Research Spotlight

The Fruit & Vegetable Game

Professor Anna Fisher and graduate student Karrie Godwin are investigating the relationship between learning and other general cognitive processes such as attention, memory, processing speed, executive function, and general reasoning ability. In the Fruit & Vegetable Game, they are examining how children allocate their attention in different learning environments. In particular, they are interested in examining whether children’s ability to effectively distribute their attention has consequences for learning new science content. In this computer game, children are presented with a series of pictures of fruits and vegetables. Children are told the name for each picture. At the end of the game, a memory assessment is administered to see which items the children learned. For example, after learning the names of different types of fruits and vegetables, children may be presented with a picture of a fruit and asked to recall the fruit’s name (e.g., “What was the name of this fruit?”).

The Butterfly Game

Fisher and Godwin’s Butterfly Game is a similar computer game in which children are presented with a series of pictures of butterflies. Children are told the name for each picture. At the end of the game, a memory assessment is administered to see which items the children learned. For example, after learning the names of different types of butterfly children may be asked to identify the morpho (e.g., “Point to the morpho”).

The Remember That Game

In a series of games like the Fruit & Vegetables Game, the Butterfly Game, the Flower Game, and the Fish Game, children learn about novel science content by reviewing a series of pictures of animals or plants and practicing the name for each picture. In the Remember That Game, experimenters examine whether children’s ability to engage in sustained attention during those initial games affects their long-term retention of the science material. In the Remember That Game, children are asked questions about the animals and plants they learned about over the semester. For example, children are presented with a series of pictures and asked to recall the name of the objects (e.g., “What was the name of this Butterfly?”). Children are also asked about educational displays that were present in the classroom to see if children remember the classroom visual environment. For example, children may be presented with pairs of objects and asked to identify which object he or she saw in the classroom previously.
Research Spotlight, continued …

The Shape Sorting Game

Shira Bauman, Isabella Daher, Michael Tyler, and Travis Andring, students in Professor Illah Nourbakhsh and Professor Reid Simmons’ Human-Robot Interaction class, are conducting an experiment examining the trust Kindergarten children place in a robot. The children are given 20 blocks of assorted color, size, and shape, and then they are asked to sort the shapes in any way they choose. The children experience one of three conditions: in one of the conditions the child is in the room on their own, and in the other two conditions a pretend “robot” will be in the room with them. The fake cardboard robot has a person inside, and the children are told that the researchers are designing a real robot and need their help so they pretend that the cardboard robot is real. The two robot conditions differ in that the children are either exposed to a silent robot or a robot that encourages the child to change the sorting method.

The purpose of the experiment is to see if the children trust the robot’s advice to change their sorting method from their initial inclination. By doing this study, the researchers hope to learn more about how children might interact with robots in a classroom setting. For example, a robot might be used in a teaching position, giving examples and helping children work on math problems, for example. If a child is working on a problem but begins to have trouble, the robot might explain the problem in a different way than the student was originally attempting to solve it, or provide explanations that approach the problem from a different angle. This advice could be confusing for a young child. In designing such education systems, it is necessary to understand how the child would react when presented with different options for completing a task. Will the student continue to try to solve the problem the original way? Or would they stop what they are doing and try to solve the problem in the manner being presented by the robot? The researchers hope to begin to answer this question through their experiment.

Scientific American Reporter

On Wednesday, April 9th, Barbara Kantrowitz, a professor Columbia University Graduate School of Journalism and a reporter for Scientific American, toured the Children’s School to better understand the role of laboratory schools in supporting scientific research in education. Ms. Kantrowitz was commissioned to do a story about using evidence-based curricula, particularly related to the practice guide on Teaching Math to Young Children (for which Dr. Carver was a panelist), but she got interested in the many roles that laboratory schools play in the field of learning sciences. During Ms. Kantrowitz’s visit, she toured the school, watched Dr. Carver’s child development students record data for an upcoming paper, observed students in the research methods class collecting data, joined Dr. Carver’s practicum students for a discussion of autism led by Mrs. Rosenblum, and watched graduate student Karrie Godwin conduct several research sessions. We will share her article with you when it is published.