



2021-2022

DUKE CHILD STUDIES NEWSLETTER

CHILD STUDIES LABS

Duke Identity and Diversity Lab

PI: Dr. Sarah Gaither

Bergelson Lab

PI: Dr. Erika Bergelson

Tomasello Lab

PI: Dr. Mike Tomasello

Empathy Development Lab

PI: Dr. Rita Svetlova

Wilbourn Infant Lab at Duke (WILD)

PI: Dr. Makeba Wilbourn

Duke Early Experiences and the Developing Brain Lab (DEED)

PI: Dr. Michael Gaffrey

Early Childhood Cognition Lab

PI: Dr. Tamar Kushnir

Thank you!

While 2021 brought on new challenges, it was a marvelous year for psychology research, and we couldn't have done it without the help of our participating families. We have successfully progressed in both virtual and in-person research projects. This newsletter will dive into some of our interesting findings and specific topics we examined last year. If you have any questions about the newsletter, please feel free to contact us at **child@duke.edu**. We thank you all again!





Duke Identity and Diversity Lab

Recently, our lab has been working with Dr. Wilbourn's WILD lab on an exciting new research project to address the following question: **Could gesture (non-verbal cues) be a cultural tool to narrow the learning gap between Black and White children?** Previous work has shown that pointing and iconic gestures (i.e. concrete symbolic representations, for example, extending your pinky and thumb next to your ear while saying 'I'll call you later') are related to early word acquisition with White children.

However, Black individuals use significantly more metaphoric (i.e. physical representations of an abstract concept, for example, calling an idea 'big' while gesturing to indicate a large size) and beat gestures (i.e. non-semantic, rhythmic pulses, for example, waving hands to emphasize certain words).



Thus, we want to know if the unequal use of certain gesture types in educational settings could provide insights into the vocabulary gap between Black and White students. We hope to better understand which gesture types are most beneficial for Black children's trust and learning outcomes to ultimately create teacher interventions that will address these issues.

To do this, we are recruiting **six to eight year old Black and White children** to watch videos of teachers using different forms of gestures and demonstrate what they learned. We are very excited about the potential impact of this research, and we would love for you to get involved in this online study!



Duke Identity and Diversity Lab

Our lab just finished collecting all the data for the Group Kid Perception study and has recently published early results on 3- to 5-year-old participants. This study's aim was to **analyze mutual intentions** (*i.e., when someone wants to join a group and the group wants the person to join as well*) **and if children starting at the age of three can recognize them.** It was found that 3-year-olds are only slightly more likely to recognize when an individual can join a group if there is mutual intention rather than group-only intention. 4- and 5-year-olds were more likely to join a group if there were mutual intentions rather than if it was **single-sided** (*i.e., when someone wants to join a group but the group doesn't want the person to join, see image below*).



Look! This is Sam. Sam says he wants to be in the Flurps. The Flurps say Sam can be in the Flurps.

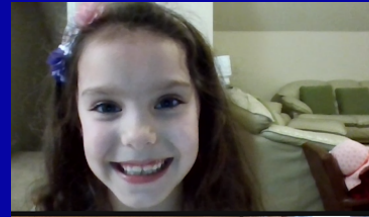
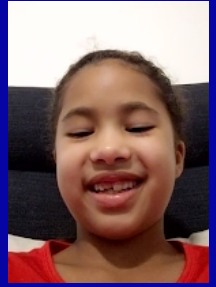
Is Sam in the Flurps or not in the Flurps?

Yes

No

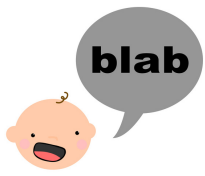


Study Participants



This study researched differences in **entitative groups** (*e.g., task, friends, family*) and **essentialized groups** (*e.g., family*). The results highlighted that **children are more likely to reject an individual from joining an essentialized group versus entitative groups, even with the presence of mutual intentions.** Children at these ages may not always comprehend that mutual intentions mean a new person can join the group, but they may understand that non-mutual intentions mean a new person cannot join the group. Mutual intentions impact which types of social groups are formed, influenced by factors such as race and gender. This research is key in understanding that children as young as 3-years-old demonstrate a usage of mutual intentions as a social rule to navigate certain social groups. Thus, social groups of all forms are established during child development.





Bergelson Lab

In the past year, our lab got back to running studies in person at Duke. What a joy it is for us to spend time with you and your little ones! We also continued to run a few studies online over Zoom. Being flexible across in-lab and Zoom studies allows us to collect a lot of data over the course of a year! Below, we'll tell you a little bit about what we learned as a result of your continued support.

Learning words from different talkers is hard!

By Federica Bulgarelli

In 2020, we ran a study to understand what 7- and 8-month-old babies know about how new words can sound. This [recently published study](#) found that **how a word sounds during learning changes what infants learn about the word**. Specifically, we found that infants who learned new words from multiple talkers had difficulty correctly identifying when the word had changed (e.g. after learning the word 'neem', they thought both 'noom' and 'lof' were acceptable ways to say neem). We think that since words from different people sound slightly different, infants may have difficulty determining what sound changes are and are not allowed.

Since this finding, we made some changes to the original experiment that we think might help highlight that we are labeling an object and that the object has a specific name. These changes were:

1. Showing them a video of somebody holding and labeling the object, and
2. Directing their attention to the object by labeling it in a sentence (Look at the neem) instead of just saying "Neem" by itself

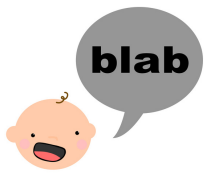
You might have participated in this study on Zoom from your home. Some infants heard the same exact recording of the sentence, "Look at the neem," repeated over and over again, while other infants heard many different variations of the sentence from the same talker or heard the sentence from 10 different talkers. Then we asked whether infants would notice when we changed the word that went with the object. For example, if they suddenly heard the sentence "Look at the lof" after only hearing "Look at the neem", they might turn back to the screen to check out what's going on!



If infants notice the change, this tells us that they learned the label for the object and are surprised when we change the name of the object. If infants do not notice the change, we interpret this to mean that it does not yet matter to them how we label that object.

Data collection is ongoing, but so far our results suggest that these changes help infants who heard varied speech in the learning phase (from multiple talkers or from a single talker) learn the object name. In contrast to the original study, infants in the variable condition are surprised when we change the word! This means that we can change how we teach infants new words to help them process them more appropriately. Since data collection for this study is still ongoing, we would love for you to share information about participating in this study with other parents of 7- or 8-month olds. We are also conducting a similar study looking at how bilingually-raised infants learn words that sound slightly different from each other. **We are still recruiting participants for this study, which is conducted fully online! Participants can be located anywhere in the country and can be bilingual or monolingual English learners.**





Bergelson Lab

Dogs vs. Two dogs? Toddlers may need multiple cues to the plural to understand it in English.

By Stephan Meylan

In Spring 2021, many families participated in a web-based experiment looking at their two-year-olds' knowledge of the English plural (for example, "cats" and "dogs"). In this experiment, kids heard sentences like "look, there are two dogs!" and then we tracked where they looked on their home computer using their webcam (one side of the screen showed one dog, the other side two dogs).

We found that kids in this age range generally don't seem to know the plural without hearing additional context. Participants are equally likely to look at a single dog or multiple dogs when prompted with a simple sentence like, "Look at the dogs!". **Their performance improves if the child hears additional pieces of language that give evidence about the number ("are" / "two") ~AND~ the child has already started to use plurals in their own speech.**

This gives us intriguing preliminary evidence that toddlers may be learning broader patterns of how words relate to one another (syntax) and using that to help revise their knowledge of the sound categories. We're submitting a journal article in Spring 2022 with these results! Check our [website](#) or [Twitter](#) for updates if you're interested in reading the publication. **We are recruiting more 24 - 36 months old to participate in this study in the lab!**

Can 14-month-olds use sentence contexts to learn a new verb? We're not quite sure!

By Lilli Richter

Imagine if you heard the following sentences while watching an animal puppet spin around in circles until it levitates: "Look, it's a doke! It is pratching!" You can probably make a guess at the meaning of those two new words based on the sentence: *doke* is the name for the

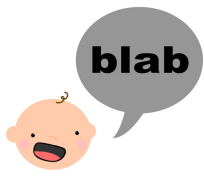
"Look, it's a
doke! It is
pratching!"



animal, and to pratch is the name for the spinning-to-levitate action. "Doke" came after the indefinite article "a," which probably clued you in that it's a noun, and "pratch" was sandwiched between "is" and the word ending "-ing," which is a very common frame for English verbs. From there, you probably used an assumption that nouns generally label objects or beings in the world, and verbs generally label events or actions, and made your guess about the most likely meaning in the scene that you were watching. We call these assumptions linking strategies (i.e., linking the type of word to a category of possible meanings). We recently ran an online study via Zoom to see if infants use linking strategies when they're first learning new words!

We introduced these two made up words to 14-month-olds, and played them over and over again until they were bored. Then, we made a change in the video to see whether we could grab back their attention, which would let us know they thought it was an important or surprising change. We showed them a video of the same cute puppet doing a different action (waddling). In one version of the study, we said "look! It's a doke!" with the new scene-which, if you've just learned that doke is the name for the puppet, shouldn't be too surprising.





Bergelson Lab

In another version, we said “look! It’s pratching!” again-- but if you’ve just learned that pratching is spinning-to-levitate, and now someone uses that word to describe waddling across a table, you might be pretty surprised. However, our results were kind of puzzling. **In past versions of this study, 14-month-olds were surprised by ALL the changes in pairing up the scenes and the words, which left it unclear whether they were making guesses about what the new words meant. In this current version of the study, the babies who participated were not (on average) surprised by ANY of the changes we made!**

We are now creating follow-up versions of this study to see if there’s something different about babies participating over Zoom, or if the way we introduce these words makes it hard for them to use their linking strategies, or something else altogether. **Look out for new studies for 13- and 14-month-olds soon!**

Predicting Vocabulary Outcomes and Diagnosis/Intervention Timelines for Children with Hearing Loss

By Erin Campbell

Vocabulary development for children with hearing loss varies widely. How can we identify children who might need extra language support? We examined data from nearly 100 children enrolled in an early intervention program for hearing loss and found that while many children with hearing loss have delayed vocabulary development, delays are not inevitable. **Factors like the type of hearing loss (whether it affects one ear or both), whether the child uses hearing aids or cochlear implants, as well as the timing of diagnosis and intervention influence children’s vocabulary development.**

To promote early access to support, the American Academy of Pediatrics recommends that all children are screened for hearing loss by 1 month old, receive diagnoses by 3 months old, and begin early intervention services by 6 months old. However, we found that only 36% of children in our sample met this recommendation, and it seems as though children with milder hearing loss,



children with health issues, and children from non-English-speaking households were more likely to experience delays in receiving services. Taken together, these results suggest that clinicians, lawmakers, and researchers need to work harder to ensure all families can get necessary support on time.

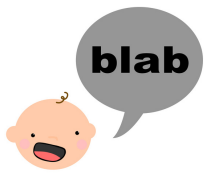
Still, the news is hopeful! Rates of hearing screening and early intervention have increased substantially over the last several decades, and by continuing to monitor vocabulary and the timelines for diagnosis and intervention, we can continue to support children’s language development. If you’re interested in more information on this study, check out [this paper](#), which was recently accepted to the Journal of Speech, Language, and Hearing Research!

Language Input to Blind, Deaf, and Typically-Developing Infants - Lots of Similarities and Some Interesting Differences!

By Erin Campbell

When we study language learning, it’s important to consider the context that children are learning in. That context includes family-level factors, like the





Bergelson Lab

way each parent talks with their infant, as well as child-level factors, like whether the child can see and/or hear the objects in their environment. It's also possible that these factors are related--perhaps parents talk differently with infants born blind or deaf than to typically-developing infants.

We asked parents of infants with different sensory abilities to have their infant wear a language recorder for a day. This device measured the number of words the child heard. **We found that the number of words parents say around their infants does not differ for children born blind or deaf as compared to sighted/hearing children.** On average, children in this study heard a whopping 16,459 words just over the course of one day!

If we look closer at which words parents use with their children, we find that parents seem to use sense words differently based on what their infant can hear or see. **Parents of blind children seem to use fewer visual words (like the color *red* or the verb *see*) and more auditory words (like *loud*, *hear*, or *cockadoodle-doo*).** This might be a way that parents adapt their language to what their children can experience. This study is still in progress, so stay tuned!

What's the Difference Between a Cat and a Gat? Not Much!--If you ask 14-16-month-olds.

By Erin Campbell

How can researchers tell how much babies know about the sounds in words? Well, we wish they could just tell us themselves! Oftentimes, however, we need to use different techniques to figure out what's happening in babies' brains when they hear a word. EEG (or electroencephalography) gives us a window into babies' language processing abilities. By placing electrodes on the head, we can measure the electrical activity in the brain.

In one of our studies, we use EEG to look at infants' brain activity while listening to 3 different types of words: real words that babies know (like *cat* or *book*), fake words that *sound* like words babies know (like *gat* or *dook*), and fake words that don't sound like words that babies



now (like *neem* or *kobe*). When infants have a good sense of the sounds in words, they should recognize that *gat* and *dook* aren't real words (even though they're pretty close!). However, for the younger infants that participated in the study (14-16 month olds), **we found that brain activity for *gat* and *dook* actually looks very similar to their brain activity for the real words!** This suggests that at 14-16 months-old, infants don't yet have adultlike knowledge of the sounds in words. This study is ongoing, and we're still testing 17-20-month-olds, as well as adults, to see how this brain activity and sound knowledge develops. If you're interested in more information on this study, check out [this poster](#) from the 2021 conference for the International Association for the Study of Child Language!

Other updates from the BLAB:

- Our first Ph.D. recipient, **Dr. Charlotte Moore**, is now a post-doc with Dr. Krista Byers-Heinlein at Concordia University in Montreal.
- Undergraduate RA **Jingxuan Liu** won the Jerome Bruner Thesis Award
- Undergraduate RA **Janani Ramadurai** was featured on [LinguistList rising stars](#) and is entering a linguistics master's program at UNC





Tomasello Lab

Recently, our lab has been working on three online, Zoom studies exploring different areas of children's social experiences and how they make humans unique!

The first focuses on **children's moral reasoning**. Through playing with puppets over Zoom with three and five-year-olds, we're hoping to discover how children reason about different social experiences. We are currently recruiting 5-year-olds for this Zoom study.

The second study focuses on **children's comprehension of the word "we."** By interacting with puppets over Zoom with two and four-year-olds, we explore how children come to understand the word "we" when the use of the pronoun is ambiguous. We are currently recruiting 2-year-olds for this Zoom study.

The third study focuses on **social bonding and liking when listening to music**. During this study, children help plan a playdate and may listen to music. Through this online study with four-year-olds, we're hoping to understand the social effects of listening to music together. We are currently recruiting 4-year-olds for this Zoom study.



Our lab is excited to be starting new projects soon exploring helping behaviors and when children want to show off those behaviors,, what changes a children's comprehension of the word "we," and how the presence of people or a mirror affects different social behaviors! We hope to see you in the lab (either in-person or online) this year!





Early Childhood Cognition Lab

This past fall, the Early Childhood Cognition (ECC) Lab celebrated their first semester at Duke University! After taking some time to get set up, our lab is now up and running: all ready to invite children to take part in our lab studies here in Durham!

As a brief introduction, at the ECC Lab, we study the process by which children learn through everyday experiences. This process of learning is inherently active and social: driven by children's natural curiosity about the world, and supported by knowledgeable and helpful adults.

Right now, we have seven studies in the lab looking for 3-9-year-old children. Examples of current studies are children interacting with robots, children talking about others, and children understanding rules and obligations. More information can be found here: ecclabduke.com/for-parents



Also, you can visit us at the **Museum of Life and Science** (433 W Murray Ave)! Every Sunday, researchers from the ECC Lab go into the museum and run studies with children of ages 3-9 years old. We will be on the second floor Living Lab space (see picture above) from 1-3 pm most Sundays. Make a trip to the museum and participate in our research -- it will be double the fun!





Early Childhood Cognition Lab

Did you know that how we talk to children about science matters?

You can discuss science as an **action** to children (e.g., "Let's do science!" or "You're doing science"), or as an **identity** (e.g., "you're a scientist", "be a scientist!")

Interestingly, studies* have shown that when we describe science as an action (e.g., "doing science"), rather than as an identity (e.g., "being a scientist), children persist more in challenging science activities. Why? Because children's **identities** are built over time, and are based on **experience**!



Identity-based language suggests to children that "Scientist" is a social group. This can lead them to interpret failure as a sign that they don't belong to the group. So they don't persist and learn less. On the other hand, using **action-based language** focuses children on the activity itself. It leads to children trying new things, learning by doing, and persisting even when things are challenging.

*Ryan F. Lei, Emily R. Green, Sarah-Jane Leslie, Marjorie Rhodes. Children lose confidence in their potential to "be scientists," but not in their capacity to "do science". Developmental Science, 2019; e12837 DOI: 10.1111/desc.12837



If you found this information interesting, we have a series of "Did You Know?" posts on our lab's Instagram page (@ecclabduke). Scan the QR code, visit our page and find out more about the lab!



VISIT DUKE CHILD STUDIES

ON THE WEB AND ON FACEBOOK!

If you have friends with kids who might be
interested in participating in our studies,
send them here to sign up!

If you are interested in online research
opportunities with labs around the world, check
out childrenhelpingscience.com
(some of our studies are even featured there!).

