Undergraduate Researchers in Training

Students in Dr. Stephanie Siler’s Developmental Research Methods class are preparing their final projects for the semester. Though the research protocols are still being developed, the students are planning to study many educationally relevant early childhood tasks. Learning the impact of the variables studied on children’s performance and learning can help parents and educators better choose approaches for supporting their progress.

• **The Tower of Hanoi Game** – Testing whether providing subgoals for challenging tasks will increase kindergartners’ persistence in solving them.

• **The Line Game** – Experimenting with factors that influence the likelihood that 3, 4, and 5-year-old children will change their answers on an open-ended line comparison task when adults offer contrasting perspectives.

• **The Block Game** – Determining whether demonstration and feedback during practice will improve 4 and 5 year olds’ performance on a 3-dimensional mental rotation task.

• **The Storytelling Game** – Testing whether gender and/or sibling status influences 3, 4, and 5-year-old children’s responses to stories in which there is a conflict, such as how to share one toy, between characters who appear to be of equal status (left) vs. differential status (right).

• **The Letters and Numbers Game** - Determining whether gender-biased theming of letter and number games (e.g., color and image type) impacts 4 and 5 year olds’ preferences when given choices of which to play, compared to games with similar content but gender neutral themes.

• **The Toy Sharing Game** - Testing whether 3 and 5-year-old children are able to integrate another’s perspective into their decisions about which toys to offer for sharing.

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 to the left of the Children’s School office. What an interesting set of developmental psychology topics!
Research Spotlight

The Thinking About Animals Game

Different things can be related to each other in many ways, such as by sharing features or by being seen together in the environment. For instance, living organisms may be similar in shape or mode of locomotion, belong to the same biological taxonomic group, or live in the same habitat. Biological taxonomic relationships are particularly cognitively useful because they divide the domain of living organisms into clear categories that can form a reliable basis from which to acquire new knowledge. For instance, biological taxonomic categories can reliably guide inductive inferences about biological features, because organisms that belong to the same biological taxonomic category share many features in common. However, education research suggests that children’s knowledge of other, more easily observed relationships, such as those based on shared perceptual features or habitat, interferes with their understanding of biological taxonomic categories, causing misconceptions about taxonomic relatedness. The purpose of graduate student Layla Unger’s research is to test whether, in the absence of misconceptions about relationships, providing perceptual “Co-Occurrence” input in which real-world organisms that belong to the same biological taxonomic category simultaneously co-occur fosters both the organization of knowledge into these categories and the formation of inductive inferences about biological features that are consistent with these categories. To ensure that children have no existing misconceptions about relationships between these organisms, each pair of organisms consists of one organism familiar to young children (e.g., snake) and one organism unfamiliar to young children (e.g., soft shelled turtle).

To assess the degree to which taxonomic relationships influence children’s knowledge organization and inductive inferences before and after Co-Occurrence Input, children are asked to complete two short tasks during both pre-test and post-test sessions. In the first task, children are shown triads of organisms on a computer screen consisting of a familiar Target organism (e.g., snake), one unfamiliar “match” organism from the same biological category as the Target (e.g., soft shelled turtle), and one unfamiliar “mismatch” organism from a different category (e.g., mudskipper). For each triad, the experimenter attributes a novel biological property such as “plaxium blood” to the Target, and asks the child to decide which of the two other organisms also shares the property. In the second task, children are asked to arrange sets of three pictures corresponding to the three organisms from the triads described above such that they put organisms of the “same kind” close together.

In between the pre- and post-tests, children take part in two Co-Occurrence Activities: A Co-Occurrence stream, in which children observe a sequence of images that each simultaneously present two organisms together, and a Co-Occurrence matching cards game, in which children play a card game depicting pairs of organisms. Half of the pairs consist of a familiar Target organism and its taxonomically unfamiliar “match” from the same triad, and the other half consist of a familiar Target organism and the unfamiliar “match” from a different triad to which it is unrelated. In this way, we can test the effectiveness of experiencing co-occurrences between taxonomically related organisms by seeing whether, from pre- to post-test, participants make more taxonomic responses only for triads in which they experienced the familiar Target and its taxonomically related unfamiliar “match” from the same triad co-occur.