Message from the Director

This newsletter marks another busy and productive year in the ABCD Lab. We have now completed the enrolment phase of our longitudinal “Pirate Adventure” study of development in the transition to school, and will be continuing follow-up visits through spring.

We also began a new study in collaboration with colleagues from the Physical Education and Recreation department, examining how young children’s physical activity relates to their cognitive and brain development. This study was recently featured on CTV News! Learn more about these and other studies throughout this issue. As always, we extend our gratitude to the parents and children who have participated in our previous studies and who continue to participate in our current research.

Let’s Get Physical!

The physical activity study is an initiative to examine the association between physical activity, sedentary behaviour and executive functioning in early childhood. As the early years are a period of rapid growth, it is important to understand how lifestyle factors such as physical activity and sedentary behaviour may influence children’s cognitive development. Children visit our lab and complete a few game-like measures of cognitive functioning. The Go/No-go task is a measure of response inhibition where children are tasked to press a button to catch all the fish but not the sharks. Children’s ability to restrain themselves from catching the sharks serves as an indicator of their inhibitory skills. In addition, to find out how inhibitory behaviour is controlled by the brain, we record children’s brain activity while they complete the task. Another game children complete is the Noisy Book. Children are shown a number of buttons with animals on them and have to learn their location. After that, they are told a sequence of animal names and have to find the animals in that same sequence. This task is commonly used as a measure of children’s working memory capacity. At the end of the lab visit, children are given an actigraph monitor to wear for a period of seven days. The monitor records their movements and gives us an objective measure of children’s physical activity and sedentary behaviour. The information collected from the actigraph monitor will be used to assess how physical activity and sedentary behaviour in early childhood is associated with children’s cognitive performance.
Psychology Facts!

“Turophobia” is the fear of cheese!

We forget 90% of what we dream about!

Mind wandering can encourage creative thinking!

You tend to perform worse if you are under a lot of stress!

When you’re sad or scared, you’re less likely to try new things!

Most adults can repeat up to seven digits correctly from their working memory!

The human brain can hold five times as much information as an encyclopedia!


http://www.skygaze.com/content/facts/psychology.shtml

We are interested in learning about children between the ages of 2 and 6 and the relationship between familiarity with household items, food, and toys, and object size memory. Scan here to participate in our survey!

Direct Link: http://tinyurl.com/kids-experiences-study

Upcoming Project:
Dreaming the Day Away

Much of our days are spent thinking about something other than the task at hand (up to 50%, yikes!). Although this phenomenon of “mind wandering” has been studied in adults, little research has been done on daydreaming and mind wandering in children. Dr. Wiebe, graduate student Sarah Elke, and undergraduate honors student Katherine Maki, have a new project in the works that will examine children’s tendency to mind wander, how mind wandering is related to executive function, and how brain activity changes while children mind wander. Currently, the games we hope to use are being validated with adult participants, but we hope that by next year the project will be ready for child participants.

Ongoing Projects
The Benefits of Storytime

Reading to young children has been linked to a number of positive outcomes, notably children’s language development and IQ scores. In this project, our goal is to look at the relationship between quantity and quality of shared reading and children’s executive function, including working memory, inhibition, and delay of gratification. Ultimately, this study will extend our understanding of parent-child book reading, and results may shed light on the most effective and stimulating ways for parents to engage in shared book reading with their children.
Fourth year honors student Auriele Volk and graduate student Daphne Vrantsidis are investigating the effects of parent-child interactions on the development of self-regulation in preschoolers. Parental warmth, sensitivity, and discipline have been linked to better control of mental processes in situations that do not involve motivation or emotion, one aspect of self-regulation. But very little research has been conducted on how parenting affects children’s ability to delay gratification, a second component of self-regulation. Data for these studies come from the Midwestern Infant Development Study which followed children prenatally to age 5 to look at the effects of prenatal tobacco exposure on child development. Parents and children were video recorded completing play tasks and moderately challenged puzzles. We are coding parent-child interactions for parental responsivity, constructive discipline, and problematic discipline. Auriele will be examining how parental responsivity and discipline affect both control of mental processes and delayed gratification in children, and Daphne will be looking at how these same aspects of parenting interact to affect children’s self-regulation. The results of these studies will further our understanding of how early social influences affect the development of self-regulation in children.

Teaching Your Children the Art of Self-Control

Copy the picture using the grid lines as a guide. You might find it easier to copy one square at a time. Count the squares carefully!
Ongoing Projects

The Jungle Matching Game!

We are currently collaborating with Emma Blakey from the University of Sheffield in England to study how children develop the ability to switch from doing one thing to another. This is something that children have to do all the time, for example when they have to adjust their behaviour from home to daycare. Yet, this is something that preschoolers often find difficult. For example, previous research shows that if you get children to match picture cards by colour and then later switch to matching them by shape, 3-year-olds often fail to switch rules. This reflects the fact that the ability to switch behaviour is a complex, high-level skill that is slow to develop during childhood. However, we still know very little about how this skill develops between the ages of 2 and 4. To look at this we are running a study where children play a touchscreen computer game where they match pictures to find hiding animals. While they play the game children wear a special cap that measures their brain activity. If you have a child between ages 2.5 and 4 and are interested in learning more about this study, please contact the ABCD Lab at (780) 492 - 1277 or abcdlab@ualberta.ca.

Executive Function Study

With the completion of the first phase in May, and the follow-up phase well underway, it has been quite the year for the longitudinal executive function study! We are currently going through the data from the first sessions and collecting new data in our second sessions. We love seeing all the bright faces back into our lab! Tieghan, one of the lab’s psychology honor students, has been hard at work in the beginning stages of her analysis. She is examining the relationship between working memory outcomes and language milestones. A big thank you to all the parents who helped conclude the first phase of this study, and to those who have been able to come back for their follow-up visits. This study would not be possible without the time and commitment of all the children and their families! If you have any questions or are interested in finding out more about our study, please contact us at the ABCD lab by email at abcdlab@ualberta.ca or by phone at (780)-492-1277.
Congratulations to all of the ABCD Lab students who graduated in the last year: Emily Jeong, Dorothea Hui, Ivanna Kruhlak, Karen Shin, Bethany Zelent, Aala Abdullahi, Akshay Verma, Toby Vickar, Naaila Ali, and Jerome Satkunam.

It gives us great pleasure to know that both Naaila and Jerome are sticking with us in the lab this year! To the hard working past and present members of our lab, thank you all so much for the contributions you have made! For those of you who are continuing with your education, the best of luck to you as you move toward the next chapter life brings your way.

Congratulations to our wonderful Daphne Vrantsidis, who was awarded the Queen Elizabeth II Graduate Scholarship. The award recognizes her academic and scholarly achievements, and is funded by the province of Alberta.
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?

**ABCD Lab Contact Information:**
P 217 Biological Sciences Building
Department of Psychology
University of Alberta
Edmonton, AB
T5J 1H8

Phone: (780) 492-1277
E-mail: abcdlab@ualberta.ca
www.ualberta.ca/~abcdlab/