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Dear Parents and Teachers,

Thank you very much for allowing your children to participate in our research. The Infant and Child Development Lab at Brock University is committed to learning more about how children process their social world. Without your cooperation it would not be possible to conduct our work!

During the past year we conducted several studies and we would like to share our discoveries with you. In one study, we investigated the influence of body posture on adults' and children's perception of facial displays of emotion. Participants were shown a series of pictures and were asked to indicate whether each face was displaying fear/sadness (Experiment 1) or happiness/sadness (Experiment 2). The trick was that each face was attached to a body posing either the same emotion (e.g., sad face on a body posing sadness; *congruent trials*) or the opposite emotion (e.g., sad face on a body posing fear; *incongruent trials*). Participants were instructed to ignore the body. When tested with fear/sadness, both adults and children were influenced by body posture: their accuracy was much higher on congruent trials than on incongruent trials. This effect was much larger in 8-year-old children (a difference of 30%) than in adults (a difference of 12%); the effect was adult-like in 10-year-old children. When tested with happy/sad expressions, neither 8-year-old children nor adults were influenced by body posture. This suggests that body posture only influences perception of facial expressions when the two emotions displayed are similar in valence (i.e., when both display a negative emotion) and that under these conditions children are more likely to be fooled than adults! This work is the basis of Danielle Longfield's MA thesis; she presented this work at the annual meeting of the *Vision Sciences Society* in May and is preparing it for publication. After her defence, Danielle will be pursuing a career in midwifery at McMaster University!

In a second study, we investigated children's perception of aggressiveness in human faces. In men, there is a correlation between the facial width-to-height ratio and behavioural aggression—both when aggression is measured in the lab and when aggression is defined as the number of penalty minutes accrued by individual NHL hockey players. Adults can accurately predict propensity for aggression, even when faces are shown for less than 1 second! Furthermore, adults can do this both when judging own-race faces and when judging other-race faces, with which they have less experience. This year we tested 8-year-old children in the Niagara Region and in China. Children were shown 24 Caucasian faces and 24 Chinese faces that varied in width-to-height ratio. They were asked to indicate, on a 5-point scale, how aggressive they thought each man would be. Like adults, children's estimates were related to the facial width-to-height ratio and this was true both when judging own-race faces and when judging other-race faces. These results suggest that this skill emerges early in development and that, unlike our ability to recognize the identity of individual faces, is applicable both to faces seen on a daily basis (e.g., Asian faces for children living in China) and to faces encountered less often (e.g., Caucasian faces for children living in China). This work was presented at the annual meeting of the *Cognitive Neuroscience Society* and is being prepared for publication.

In a third study, we investigated how children organize faces based on social categories. Adults' expertise in face recognition has been attributed to their using norm-based coding. Each time adults encounter a face, they are thought to compare that face to their norm/prototype (i.e., to the average of all faces previously encountered). Faces similar to the prototype are rated as most attractive and most normal. That prototype is constantly updated as new faces are encountered. We are able to study the nature of face prototypes in the lab using a process called adaptation. For example, after viewing a series of distorted faces (e.g., with compressed

features), adults rate slightly compressed faces as more attractive/normal than undistorted faces. Recently, researchers have discovered that adults have multiple face prototypes. After viewing male/female faces distorted in opposite directions, adults' attractiveness judgments shift in opposite directions (e.g., they rate compressed male faces and expanded female faces as more attractive). These results are thought to indicate that the neural populations processing male faces may not be exactly the same as the neural populations processing female faces. These effects have also been shown for Caucasian/Chinese faces, human/monkey faces, and young/old faces.

Children make more errors on a variety of face-processing tasks and we wondered if this might be because they do not yet use norm-based coding or because they do not have different prototypes for the various face categories. Last year we discovered that 5- and 8-year-old children do use norm-based coding. After reading a storybook in which all faces were distorted in the same direction (e.g., in which all faces had compressed features), children's attractiveness judgments shifted in that direction. We also discovered that 8-year-old children have separate prototypes for Caucasian versus Chinese faces. After reading a storybook in which Caucasian faces were distorted in one direction (e.g., compressed) and Chinese faces were distorted in the opposite direction (e.g., expanded), 8-year-olds' attractiveness ratings shifted in opposite directions. This year we read that same storybook to 5-year-old children. We discovered that separate prototypes for Caucasian and Chinese children are just emerging at 5 years of age: Five-year-olds' ratings of Caucasian faces shifted as expected, but their ratings of Chinese faces did not change. These results suggest that by 5 years of age, children's Caucasian prototype no longer includes Chinese faces but that they have yet to develop a prototype for Chinese faces. This fall we hope to test children in Toronto—a region in which children are exposed to numerous Chinese faces on a daily basis. What about other face categories? We discovered that 5-year-old children do not have separate prototypes for male/female faces, at least when tested with children's faces; after reading a storybook in which boy/girl faces were distorted in opposite directions there were no shifts in attractiveness ratings, suggesting that 5-year-olds process male/female faces in reference to a single androgynous prototype. This work is the basis of Lindsey Short's MA thesis and was presented at the annual meeting of the *Cognitive Neuroscience Society*. It has been submitted for publication. Lindsey will begin her PhD this summer at Brock University.

Several other projects are ongoing, but as of today we do not have enough data to draw conclusions. Again, we thank you very much for allowing your children to participate. We invite you to learn more about our work by visiting our WEB page: http://www.psyc.brocku.ca/research/infantchildlab. (A virtual lab tour is now available.) If you are interested in visiting our new lab at Brock University with your children you may sign-up through the WEB page or by calling us at (905) 688-5550, x4944.

Lab News:
Lindsey Short's innovative research was recently recognized by *Social Sciences and Humanities Research Council*. She received a Vanier Canada Graduate Scholarship—the most prestigious award available to graduate students in Canada!

Cathy Mondloch, director of the Infant and Child Development Lab, received a *Canada Foundation for Innovation Award* in the amount of $479,000. This will allow her to purchase cutting-edge technology (e.g., a 3-dimensional camera; 2 eye trackers) as she and her students pursue their investigations of how children perceive social stimuli. Professor Mondloch was also awarded an operating grant from the *Social Sciences and Humanities Research Council* for her work on how children perceive emotional expressions.

Sincerely,

Cathy Mondloch
Professor
Brock University