News from the lab

Winter 2015

ABCs Assessment Brain Cognition Socialization

Developmental Neuropsychology Laboratory

About…

You are receiving this *newsletter* as part of or following your participation in one of the ABCs laboratory studies. Its purpose is to inform you of the studies conducted at the ABCs Laboratory and of current information concerning child and adolescent development.

Recognize emotions: a breeze!

Marie Maxime Lavallée, bachelor student
and Tetiana Goi, research assistant

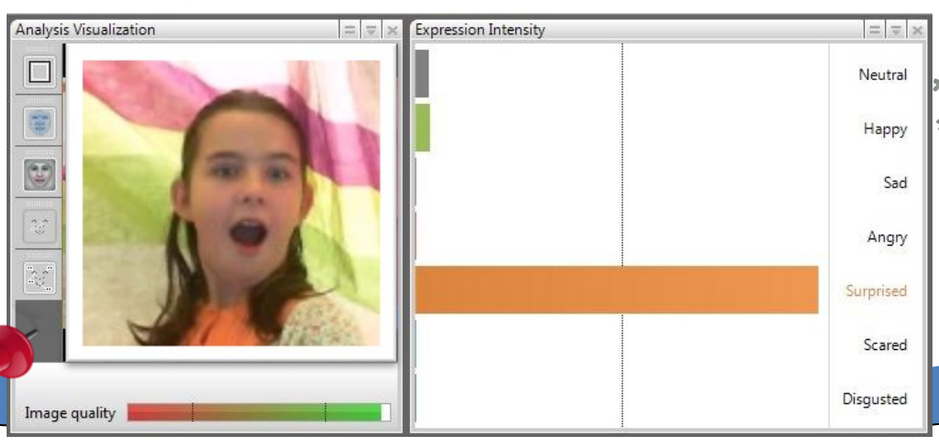
Have you ever wished you were capable of reading quickly and precisely the emotion on someone's face? For example, when you offer a gift to a loved one and you would like to make sure the person feels joy upon unwrapping the gift? There may not exist a way to verify this in everyday life, but the technology of a software called FaceReader allows us to measure, in the research environment, facial expressions as well as their intensity. It can detect joy, fear, sadness, disgust, anger, surprise, contempt, and indifference.

This software can analyze still images, videos, but also real-time recordings. It begins by detecting the face's position, and by comparing it to a facial model it has stocked in its memory, it targets specific points necessary for the analysis of emotions (i.e. the cheekbones, mouth, eyebrows, eyes, etc.). Once the software has recognized the facial movements, such as a frown or smile, it is capable of identifying emotions felt by the subject. Indeed, an individual can feel more than one emotion at a time, and FaceReader can easily detect these.

In addition to detecting emotions, the software is also capable of detecting the subjects' gender, age, and ethnic origin. Moreover, it can measure the head's orientation and sight direction; this data can help better understand what causes the emotion.

When doing research on emotions, researchers mainly use multiple choice questionnaires that require individuals to check off their emotion among the options proposed. This type of tool, however, has a major disadvantage as participants can easily hide their true emotions. In addition, it is not adapted to all ages as young participants are not yet capable of precisely naming their emotions, and can therefore make mistakes or get confused. Thus, using FaceReader allows us to measure emotions objectively, that is, of participants of all ages, as it is very difficult to lie to the software.

Presently, FaceReader is used for a project that studies, among other things, the social and emotional development of children having suffered a concussion. For this project, children are videotaped while they open a present that will be disappointing. The software is capable of detecting the change in emotion, that is, from the excitement of unwrapping a present to the sadness upon discovering the present is deceiving. Afterwards, the children might decide to hide their deception to please the adult, which is socially adapted behaviour, or to demonstrate their discontent. Once again, FaceReader is extremely useful when it comes to measuring emotions. The children's change in emotion provides a lot of detail on their social development.



Inauguration of the ABCs Laboratory

Hélène Audrit, Doctoral student

This Thursday, November 20, 2014, our ABCs laboratory in developmental neuropsychology inaugurated its equipment and facilities. For the occasion, all lab members were present to guide the guests and perform interactive demonstrations in a relaxed atmosphere.

This event for the laboratory's professionals and collaborators was an opportunity to get to know the ABCs laboratory, founded and directed by Dr. Miriam Beauchamp who has, for the past five years, dedicated her time and shared her research activities with both the University of Montreal's Psychology Department and Sainte-Justine Hospital's Research Center.

All of ABCs laboratory projects and equipment have one aim, that is, to better understand the development of infants, children and adolescents. More precisely, the laboratory is interested in developmental problems, be they at the cerebral, cognitive or social levels, but also in the consequences of traumatic brain injuries and concussions happening at a young age.

Our equipment is distributed in several rooms dedicated to the observation and analysis of children and adolescents. Therefore, it is possible to observe the children while they perform tasks or interact with others (i.e. a parent). The laboratory uses several state-of the-art technology such as actigraphy, which is used to record and assess sleep, eye tracking, which allows the measurement of participants' eye movements and to infer what his social interests are, the FaceReader, a software that allows to decode facial expressions of participants faced with a situation created by the evaluator, virtual reality, neuroimaging, and observation via rooms equipped with cameras. All these tools contribute to our research projects by measuring aspects like social interaction, moral reasoning or attention.

Over the past five years, our laboratory has never ceased to develop and improve. Projects conducted by the ABCs laboratory are major projects. For example, the LION study, a study of children between the ages of 18 months and 5 years, has mobilized several students and research assistant for the past 3 years in order to determine the consequences of TBIs and concussions at an early age. Moreover, Dr. Beauchamp is also a co-investigator on the 5P study, a national multi-site study which involves nine research centers in Canada and which follows more than 2 200 children aged between 5 and 18 years old.

These projects and equipment are funded by several organizations : the Social Sciences and Humanities Research Council, the Canadian Institutes of Health Research, the Natural Sciences and Engineering Research Council, the Fonds de recherche en santé du Québec, and recently, the Canadian Foundation for Innovation (CFI) which provided the virtual reality equipment the laboratory has recently acquired. All our projects are also made possible thanks to national and international collaborations and are led by a passionate team. However, they would not be possible without the participation of children and their families. Indeed, these participants, who so willingly contribute their time to advance scientific knowledge relative to social and cognitive development of children and adolescents, are the heart of our ABCs laboratory.

Participants needed!

We are always looking for healthy young individuals to help us gain a better understanding of child and adolescent development. If you or a member of your family is interested in giving a little time for research in neuropsychology, and if you have a child between the ages of 2 and 17, contact us at 514-343-6111 ext 36027 or at cindy.beaudoin@recherche-ste-justine.qc.ca. It often takes very little time to give researchers a helping hand!

The ABCs Lab

Director : Miriam Beauchamp, Ph.D; **Post-doctoral researcher** : Jennyfer Ansado, Ph.D.,
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