Research Spotlight

The Sound Game: Tablet

Audrey Kittredge, a post-doctoral researcher in the Psychology Department, is working with Dr. David Klahr. Audrey is developing ways to assess and improve children’s experimentation. Preschoolers and kindergartners may participate in the Sound Game at least once, and may come back for a few more sessions to investigate different aspects of their experimentation skill. During the Sound Game, children play a game on a tablet (pictured below) in which they can make a box glow and play music by touching it with another object on the screen. 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 research results may reveal how different instructional techniques can 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 Animal Insides Game

Children must generalize, or induce, what they learn about things in the world to new situations so they can avoid having to learn about the characteristics of each thing separately. For instance, if a child learns that her canary has a heart, she can induce that other birds have hearts, rather than learning whether each individual bird has a heart. Children can use multiple strategies to determine which new things share properties of familiar things. First, they can rely on overall similarity: If a new thing looks like a familiar thing, then it is likely to share the same properties. Alternately, they can rely on a specific feature that is critical for category membership: If a new thing shares this critical feature with a familiar thing, then it will share the same properties. Several current theories posit that children can readily use the first form of induction from an early age; whereas, the ability to use the second form continues to develop throughout childhood. In the Animal Insides Game, children see triads of cartoon bugs on a computer screen. The bug that appears at the top is the Target, and the two bugs that appear at the bottom are Alternate Choices. When presenting each triad, the experimenter tells the child that the Target bug has a novel biological property (e.g., “Has zimmer cells”) and asks the child to choose which of the two Alternate Choice bugs also has this property. Children may base their choices on overall similarity or on sharing a critical feature (i.e., head shape). On half of the trials, the Alternate Choice that shared the critical feature with the Target also shared several other features, rendering it similar overall; whereas on the other half, this Alternate Choice was dissimilar overall. We predict that the rate at which children induce properties on the basis of sharing a critical feature, regardless of overall similarity, should increase with age.