Research Spotlight

The Sound Game

Audrey Kittredge, a post-doctoral researcher in the Psychology Department and member of the Program in Interdisciplinary Education Research, is working with Dr. David Klahr. Audrey is developing ways to assess and improve children’s experimentation and their awareness of the goal of experimentation. Children in the 3 year-old, 4 year-old and 5 year-old classrooms may participate in the Sound Game at least once, and they may come back for a few more sessions to investigate different aspects of their experimentation skill. During the Sound Game, the child is asked to simply play a game on a tablet, in which the child can make a box glow and play music by touching it with another object on the screen. Children will either be told to play freely with the virtual objects or will be explicitly asked to figure out how it works. Each child will get a specific kind of instruction: (1) instruction that asks the child to report on the goal of his or her actions on the objects, (2) instruction that asks the child to describe his or her actions while interacting with the objects, or (3) instruction that helps the child figure out how the objects work. Some children may receive a combination of different instructions. Will children be aware that they perform spontaneous experiments to figure out how the objects work? Will asking children to describe their actions enhance children’s awareness of the goals of their actions? Will children with greater levels of awareness benefit more from instruction on how to do experiments? The results of this research may reveal the ability of different instructional techniques to enhance children’s experimentation and self-awareness in early childhood. This, in turn, would allow educators to develop curricula that better support the development of children’s scientific inquiry and metacognitive skills.

The Hearts and Flowers Game

Graduate student Karrie Godwin is working with Professor Anna Fisher to investigate the relationship between learning and other general cognitive processes such as attention, memory, processing speed, executive function, and general reasoning ability. In this particular task, they are measuring children’s cognitive control and their ability to inhibit a behavioral response. In the Hearts & Flowers computer game, children are presented with a series of hearts and flowers. Children are instructed to respond to each object as follows: When children see a heart on the computer screen, they are told to press the response button on the same side that the heart was presented (e.g., if the heart appears on the left hand side of the screen, the correct response would entail pressing the left response button). However, when children see a flower, they are instructed to press the opposite response button (e.g., if the flower appears on the left hand side of the screen, the correct response would entail pressing the right response button). Next, children will be shown pictures depicting the sun or the moon. Children will be asked to provide a verbal response that conflicts with the picture. For example, if children see a picture of the sun they are instructed to say “night”, when children see the picture of the moon they are instructed to say “day”. Answering correctly on these tasks is challenging because it requires children to think carefully during the task and to inhibit their natural responses. If children’s ability to regulate themselves in this way is predictive of their learning ability, then educators and parents will be encouraged to intentionally help children develop regulation skills.