted to an online format during this past year. How do we do behavioral research when our participants can't come in to the Child Study Center? For now, participants meet with us on video calls. Our experimenters have had a wonderful time virtually leading participating children through fact learning, memory tasks, and other types of activities that we used to do in person. Images that we used to show on paper can be shown through screen-share, and kids are pros at meeting with us online.

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.

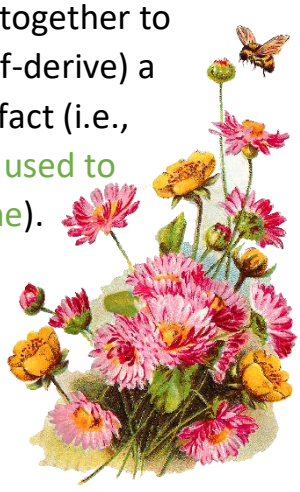
In particular, we at the Bauer Lab are interested in how children combine information learned at different times and in different contexts and then generate new understandings, a skill that is critical to building this knowledge base across one's lifespan. Our lab calls this process knowledge integration. 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).



New Findings

Integration in children

Even though we all worked from home, we still met with lots of children in the past year! Some children participated in a study that is funded by the National Institutes of Health (NIH). Children in this study were 8 and 12 years old, and they met with Melanie, Katie, or Jessica over Zoom. During this study, children learned facts and saw some images that represented those facts. Later in the session, the children answered some questions about what they had learned. We wrapped up data collection for this study around the end of 2020. Katie and Melanie put together a poster to present this study at this year's virtual SRCD meeting, and Katie presented it!

Melanie

Katie

Jessica

In this study, we were interested in answering two questions about how children gain new knowledge: a) does the amount of information (4 facts vs 2 facts) about a topic impact whether children put together relevant information, and b) does presenting related facts consecutively versus separately impact knowledge generation? We found that 8- and 12-year-olds could generate new knowledge whether they learned a little or a lot about a topic. Similarly, children were able to generate new knowledge when related facts were presented together and when they were separated in time. Because both 8- and 12-year-olds participated in this study, we were able to observe important differences in how learning changes across development. We found that, overall, 12-year-olds generated more new knowledge than 8-year-olds. However, both 8 and 12 year olds are adept at putting together related facts even in these challenging conditions!

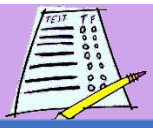
New Findings

Learning in the "wild"

Lucy

Many of the studies in our lab investigate how children learn in school or research settings. However, children learn tons of information every day from settings that are not "formal" learning environments. For example, children gain knowledge by reading books, going to museums, or listening to other people talk (just to name a few)! It is important to study how children learn and remember information from environments that are designed to be educational, but are not necessarily school or research settings, so that we can encourage children to learn as much information as possible from these resources. This year we partnered with the Carlos Museum on Emory's campus to learn more about how children interact and learn from museum exhibits (specifically online museum exhibits). 8 year old children sat down with a parent and walked through these online exhibits (webpages), then met with a researcher on Zoom to answer questions about what they learned. This study helped us to understand more about how and to what extent children learn from informal educational experiences.

Another project was an investigation of how different types of questions affect how we remember and build from information we learn. We know that practicing retrieving information improves later memory above and beyond other methods such as restudying by re-reading. Integrating information into one's knowledge base could also be useful for later memory. In two samples of adults (age 18-22 years and 18-25 years), we taught pairs of facts that could be integrated to generate new information. We then asked them to either recall the facts they were taught or integrate the facts together. Then, after 24-48 hours, we asked participants to integrate even more information with what they had already learned. We then asked them questions about all the facts that they had been taught over the two days. Results suggest that both types of questions (retrieving and integrating) led to memory benefits, although they may help memory in different ways. We also found that integrating the facts seemed to help participants extend their knowledge further. These data help us determine the best ways to learn and remember new information.



Learning/ Memory Tools

Julia

New Findings

Learning from Storybooks

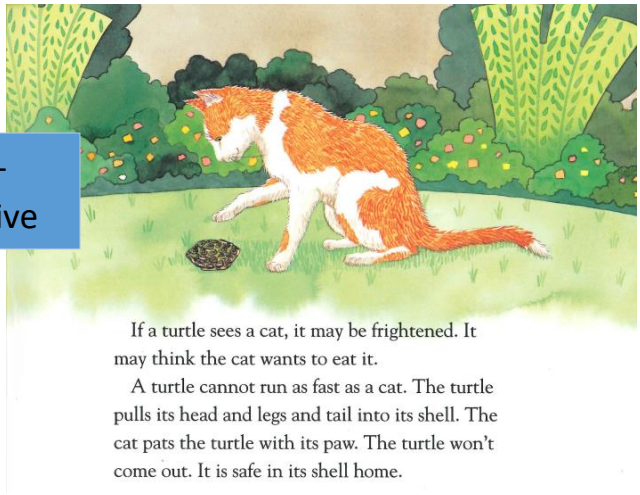
Hilary, Melanie, and Alissa are looking at how 4- and 5-year-old children learn science information from book reading with their caregivers. As described in last year's newsletter, we are interested in whether children learn science information differently from factual books without narration (e.g., a book about animals with shells) versus factual books with a narration (e.g., a book about a character that plays with animals with shells). We found that children learn equally well from both types of books! One thing that did affect children's learning was whether or not the books themselves were supportive of learning through giving examples and providing details about facts. Overall, we are finding that reading science books designed for children can help them learn new science information both when the facts are presented within a storyline and when they are not. We hope to use this work in the future to enhance early science learning in the home. We thank families who participated and look forward to sharing more of our findings.

Melanie

Hilary

Alissa

Non-narrative



If a turtle sees a cat, it may be frightened. It may think the cat wants to eat it.

A turtle cannot run as fast as a cat. The turtle pulls its head and legs and tail into its shell. The cat pats the turtle with its paw. The turtle won't come out. It is safe in its shell home.

Narrative

Lee was scared that the cat might eat the turtle.
A turtle cannot run as fast as a cat.
Luckily, Lee sees that turtles have tricks too!
The turtle pulls its head and legs and tail into its shell.
It is safe in its shell home.
Lee is relieved.

Current Children's Studies

Two-year Memory Study

The Bauer Lab is currently conducting longitudinal research about acquiring knowledge in childhood. This research is funded by the NIH and takes place over the course of 2 years - giving us an opportunity to see individual growth amongst participants! 8-12 year-old children visit researchers over Zoom for two sessions in year 1, one week apart, and then again in year 2. The sessions include learning engaging facts ranging across topics they may learn in school, which experimenters test to see how well they can be remembered. Children are also asked to "self-derive" knowledge based on these facts. Then, children answer questions about various academic topics such as math, reading comprehension, science, and social studies. Some activities include puzzles or number games and will provide insight into what skills are acquired in different grade levels, and how these skills improve over time. Importantly, we are interested to see if any of these academic skills are related to their ability to self-derive new knowledge. Almost the entire lab has participated in meeting with participants in this important study!

Katie

Melanie

Alissa

Jessica

Lucy

Britney

News and Conferences

Thanking our Undergraduate Research Assistants

Many wonderful undergraduates have worked in our lab the past year. They provided support to all aspects of our research, from entering data to putting together our new online surveys! We are very grateful for them, and we could not have done all this research without them.

Ben Gilbert
Emma Simpson
Jelena Pejic
Emily Beattie
Britney Del Solar
Elena Bowie
Elizabeth Pittenger
Rachel Shanahan
Michelle Zhang
Laura O'Hanlon
Warren Luo
Dawn Nguyen
Irene Hsu
Kahei Hong
María Grosso Zelaya
Luisa Taverna

Presenting our work

Our lab members attended several research conferences over the past year. Many psychology conferences moved their programming online, with presentations and posters displayed virtually and discussions through video calls. We are grateful to keep learning from and sharing our work with the scientific community!

CogSci 2020

SRCD 2021 BIENNIAL MEETING

Again, thank YOU for participating in our research! Our efforts would not be possible without such willing and enthusiastic participation. We would love to have you back for another study!



Child Study Center - Emory University

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