

Even at infancy, human can visually identify objects that stand out, study finds

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Even by three months of age, babies are visually able to locate objects that stand out from a group, a York University study has found.

"For example, an infant can pick a red umbrella in a sea of grey ones," says Psychology Professor Scott Adler in the Faculty of Health, who led the research. "This indicates that babies at a very young age are able to selectively extract information from the environment, just like adults."

Previously it was unknown how early this form of [visual attention](#) developed in infants. For the current study, both infants (34) and adults (10) were presented with certain [visual search](#) task, to measure the latency of [eye movements](#) in hundreds of milliseconds. For this study, in a 30-minute session, the infants were on their backs with the [stimuli](#) above them on a screen, while infrared light tracked their eye movements.

The study, [Search Asymmetry and Eye Movements in Infants and Adults](#), recently published online in the journal of *Attention, Perception, and Psychophysics* revealed that infants, like adults, were able to pick out a single R character among increasingly larger groups of P characters. The R is considered to have a distinguishing, unique feature that stands out.

That means they are just as adept at locating specific stimuli among competing and distracting stimuli in their environment. In addition, the infants showed a similar an asymmetrical pattern of detection to locate the unique target as the adults.

The study also looked at what happened when infants and adults were given a "feature-absent" target among distracting "feature-present" objects, such as a P among varying sized groups of Rs. In this case, the infants were less efficient at finding the differing letter without a distinguishing feature.

"This is called 'bottom-up' [attention](#) and it comes from the environment and goes up into the processing system," explains Adler. "Top-down attention is where your goals, ideas and thoughts control where you attend. You have voluntary control over what information you're going to choose to process."

Bottom-up attention, is thought to be a more primitive, but key process that would, for example, allow a predator, such as a lion, to be noticed among a group of zebras. It is also when people notice something different or salient in their environment, such as a door suddenly opening and someone walking through it into a classroom.

With top-down attention, the ability to ignore certain stimuli in the search for something specific, such as lost keys, is greatly enhanced.

"The aim of the present study was to add to our understanding of [infants'](#) ability to selectively attend to particular items in the presence of competing stimuli by examining the development of [selective attention](#) mechanisms involved in visual search, particularly the role of bottom-up processing of stimulus salience," says Adler.

Provided by York University

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