

Speed limit on babies' vision

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Babies have far less ability to recognize rapidly changing images than adults, according to research from the UC Davis Center for Mind and Brain. The results show that while infants can perceive flicker or movement, they may not be able to identify the individual elements within a moving or changing scene as well as an adult.

"Their visual experience of changes around them is definitely different from that of an adult," said Faraz Farzin, who conducted the work as a graduate student at UC Davis and is now a postdoctoral fellow at Stanford University.

The study, conducted with Susan Rivera, an associate professor at UC Davis, and David Whitney, an associate professor of psychology at UC Berkeley, is published online by the journal *Psychological Science*.

Babies are not born with all the visual abilities they need in life. Their brains gradually develop the ability to use visual information to discover their world.

Even in adults, the brain is limited in the rate at which it can keep up with changing information in a scene, Farzin said.

An adult can't recognize individual moment-to-moment changes that occur faster than every 50-70 milliseconds.

For infants, Farzin and her colleagues found that the speed limit is about half a second -- about 10 times slower than for adults.

To determine the speed limit on infants' perception, Farzin and her fellow researchers tracked the eye movements of a group of 6- to 15-month-olds as they were shown four flickering squares. Three squares flickered from black to white and back, and one square flickered out of phase with the others (white to black), which should draw more attention because it is the "odd man out."

Eye tracking of the infants showed that they did not spend more time looking at the out-of-phase square, meaning they could not distinguish it as being different, she said.

"It was surprising how coarse their resolution was," Farzin said.

A TV show or movie in which scenes change faster than two frames per second is probably a blur to an infant under 15 months, Farzin said.

Farzin is now extending her work to people with developmental disorders that affect visual perception, such as dyslexia, fragile X syndrome or autism. By understanding visual perception in typically developing children, she hopes to understand how and when it can go wrong.

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