Research Spotlight

Longitudinal Research with fNIRS

Children with permission to participate in the functional Near Infrared Spectroscopy (fNIRS) research are beginning our first longitudinal series of studies, with three sessions in the fall and three in the spring. The aim of Dr. Anna Fisher and Dr. Erik Thiessen's project, being conducted with new graduate student Jaeah Kim is to understand how developmental changes involving increases in coordination among brain regions relate to the development of core cognitive capacities, including inhibitory control and working memory. Researchers begin by measuring brain activation in the left and right prefrontal cortex during free play to determine the child's 'resting state' brain activation – in other words, brain activation in the absence of an externally prescribed goal or task. They then compare the resting state levels to those recorded during a variety of other tasks, such as the Opposites Game. This game is often used by researchers around the world to investigate the development of *inhibitory control*, which is one's ability to suppress responses that are not appropriate in a given moment (such as eating cookies before dinner, answering a teacher's question out of turn, or taking a toy that another child is playing with). In the Opposites game, children are instructed to say "day" when presented with a picture of the moon, and "night" when presented with a picture of the sun. In future sessions, children will play other games involving similar cognitive processes so that the researchers can compare the brain activation when given a challenging task to the resting state activation previously measured.

NOTE: If you would like your child to be included in this ground breaking research but have not yet signed the permission form for participation in fNIRS studies, please contact Miss Drash to have a consent form sent to you.

Undergraduate Research

Dr. Anna Fisher and Graduate Student Sandrine Girard's **Developmental Research Methods** students are preparing their final projects for the semester. They are beginning to pilot test their projects on the topics listed below. Families whose children participate will receive fuller parent descriptions via the child's backpack. Everyone can read the study descriptions on the Research Bulletin Board near the office door. Notice the interesting range of important topics in early childhood development!

- **Can increased emphasis on conflict resolution in stories promote children's sharing behavior?** (The Cupcakes Game, PM 3's, PM 4's & K)
- **Does exposure to children's books depicting atypical gender roles decrease the strength of gender stereotyping?** (The Story Game, AM 3's and K)
- **Is young children's difficulty with false belief tasks a result of language limitations or lacking theory of mind?** (The Special Object Game, AM 4's and K)