We are pleased to offer the inaugural issue of the ABCD Lab Newsletter. It has been one year since renovations on our lab space were completed and our team began conducting research at the University of Alberta. It has been an exciting year, and we could not have done it without the enthusiasm and support of all the families who have participated in our research and everyone who has helped spread the word about our lab.

In this issue, we provide an update on the findings of two of the studies we have been conducting this year, along with milestones in the academic careers of several lab members.

We recently received funding from NSERC, one of Canada’s major funding agencies, to study how self-regulation develops in the transition from preschool to school-age, so we expect the coming year to bring more good things!

Dr. Sandra Wiebe
Assistant Professor,
Psychology
Director, ABCD Lab

In one of our current studies, we are looking at the neural correlates of impulse control or regulation. In this study, children wear a special cap while they play a computer game where most of the time they catch fish by pressing buttons, but occasionally they must suppress the button-press response when certain pictures (either fish with particular features, or sharks) appear on the computer screen.

We found that successfully suppressing a response is related to enhancement of the P3 brainwave activity that, in preschoolers, happens about 400 milliseconds after the picture appears on the computer screen (the blue line represents catching a fish, the red line represents successful response suppression). Not surprisingly, older preschoolers respond more quickly and have faster brainwave responses.

Simone Lebeuf presented these findings at the Psychology department’s 25th annual Royce Conference in spring, and we also presented this study at the Association for Psychological Science meetings in Washington, D.C.

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New & Upcoming Studies

Kelly West, an Honors Psychology student in the lab, is currently looking for preschool children who were born preterm, between 3 and 6 years of age, for her honors thesis. For more information, please contact Kelly at krwest@ualberta.ca or call the lab at 780-492-1277.

We are planning a study to look at how children’s ability to regulate their behaviour develop between 5 and 7 years, and how early self-regulation helps children make the transition to school. If you have a 5- to 7-year-old child and are interested in participating, contact the lab to learn more (abcddlab@ualberta.ca or 780-492-1277).

Find us on Facebook
facebook.com/ABCD.Lab
A new tool to study memory in young children

One of our projects this year was developing and testing a new, preschool-friendly, assessment of working memory. Working memory involves holding information in mind and using it to guide behaviour (for example, remembering a website address long enough to type it into your browser). Many existing working memory tasks don’t work with young children because they require background knowledge that some kids do not have (for example, knowing their numbers), they are hard to explain, or simply don’t hold children’s attention well enough to motivate them to try their best.

In our new task, “the Map Task,” children move Little People figures to different activity locations on a playground map in the same or opposite order as the experimenter. We tested whether our task was a valid measure of working memory by having 3- to 6-year-old children in several local daycares and preschools complete the Map Task along with two existing working memory tasks. We then looked at the relationships between scores. We found evidence that our task is a valid measure of working memory, and in fact it seems to work better in younger preschoolers than existing measures.

Preliminary results of this study were presented at the Royce Conference here at the University of Alberta and at the meetings of the Society for Research in Child Development in Montreal this April. The response from other researchers has been very positive! A visiting Turkish professor from Cukurova University, Dr. Özkan Özgün, plans to translate the Map Task into Turkish and use it in a study of preschool children’s development in Turkey.

For some of our studies, we test children in daycare or preschool settings. If you think your child’s daycare or preschool director may be interested in collaborating with our team by having us visit and play some working memory games with the children, have them contact the ABCD Lab at 780-492-1277 or abcdlab@ualberta.ca.

Transitions and Awards

Congratulations to all of the ABCD Lab students who graduated in the last year: Aneeqa Ansari, Emily Armstrong, Adam Gordon, Mahsa Khoei, Alan Lam, Simone Lebeuf, Cecilia Mah, Laura Ritzen, and Corbin Rose. Some of our lab graduates will be continuing their studies in graduate or medical school here in Alberta or as far away as Edinburgh, Scotland! To all of our grads, best wishes in your future endeavours, and thank you for your contribution to the lab!

Kelly West, a third-year honors student in the lab, won a Roger S. Smith Award from the University of Alberta’s Faculty of Arts. This award will allow Kelly to work in the lab full-time throughout the summer, helping with ongoing studies and making progress on her honors thesis project looking at self-regulation in preschool children born preterm.

Lisa Smithson was selected to receive the Jane Silvius Award, a scholarship for outstanding doctoral students studying developmental psychology at the University of Alberta. Lisa’s research deals with language development, gesture, and working memory.
Some Fun Facts About Your Brain:

- Did you know that most fish don’t have frontal lobes? The frontal lobe is the very front part of your brain, and you use your frontal lobe whenever you have to learn or remember something new or follow a complicated rule. If you played the “fish game” in the lab or the “playground game” at your daycare, you gave your frontal lobes a workout!
- The human brain’s frontal lobe takes up more space in the brain than any other animal’s, even a dinosaur’s!
- Your brain is growing every day, and it will keep growing until you are about 20 years old!
- Keep your brain safe by wearing a helmet when you go roller-blading or ride your bike, and help it grow by eating plenty of healthy things like fish and vegetables.
The Alberta Brain and Cognitive Development Lab is a research lab in the Department of Psychology at the University of Alberta. Our research examines how children develop the ability to regulate their behaviour, attention, cognition, and emotions. Typical research questions that the ABCD lab asks include:

- How do these abilities emerge and develop in the infant, toddler, and preschool years?
- How do changes in behaviour relate to brain development?
- What factors put children at risk for developing problems with self-regulation?

To study these questions, we use game-like tasks, sometimes combined with neuroimaging methods like event-related potentials (ERPs), in which we record small ongoing changes in voltage at the scalp that reflects underlying brain activity.