

## Dear Parents,

Thank you very much for your participation with your child in our projects. Over the past few months, the Language and Learning Lab has completed 6 exciting projects and we couldn't have done it without your help. Three of the studies were recently presented at major conferences for studies in infant and child psychology in Toronto and Columbus, Ohio. In this newsletter, we will review what children did and share with you what we found.



We are grateful to the Ontario Science Centre for allowing us to run our studies at their Research Live! facility with visiting families who were kind enough to take part in our studies. We hope to continue our partnership with the OSC in the new year.

If you would like to update your contact information with us or tell us about any new siblings, please visit our website and fill out the form linked under 'For Parents' or send us an e-mail ([languageandlearninglab@gmail.com](mailto:languageandlearninglab@gmail.com)).

If you know of any friends or families that you think might be interested in participating, we would greatly appreciate your help if you would like to pass our information on to them. We are always looking for new 'child scientists' to help us with our studies, and we could not do our work without the generous support of parents like you.

Sincerely,

**The University of Toronto**  
**Language and Learning Lab Team**

### Special Points of Interest:

- Learning social skills from picture books
- How books affect your child's learning
- Electronic books versus traditional books

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# Do Picture Books with Animal Characters Teach Children Social Skills?

Many books for young children contain animal characters, even books that are meant to teach children about human behaviours.

In this study we wanted to find out whether or not reading a story book about sharing behaviour would affect children's own sharing behaviour, and if the use of human or animal characters in the story would make any difference as to whether or not children shared more after reading the story.

We used a book named "Little Raccoon Learns to Share" written by Mary Packard, and we also manipulated the pictures to create another book with an identical storyline but with human characters instead of animals. These books provided the exact same cues about sharing for children, but the illustrations in the first book depicted various animals while the illustrations in the second book depicted humans.

## *What stories do we suggest and why?*



***“...children shared more after reading the book with human characters...”***

Children between the ages of 4 and 6 were read one of the two books about sharing, or a control book about seeds.

Children were given an opportunity to choose 10 stickers, both before and after the book reading. Children were told that they could keep all 10 stickers, or they could share some or all of their stickers with a peer who was unable to come into the lab and wouldn't get any stickers if they didn't want to share theirs.



If children learned the sharing skill from the book, we expected that they would share more stickers after reading the book than before.

Children shared more stickers after reading the book with *human* characters than they did before reading the book, but they shared fewer stickers after reading the book with animal characters or the book about seeds. Thus, despite what many people believe, children only learned social skills from the book with human characters. Of course, books with animal characters can be a lot of fun and great for instilling a love of literacy in children. However, if the goal of the story-reading is educational, this study suggests that parents and teachers should choose more realistic stories!



## Do Children Learn About Camouflage from Picture Books?

In this study, we were interested in examples in books (pictured below) influence how children develop and revise their science knowledge. Children aged 3 to 4 years old were read a book about camouflage containing 8 animal pictures. Four of the pictures showed animals camouflaged in their environments and four other pictures showed animals with colours that differed from their background.



*Example of non-camouflaged lizard*



*Example of camouflaged lizard*



*Example of another animal used*

We modified the books in two ways: 1) all pictured animals were lizards, or a variety of different animals were pictured; 2) all the non-camouflaged animals appeared first, followed by the camouflaged animals, or each non-camouflaged animal was shown opposite a camouflaged animal, giving children a chance for visual comparison.

After reading the book, children were asked to use their knowledge of camouflage to respond to questions about 2 pairs of pictures (lizards and crabs) and 2 sets of real animals in tanks (different lizards and fish or crabs).

In general, the 3-year-olds struggled to use camouflage reasoning to respond to the questions after reading. The most supportive book version included all lizards and pictures that were “blocked” – i.e. all the non-camouflaged animals appeared first, followed by the camouflaged ones.

***“...three-year-olds  
struggled to use  
camouflage  
reasoning...”***



We think this may be because 3-year-olds were just beginning to build a concept of camouflage; therefore being able to see a block of similar examples (with the same animal) helped them build a concept of “not matching the environment,” which they could then compare to the block of “matching” animals.

On the other hand, 4-year-olds generally did very well on our questions following all versions of the book. The versions that featured a variety of animals were quite supportive. We believe this is because many 4-year-olds already had a basic concept of camouflage and the variety of animals allowed them to test their existing theory in varied contexts.

Our results suggest that examples with highly similar attributes shown together in a block may support new learners who are just building a concept. On the other hand, examples with differing attributes may be more supportive for children who already have a conceptual base and need to test and revise their existing/prior understanding.

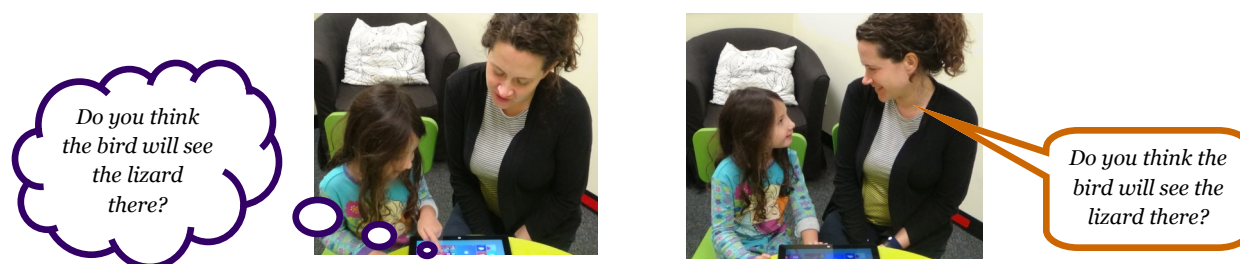


## Are Electronic Books Good Sources of Learning?

Picture book reading can be both fun and educational for children, especially when adults ask children questions and get them to talk during reading. The interactivity of touchscreens allows for questions to be presented to children even when adults aren't available to ask them. In this study, we were interested in the effectiveness of questions delivered through an electronic book. Children 3 to 4 years old listened to a touchscreen book about camouflage. They had the opportunity to navigate through the book and drag lizards to different backgrounds.

***“Children with low vocabulary scores struggled when prompts were given by the electronic book.”***

All children heard prompts that requested them to make predictions and give explanations. Some children heard the book 'read' printed prompts from the page. Other children heard a researcher read the same prompts from the page. A third group of children had a book that excluded the written prompts; instead, they heard the prompts during a face-to-face interaction with the researcher. Children were then asked some questions about camouflage using replica lizards and aquariums.



Overall, children did a great job using camouflage-based reasoning to solve our questions! This was true regardless of the type of prompts they heard. However, there were a couple of groups of children for whom the source of the prompts mattered:



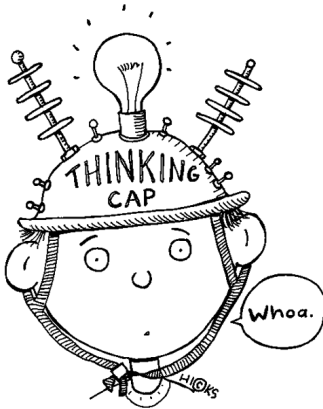
- 1) Children with low vocabulary scores struggled when prompts were given by the book. These children especially benefited from having a present adult that guided their learning.
- 2) Children who had lower ability to voluntarily inhibit their behaviour (i.e. not saying or doing the first thing that comes to mind) struggled when prompts were not printed on the page. These children benefited from the structure of having prompts read to them (by the book or an adult), and they learned less when prompts were presented in conversation style.

All groups of children were supported by the electronic book that included prompts for the adult to read. Thus, electronic books that drive conversation by including prompts - or perhaps other materials that engage you and your child in discussion during reading - might be a good choice in order to promote learning.





## Are Children's Ideas About Other People's Minds Influenced By Picture Books?



At around 3 years of age, children begin to explicitly reason and talk about the fact that other people can have thoughts, feelings, and knowledge that is different from their own. In this study, we wanted to find out more about how the language we use in children's picture books helps or hinders their understanding of others' thoughts.

The children played a game, which told us whether they understood that other people could have beliefs that are false. They first had to guess what was inside a box — for example, a cereal box. Most children reasonably chose cereal. They were then shown the contents, which did not match the markings on the box — for example, paper clips. Then, the children were asked what a new puppet would expect was in the box.

Children who understood that the puppet could have thoughts different from their own would understand that the puppet would expect cereal in the box, because the puppet wouldn't have known that there were paper clips inside!

Then we read to the children one of six different picture books about people who had 'false beliefs' (for instance, a mom who thinks her jewellery is in a box, not knowing that her daughter Silly Suzy has put a frog in the box!). Some books used a lot of words like 'think' or 'believe' that told children directly about people's mental states, and other books let children figure it out for themselves.



***“...we did not find that these improvements were different depending on the type of book they read...”***

Children read these books twice on two different visits to the lab. Then, children completed the box-and-puppet tasks again. We tracked their responses to these tasks to see how they changed over the two sessions and if the type of book affected how much they learned.

After reading the books children showed an improved understanding of how others' thoughts could differ from their own. However, we did not find that these improvements were different depending on the type book they read. This may be because the language used in the books is less important than exposing children to these sorts of false belief and false identity situations in general.





## Can You Teach Children About Gravity?

Studies have shown that children can learn science concepts from realistic stories. There has been a debate as to whether informational books are best for learning because they provide direct instruction (but might be boring to children), or whether narrative stories are better because they capture children's attention.

The goal of this study was to discover whether young children learn a science concept better from a traditional informational book or a realistically-designed fiction book. It's a common misconception that heavy objects fall faster than lighter ones, even among adults. We designed two books that taught 4- and 5-year-olds about gravity and how objects fall. The books had identical illustrations, were similar in length and reading level, and provided the same information about falling, but one contained plain factual statements and the other contained facts built in to a narrative story.



Realistic Fiction	Informational Text
Luke and Alice climbed to the top of a jungle gym. "I wonder what happens if you drop two things at the exact same time?" Alice asked. Luke said "Our buckets are the same size. But my bucket is full of toys and your bucket's empty. I think my bucket's going to reach the ground first. "No way!" Alice exclaimed.	What happens if you drop two things at the exact same time? Let's find out how two different objects fall when they are dropped together. First, look at these buckets. These two buckets are the same size. But one bucket is full of toys and the other bucket is empty.
Both Alice and Luke let their buckets go. "Hey, both sand buckets reached the ground at the same time" said Alice. "Let's go play on the playground" Luke said.	Let's see what will happen if these two buckets are dropped from the top of a jungle gym at the same time. Down the buckets go! Both buckets reached the ground at the same time.

Children were read one of these two books about gravity, or a control book about plants.

Before and after the book reading, children were presented with pairs of objects and asked, "If you hold the objects out like this and let them drop, do you think that one of the two will fall faster or they will both fall at the same time?" If children learned from the books, we expected that they would offer more correct answers after reading the book than before.

Generally all children improved from pretest to post-test regardless of book type. Five-year olds learnt from both types of genres, while 4-year olds only learnt from the realistic fiction book. As expected the control group did not learn the science concept. Interestingly, children reported enjoying both the realistic fictional and informational genres equally. These results suggests that both 4- and 5-year olds can learn that similar objects will fall at the same rate regardless of how much they weigh. However, it's not until about age 5 that children can learn science concepts from both informational and realistic fiction books.

(A special thank you to Shelley He, an undergraduate student in our lab, for her wonderful illustrations!)



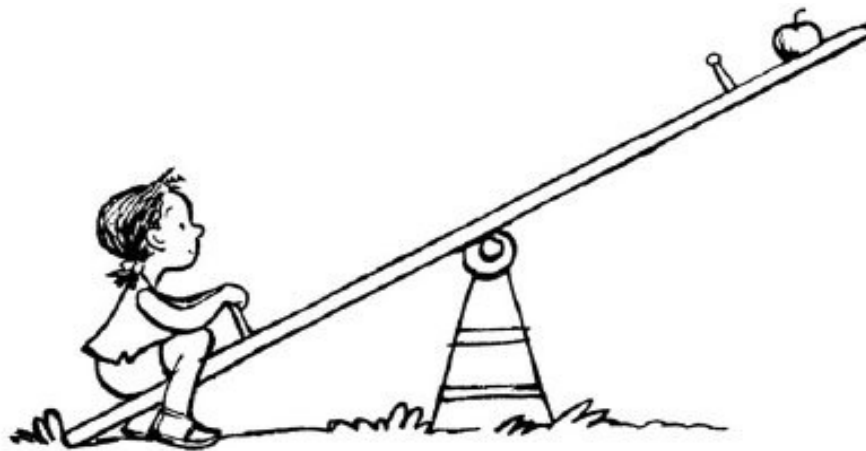
## Do Children Learn Physics From Stories?

As children grow, their understanding of the physical world changes. For example, between 6 and 8 years old, children learn that an object won't always balance on its center – that balance depends on the weight on each side of the object.

In this study, we wanted to know if 6- and 7-year-olds could learn this correct theory of balance by reading a storybook with the science-concept built-in. Also, we wanted to know if the type of story (fantastical vs. realistic) would influence children's learning about physics because previous research has shown that children are better able to learn biological facts from a story when it is realistic rather than fantastical.

First, children had to predict how blocks would balance on a stand so we could learn about their existing understanding of balance. Next, children were read either a realistic or fantastical storybook about other children playing on a seesaw.

***“...storybooks can be a useful tool for gaining knowledge about science. Even when events weren't realistic...”***



Both storybooks always included accurate information about the correct theory of balance. In the realistic story, all of the story events could have easily taken place in the real world, but in the fantastical story, some story events and contexts would have been impossible – like having a purple sun!

After reading the story, the children had another chance to play with some new blocks and predict how they would balance so we could see what they had learned.

Children used both stories to improve their understanding of balance! This research shows that storybooks can be a useful tool for gaining knowledge about science. Even when events weren't realistic, children still applied what they read to real-world questions about balance.



# Congratulations Patricia Ganea!

## The Editor's Choice Award

Dr. Ganea and one of her graduate students won The Editor's Choice Award from the academic journal *Cognition and Development* for her recent paper titled '*You Could Call It Magic*': *What Parents and Siblings Tell Preschoolers About Unobservable Entities*.

The paper addresses the issue of explaining children's understanding of the unseen world. Here is a short excerpt from the fascinating paper:

For more information about the study, and the full paper itself, please visit the electronic copy in the Journal of Cognition and Development, published April 30th, 2014, in the link below:



[You Could Call it Magic: What Parents and Siblings Tell Preschoolers About Unobservable Entities](#)

## Patricia Ganea presents at the Ministry of Education

On October 15th 2015, Dr. Patricia Ganea provided a talk for the Ministry of Education, presented by the Research Strategy Speaker Series.

In the session, Dr. Ganea discussed what types of books facilitate children's transfer of knowledge and how books can be used in the early years' classrooms as a source of conceptual knowledge. This research adds to a growing body of literature on how young children learn key concepts, and how different media support or detract from their learning.





# Current Studies

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## **Negation Study**

*22.5–24.4 and 33–37.0 months*

This study looks at toddlers' ability to process negative sentences to make a simple inference on the location of a toy. Your child will be asked to play a hide-and-seek game with a toy. One visit to the lab for about 45 minutes.

## **Communicative Perspective-taking Study**

*24.0–54.0 months*

How do children use social and verbal cues when learning a novel word from their communicative partners? We will show children some unfamiliar toys and teach them novel (nonsense) labels for these toys. One visit to the lab for about 20 minutes.

## **Verbal Deletion Study**

*23.0–25.9 months*

Exploring how toddlers learn and update their knowledge of objects that have been removed from view. One visit to the lab for about 45 minutes.

## **Making Story Predictions**

*36.0–42.9 months*

How do children use information from a story to figure out what is happening? We'll watch a two-minute movie about a little boy, and see what your child thinks has happened to him at the end of the movie. One visit to the lab for about 30 minutes.

## **Making Sense of Stories**

*7 years old*

How do children use the language in stories to make sense of what is happening? We will show you or your child some sentences or stories on a screen, and we'll track his/her eye movements as the stories play. One visit to the lab for about 1 hour.

*Interested in a study? Email us at:  
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