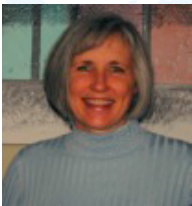


Language, Reading & Math in Children

A study of the skills that support children's learning

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Early Screening of Children's Learning

We want to understand the early skills children need in order to learn language, reading, and math at school. Our Kindergarten screening tool includes tasks important to school learning. Since 2014, we've had almost 200 kindergarten students per year participate in this study ... nearly 600 so far! This year, we'll be seeing more kindergarten students. And, we'll be going back to see the grade 1 children who completed our tool last year. The Grade 1 students will do some listening, talking, reading, and math activities. We'll be able to examine the connections between our screening measures, and children's learning during the primary grades. The results of this study will help us understand how best to support children's early learning.

- Lisa Archibald, Ph.D



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Brain Connections for Reading

Some children have more difficulty learning to read than others, and this can impact their academic success. We want to understand whether the brains of children with reading disability differ from children who are typical readers. We think that connections in the brain are important for developing good reading. We call this “brain connectivity”, and we can measure it using magnetic resonance imaging (MRI). With MRI, we can generate images of brain structures and brain activity. We are currently studying whether children with reading disabilities have among brain areas involved in reading. In our study, children with reading disabilities participate in an MRI scan and complete some reading tasks. This allows us to examine how connections in the brain relate to reading ability. Some of our participants will also come back into the lab for another MRI after they’ve finished a reading intervention program. Then, we can examine whether there are changes in the connections in their brains as their reading improves. In the future, studies like this one can help us to develop better programs for helping children with reading disabilities.

- Alex Cross, M.Sc.

Storytelling Tells about Language Learning

Speech-Language Pathologists (SLPs) try to decide if children are having difficulty learning language and why. In one of our studies, we asked children to retell a story we had just told to them. We observed how often the children stopped to think, the words they used, how long their sentences were, and how many mistakes they made.

We learned that certain combinations of these features are more closely associated with different types of learning difficulty. These findings will help SLPs to better understand children’s language learning. In order to learn about children’s language ability, the SLP can consider the length of sentences, how often grammatical mistakes happen, and how often pausing to stop and think is needed. On the other hand, the SLP can learn about children’s memory abilities by considering the amount of the original story included in the retell, and how often children stop to change or revise what they’re saying

- Laura Pauls, MCIsc-SLP

Language Measures for children with Hearing Aids

Babies learn to talk when they hear other people talking all around them. For babies with hearing loss, however, learning language becomes a much more difficult job because they have difficulty hearing sounds and spoken language around them. Hearing aids are a type of amplification technology that can help babies hear the sounds around them. Even still, we need to understand how well babies with hearing aids are developing their spoken language so we can provide them with any extra help they might need.

We are working with pediatric audiologists in the National Centre of Audiology (also at Western!) to find tools that audiologists can use to monitor how a baby is developing their spoken language. To do so, we are testing these tools on babies with normal hearing first. Parents complete a few short questionnaires about their baby’s development, and we screen their baby’s hearing. We have a long way to go for our data collection, but early analyses are suggesting that these questionnaires can help measure spoken language development!

- Olivia Daub, MSc



Design Research in Math Education

An important and pressing question in Education is how to best apply research findings to classroom practice. Everyday, new research papers are published on educationally relevant topics, such as child development, brain development, how children learn to read and perform mathematics, the contributions of attention to learning, etc. And yet, it is not always clear how and whether research from disciplines such as psychology, neuroscience, and education make their way into the classrooms of practicing teachers. It is equally unclear how to use the expertise of teachers to help inform research. We take it for granted the remarkable role teachers play in orchestrating children's learning and associated brain development. For the most part, the expertise of teachers is an untapped resource in the design, carryout, and interpretation of child development research.

In an effort to address the “research-practice gap,” members of the Numerical Cognition Laboratory and teachers and members of the TVDSB are teaming up to engage in a collaborative research project based on principles of ‘design-research.’ The project will involve a team of researchers and early years teachers (K-Gr.2) working together throughout the remaining of the school year to design, implement, and evaluate a series of new mathematics lessons and activities. The team will rely on the teachers to provide insight into student learning as they see it (and live it!) on a daily basis, helping to contextualize research findings within classroom practice. Furthermore, the team's professional learning will focus on co-conducting research aimed at addressing specific questions posed by the teacher members. Ultimately, the goal of this project is to arrive at an improved understanding of how young children learn and can best be instructed in mathematics.

- Zachary Hawes, BSc



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<http://www.freeimages.co.uk/>

A SPECIAL THANK YOU

Thank you to all of the school personnel, parents, and children who make our studies possible. Thank you also to the talented graduate students working on these research projects!

WE'RE STILL WORKING

Thank you to all of the parents who have indicated that they would like to be contacted for future studies. As we continue working on our research projects, we greatly appreciate your continued participation.

FIND OUT MORE ABOUT OUR RESEARCH!

Follow the links to find out more about our work:

Our past newsletters: <http://www.uwo.ca/fhs/lwm/newsletters.html>

Podcasts about our research: <http://www.uwo.ca/fhs/lwm/index.html>

Lists of our published papers can be found at the lab website: <http://www.uwo.ca/fhs/lwm/>