Undergraduate Research

Yevdokiya (Dussy) Yermolyeva’s and Bryan Matlen’s Developmental Research Methods students are preparing their final projects for the semester. Though the research procedures are still being finalized, the topics are 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 outside the Children’s School Office. Notice the interesting range of important topics in early childhood development!

Children’s memory for 2-dimensional vs. 3-dimensional representations of home and school rooms (The Room Arranging Game, K only)
The impact of supportive vs. unsupportive visual cues on story memory (The “Going to Grandma’s” Game, 3’s and 4’s)
The effects color scheme and music tempo on the speed of simple shape identification and motor tasks (The Stars and Beads Game, K only)
Children’s short-term memory for color sequences presented and recalled verbally vs. visually (The Color Game, 4’s only) Children’s ability to recreate toy actions they see a videotaped adult perform, after a preliminary play session with the identical toy or a similar toy (The Copy Cat Game, 3’s and K)
The role of demonstration vs. physical participation in children’s ability to remember color sorting patterns immediately vs. after a few minute delay (The Sort the Beads Game, Afternoon Children)
The effects of neutral acknowledgement vs. effort reinforcement on sorting accuracy (The Sorting Game, 3’s and K)
The speed and accuracy of gender identification for faces of children, adults, and elderly adults (The Faces Game, 4’s and K)
Children’s accuracy of tracing familiar upper & lower case letters compared to unfamiliar figures with the same component lines (The Tracing Game, 4’s and K)
The impact of verbal fluency and visual vs. auditory cues on children’s emotion labeling (The Emotions Game, 3’s and K)

Scholarship Fundraising Efforts

As you know, the Children’s School participates in the Educational Improvement Tax Credit (EITC) program. Through the EITC, eligible Pennsylvania businesses can earn tax credits while providing financial assistance for children to attend the Children’s School. Thus far in 2012-13, we have received $33,000 from Duquesne Light and subsidiaries of ThermoFisher Scientific. If you would like more info or can help us to build a list of prospective businesses, please contact the Main Office.

Benefit Dinner at Eleven: Our Benefit Dinner at Eleven was well attended by current Children’s School families, as well as a few alumni. The event added $3,288 for our Scholarship Fund!

Pittsburgh’s Day Of Giving: For the first time, The Children’s School participated in the Pittsburgh Gives Day of Giving. Children’s School families and alumni donated just over $4,000 and we are waiting to learn what our match from The Pittsburgh Foundation will be.
Research Spotlight

Another Listening Game

In this study, Dr. Erik Thiessen and graduate student Lucy Erickson are investigating how young children discover words in fluent speech, which lacks reliable pauses between words. One cue that may help children segment speech is its statistical structure. For instance, syllables within words tend to have a higher probability of co-occurrence than syllables that span word boundaries (e.g., the syllables in ‘pre-tty’ and ‘ba-by’ occur together more frequently than the syllables between those two words, ‘ty-ba’). Prior research with artificial languages stripped of all other cues to word-identity has demonstrated that both infants and adults are sensitive to this cue. Furthermore, this learning often happens after brief, passive exposure periods and without any conscious awareness of learning on the part of the participants. However, in studies where participants are asked to do a secondary task while listening to the speech, performance is disrupted. This finding suggests that attention is necessary for learning, but the specific role attention plays in the process is not yet known. In this research, researchers are exploring how performance on a task of sustained attention (The Moving Eyes Game, see October 2012 newsletter) is related to performance on this word segmentation task. In this Listening Game, children listen to an audio recording of a speech stream while drawing a picture and are told that we are interested in how listening to different sounds while coloring can affect creativity. After the exposure phase, they are presented with pairs of words and asked which one sounds more like the sounds they heard before. All of the words they hear are syllable combinations that were present in the stream, but within each pair one of the words is characterized by higher statistical coherence than the other (i.e., the syllables predicted each other 100% of the time compared to 33% of the time).

The Picture Finding Game

Early childhood is a time when children discover many new words. Word recognition tasks are often used to determine the average age of acquisition for these words. These data can then be applied to the study of other cognitive topics, including generalization or inductive inference, when using words and pictures. The purpose of the current study by Layla Unger, a new graduate student working with Dr. Anna Fisher, is to test whether four-year-old children can recognize and accurately identify a new set of stimuli that include pictures of birds, bats and butterflies on the basis of their category labels in order to determine whether they can be used in subsequent studies.

Specifically, in the Picture Finding Game, children are shown slides that display pictures of birds, bats and butterflies. Then, children are asked to find the picture representing one of the animals on each slide. For example, we might ask children to find the picture of a bird. The data collected in this study will be used as the basis for selecting a subset of pictures that four-year-old children can reliably identify. These pictures will be used in subsequent studies to investigate the ways in which children use category membership and perceptual attributes to make novel inferences about unobservable properties of objects.
Research Spotlight, continued

The Concentration Game

The world around us is complex and maintaining focused attention can sometimes be challenging - even for adults. The goal of graduate students Karrie Godwin and Derek Lomas' research project is to investigate the developmental course of deliberate selective attention. They are particularly interested in examining whether attentional selectivity can be improved through training with an instructional computer game. In the present study, they are examining how the design elements of a computer game affect children's engagement and motivation to continue playing.

In the Concentration Game, children play two short computer games that differ in their design elements - the Moving Objects Game and the Hide-n-Seek Game. In the Moving Objects Game (Below Left), children see several objects moving on a computer screen landing on one of the nine screen locations, each location is associated with a different cartoon character. Children are asked to watch a particular object while ignoring the rest of the objects. When the objects stop moving and disappear from the screen, children are asked which cartoon character was last visited by the object they had been watching.

In the Hide-n-Seek Game, children watch as friendly characters run around a room and hide behind everyday objects. Children's task is to ignore the distracter characters in order to identify the hiding location of a target character. For example, the target character may run around a playroom (similar to the room shown below on the right) and then hide behind a rocking horse. The child's task is to click on the object that the target character is hiding behind (i.e., the rocking horse).

After children play each game for 5 minutes, they will be presented with a choice of playing either The Moving Objects Game or The Hide-n-Seek Game for another five minutes. The game children select and the duration of play will be recorded as a behavioral measure of children’s motivation and engagement in the game.

Karrie and Derek are both students in Carnegie Mellon’s Program in Interdisciplinary Education Research (PIER), for which Dr. Carver is the Co-Director. Karrie is working on a PhD in Psychology under the direction of Dr. Anna Fisher, while Derek is completing a PhD in Human Computer Interaction with advisor Dr. Ken Koedinger. Drs. Fisher and Koedinger are parents of Sasha (K).