



# Infant and Child Studies Centre

## FROM THE DIRECTORS

The Infant and Child Studies Centre at the University of Toronto Mississauga would like to start off by thanking all the families who have participated in our online and in-person studies over the past year. We are learning so much about early development in infants and children and your help has allowed our graduate students and postdoctoral fellows to continue their research. It is our pleasure to share some of our recent findings with you. Please share this newsletter with anyone else you feel would be interested in learning more about our studies or would like to participate.



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## LANGUAGE AND BABY BRAINS



We are thrilled to announce our infant electroencephalography (EEG) testing facility opened in 2024! EEG is a safe method that allows researchers to monitor brain activity in real-time, providing insights into how babies' brains process language. Infants wear comfortable EEG caps and listen to sounds while engaging in playful activities like watching cartoons or playing with bubbles. Our projects explore how infants process unfamiliar accents, how they distinguish between voices, and how they segment words from speech—a crucial skill for language learning. Our findings will not only advance our understanding of early language development but could also inform new approaches to supporting children's language skills! If you and your child would like to participate, please email us for more information!



## HOW DO I PARTICIPATE?

For more information on how you can participate, email us at:  
[utmchildstudies@utoronto.ca](mailto:utmchildstudies@utoronto.ca)

## CHILDREN'S UNDERSTANDING OF EMOTIONAL EVENTS

Emotional events often linger in our minds, drawing mental focus back to what happened and making it harder to concentrate on other tasks. While adults are generally aware of this, it is less clear whether young children understand that emotions—positive or negative—can disrupt mental focus. To investigate this, researchers at the ChiLD Lab told 5- and 8-year-olds stories about characters who experienced an emotional event right before a school lesson. The children were then asked how difficult it would be for the character to pay attention in class. Even younger children acknowledged that focusing would be difficult after a negative event. However, while 8-year-olds recognized that a positive emotional event (e.g., receiving news of a surprise trip to Disneyland) could similarly make it hard to focus, 5-year-olds did not make this connection. Their explanations suggested that younger children understand how negative emotions sap motivation for other tasks, but they seem less aware that any emotional event—even a positive one—can keep the mind occupied and make it harder to concentrate. In a follow-up study, researchers asked whether the character would still be thinking about the happy news during the lesson. With this small adjustment, 5-year-olds began to respond like the older children, recognizing that emotional events can indeed distract us. These findings suggest that by talking to young children about how emotions affect thinking, we can help them better understand the connection between emotions and thoughts and their implications in everyday tasks.



## CHILDREN'S UNDERSTANDING OF SONGS AND SPEECH



Ever heard your little one singing along to their favorite song? Learning to match pitch is a skill that helps children communicate through both music and language. In song, keeping the pitch intervals—the distance between notes—just right is important to keep the melody recognizable. In speech, pitch matters too, like when a voice rises to ask a question or falls at the end of a statement. When speaking, we can still understand what someone says even if the pitch of their voice isn't quite right, but we might not know what song someone sings when they get the notes wrong! In our space-themed game, 4- and 8-year-old children helped rescue a lost llama by repeating back spoken and sung phrases. We found that all children, regardless of age, were better at imitating pitch intervals in song than in speech. While 4-year-olds could match simple notes, they didn't match pitch intervals as accurately as the 8-year-olds, who were significantly more precise, particularly in song over speech. These findings align with previous research, showing that 8-year-olds distinguish speech from song just as well as adults and use features like pitch to tell them apart. Understanding how children develop the ability to recognize which features of a sound are important, and when they can apply this knowledge, helps us see how and when kids make sense of the world of sounds around them. After all, whether they're belting out a tune or telling a story, children are discovering how to turn sounds into meaningful communication!

## CAN CHILDREN UNDERSTAND WORDS IN UNFAMILIAR ACCENTS?

With the GTA being one of the most multicultural regions in the world, children grow up listening to a variety of accents. But how well can young children understand these different accents? And does language experience influence their comprehension? We tested 23-month-old monolingual and bilingual toddlers to compare their ability to recognize words spoken in unfamiliar accents and a Canadian English accent. Children saw two objects on a screen while hearing speakers with either non-native accents (Romanian, Vietnamese, Japanese, or Polish) or Canadian English accents asking them to look at one of the objects. While both monolingual and bilingual children recognized words by both non-native and Canadian speakers, the findings reveal that children adapt to their specific language environments. Monolingual children, who are primarily exposed to Canadian English speakers, were more efficient at identifying the labeled object when spoken by Canadian English speakers. In contrast, bilingual children, who frequently encounter diverse accents in their daily lives, were more efficient at recognizing words spoken by non-native speakers, even when they had not previously heard these accents. These results suggest that children develop language learning strategies that are best suited to their language environments.

## CAN BABIES TELL WHO'S TALKING?

Babies are remarkable when it comes to learning language. By four months of age, monolingual babies are able to tell the difference between people speaking a familiar language vs an unfamiliar language. But what happens when babies grow up hearing more than one language? Does this influence how they recognize voices, even in languages they don't know? We are exploring how bilingual babies might develop unique listening skills. 4.5-month-old bilingual infants listen to recordings of females speaking in both a familiar language (English) and an unfamiliar language (Polish or Spanish). By measuring how long



babies listen to the voices, we can see how well they distinguish between them. Our results show that bilingual babies, unlike monolingual babies, are more likely to notice when the speaker's voice changes, even when the language being spoken is unfamiliar. This may reflect how growing up with multiple languages can shape listening skills in different ways; bilingual babies might be more attuned to the nuances in speech sounds, making them more flexible in distinguishing between voices. This study is helping us to understand how babies develop unique ways of processing the world around them.

## SHARING OUR KNOWLEDGE WITH COMMUNITIES

Ever wonder what we study? At our free "Mind Explorers" events, we share what we know about psychology with families through fun and educational activities. A favourite of ours is making brain hats! Kids collect stickers as they learn about the brain, language, music and more! At the end, children receive a small prize. Parents also have a chance to connect with researchers to learn more about the work taking place in our Infant and Child Studies Centre. If you and your children would like to visit our next event, we'd love to see you there! Follow us on our social media pages to learn about upcoming events.





## WHAT DO WORDS MEAN TO YOUNG INFANTS?



Babies show evidence of understanding common words like foot and dog as early as 6 months. But it's unclear whether they associate these words with their specific meaning, or just a broader category, like body part or animal. To help us understand how infants' concepts of word meaning develops, infants are shown a pair of images and hear one of them named (Look at the dog!) while a special camera tracks their gaze. Sometimes the paired images differ in category (e.g. foot with dog), where infants could succeed with only a broad understanding of the word's meaning. But sometimes they belong to the same category (dog and bird), which requires a more specific understanding. By 14 months of age, infants successfully look to the named images in both of these situations, indicating they have these specific understandings of word meaning. However, results so far suggest that 6-month-olds' word recognition abilities are generally weak, performing at chance in both situations. We are currently exploring whether stronger language skills later in infancy are associated with greater early success in word recognition at 6 months. While infants seem to have strong understanding of the meaning of these common words by 14 months, infants may differ in when and how these understandings emerge.

## CONFIRMATION BIAS IN CHILDREN

When we believe something, we tend to seek information that supports what we believe while ignoring information that challenges what we believe. This is known as confirmation bias, and it's a common way *adults* process information. We currently don't know if children display the same bias as adults. To answer this, we asked 5-, 8-, 11- and 14-year-old children, as well as adults, to make a prediction about the path a character took to go to a city. Participants were asked to choose what information they wanted to hear about the two paths the character could have taken. One group was told to choose information to understand whether they picked the correct path, and the other group was told to select information to convince someone else that they had picked the correct path. The results showed that when children and adults were asked to seek information to learn whether they picked the correct path, they were not biased—they were equally likely to pick information that would support or challenge what they believed. In contrast, when children and adults were asked to seek information to convince someone else, they were biased—they were more likely to seek information that would support rather than challenge what they believed. These findings are important for two reasons. First, they show that children and adults are not always biased. They are only biased when their goal is to convince someone else. Second, this is the first study to test how this bias develops across the lifespan.

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Thank you to the National Sciences and Engineering Research Council of Canada, the Canadian Institutes of Health Research, and the Social Sciences and Humanities Research Council of Canada, for funding of our research.