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Child's play is serious study of cause and effect

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It's not child's play to Laura E. Schulz, assistant professor of brain and cognitive sciences at MIT, to figure out what child's play is all about.

Schulz spoke March 21 at an MIT Museum Soap Box event, "Twisting the Lion's Tail: Exploratory Play and Children's Causal Learning."

Soap Box is a series of salon-style, early-evening conversations with scientists and engineers in the news, a public forum for debate about ideas and issues in science and technology.

The theory of cause and effect is fundamental to our understanding of the world. However, despite almost universal agreement that children learn about cause and effect through exploratory play, little is known about how children's play might support accurate causal learning, Schulz said.

"One of the deep mysteries of cognitive science is how we predict the future and how we explain the past and intervene in the present," she said. Causal reasoning even pervades our emotional lives when we speculate about why someone has a certain expression on her face or why a friend or colleague said what he did.

Causation in a nutshell: If you change this, all else being equal, something else changes. From earliest infancy and across all species, action and effect are correlated. Anyone who owns a pet knows that an animal quickly learns that opening a certain food container means dinner

is on the way.

Statistical evidence is one factor that contributes to our rich beliefs about the universe. Our prior experiences and beliefs affect how we interpret the evidence we see with our own eyes or hear about from scientists. But how do children form their conclusions about how the world works?

Schulz designs experiments that seek to determine how children think and learn about cause and effect and the role of play in this process. She has collected data from more than 600 preschoolers at play to try to figure out, for instance, how a 4-year-old tries to get a puppet to pop out of a box with two knobs when it's unclear what combination of knob-pressing will achieve the desired effect.

Schulz is continually amazed at how much knowledge of how things work--not only mechanically, but also socially and culturally--children pick up in early childhood. "Everything you need to know about the world you really did know before kindergarten," she said.

Schulz does not doubt that children pick up much of their knowledge about how the world works through play. But child's play is messy--not just because of paint and juice, but because it can look random and unfocused to an observer. The trick is to design experiments that isolate the variables, she said.

The payoffs from such work are considerable. Schulz believes that evidence of how children learn through play could one day lead to better teaching methods, among other things. "I certainly hope that's the outcome eventually. What I hope we learn is a new respect for how abstract and sophisticated kids' early learning is. It is much more sophisticated than what computers are capable of. It would be nice if people who worked with children got as much respect as people who work with computers."

Source: MIT