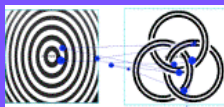




Discovering the Infant Mind

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Welcome from the UC Davis Center for Mind and Brain!

This newsletter is to provide parents, childcare providers, and members of the community with information about what researchers at the UC Davis Center for Mind and Brain are learning about the developing infant mind.

The researchers at UC Davis have been studying infant development for over 20 years. Our work provides

basic knowledge that helps medical practitioners, childcare providers, and educators understand early development and design programs for both typically and atypically developing children.

We hope you will find this information useful. We are pleased to have the chance to share some of our exciting findings with you.

Discovering the Infant Mind

How do we discover the infant mind? One of the main obstacles to studying early development is that young infants have few ways to reveal what they are thinking.

However, as parents and caregivers know, infants can be good at communicating their needs, desires, and even their thoughts. An infant who meets a new person, for example, may stare intently at the new face, as if she is memorizing it and learning how that face is different from the other faces she knows. An infant playing with a new toy will look intently at the toy while exploring it with her fingers.

As researchers, we take advantage of exactly these behaviors to discover the infant mind. As infants sit with their parents, we show

them colorful photographs of common objects, movies of animated shapes that move around a computer screen, or collections of new toys. Then we simply record how long infants look at each picture or movie, and what they do with their fingers as they explore new objects. Using special eye-tracking equipment (basically a special camera embedded in a computer monitor) we can even determine exactly where infants look on an image. These tools help us understand what infants perceive, learn, remember, and understand.

Using these simple measures we can chart changes in infants as they get older, learn language, or become able to sit, crawl, and walk. Through these methods we uncover the developing mind.



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Uncovering Infants' Memory

Imagine looking at a person's face, looking away momentarily, and then looking back. Is it the same person? Has their expression changed? Adults can generally remember what they've seen for at least a few seconds. Such short-term memory is presumably very important for infants. For example, an infant learning the difference between dogs and cats may rarely see a dog and a cat right next to each other; the infant may need to compare a memory for a cat seen at one moment with a dog seen a few moments later.

Dr. Lisa Oakes, UC Davis Professor of Psychology, has uncovered developments in infants' short-term memory by recording how long they look at two different kinds of movies. In each movie a set of colored squares flashes on and off. In one movie the colors are

the same at each flash. In the other movie, one square changes color each time they flash on. Infants generally prefer things that change, so they should watch the changing movies longer than unchanging ones. However, infants will only have this preference if they can remember the colors between the times the squares flash off and on again.

Dr. Oakes and her team found that 4-month-old infants could store one color in short-term memory. By the end of the first year, infants could store several colors; thus, this memory rapidly develops during the first year. By measuring how long infants watch simple movies, Dr. Oakes and her team have uncovered important changes in infants' ability to remember visual scenes.

Highlights from Susan Rivera's lab

Imagine that a baby sees her mother remove a bottle from a diaper bag. The mom re-considers, places the bottle back into the diaper bag, and her hand comes back out, instead, with a sippy cup. Does the baby understand that this is not the same object she saw a few seconds ago? Further, does she expect that a second object (specifically, a *bottle*, and not another sippy cup) remains in the diaper bag?

Dr. Susan Rivera is an Assistant Professor of Psychology at UC Davis. Her Neurocognitive Development lab is interested in understanding how young infants learn about objects and their properties, and the role of language in this learning process. Prior research in the Rivera lab has found that understanding the word for a particular

object can help infants keep track of how many objects are present in a scene, even when the object goes out of sight. We are currently exploring how words can help infants recognize basic features of objects such as color.

Another goal of the lab is to learn more about how infants with fragile X Syndrome (FXS) may differ from typically developing infants in their ability to process visual and auditory information. We use a digital eye tracker to measure infants' looking patterns to sights and sounds that do or do not belong together. One goal in this project is to guide the design of early diagnostic measures and potential treatments for FXS and other related disorders like autism.

Interested in volunteering?

If you are interested in participating in the research conducted at the UC Davis Center for Mind and Brain, please call us at **(530) 297-4416**. There are opportunities for children of all ages to participate in research.

The research is conducted in a comfortable atmosphere, and a parent or guardian is with the child, or nearby, at all times. In addition, we can provide childcare for any additional children you bring, and we have lots of free parking.