

Visual exposure predicts infants' ability to follow another's gaze

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Following another person's gaze can reveal a wealth of information critical to social interactions and also to safety. Gaze following typically emerges in infancy, and new research looking at preterm infants suggests that it's visual experience, not maturational age, that underlies this critical ability.

The research is published in *Psychological Science*, a journal of the Association for Psychological Science.

"To the best of our knowledge, this is the first study showing that some

aspects of the early development of [social cognition](#) is influenced by experience, even when the human brain is highly immature," says psychological scientist Marcela Peña of Pontificia Universidad Católica de Chile, lead researcher on the study. "Our results are important for modeling early cognitive development."

Previous research on early [cognitive development](#) suggests that some cognitive functions develop only after the brain has matured sufficiently, while other cognitive functions develop in response to a rich social environment.

To disentangle the roles played by neural maturation and environmental exposure in relation to gaze following, Peña and colleagues decided to compare the gaze following abilities of preterm and full-term infants.

"Because preterm infants are exposed to face-to-face interactions earlier (in terms of postmenstrual age) than infants who are born at term, they may become sensitive to gaze direction sooner as well," the researchers explain.

A total of 81 healthy infants participated in the study and they were split into four groups: Full-term 4-month-olds, full-term 7-month-olds, preterm 7-month-olds, and preterm 10-month-olds.

The [preterm infants](#) were born 2.5 to 3 months early – thus, full-term 4-month-olds and preterm 7-month-olds had an equivalent postmenstrual age of about 13 months, but the preterm 7-month-olds had an additional 2.5 to 3 months of [visual experience](#) as a result of having entered the world early.

While sitting in his or her mother's lap, the infants were presented with a sound and visual cue to grab their attention. As soon as they were looking at the screen, a video of a woman appeared and the woman

made peek-a-boo like gestures. The woman then turned her head and directed her gaze toward one side of the screen; subsequently, a moving toy appeared on each side of the screen. Using an eyetracking system adapted for infants, the researchers were able to monitor which side of the screen infants looked to first. The researchers repeated this procedure with each infant 20 times.

The data showed that preterm 7-month-olds and preterm 10-month-olds behaved like full-term 7-month-olds, looking to the toy on the side of the screen indicated by the woman's gaze. Full-term 4-month-olds, on the other hand, tended to look randomly to either side.

This pattern of results held even when the woman indicated direction with only her eyes, while her head continued to face forward.

Together, these findings suggest that exposure to visual experience outside the womb may matter most for early [gaze](#) following.

"Combined with previous results on vision and language cognition, our results support the idea that the early steps of human cognition develops in an asynchronous way," says Peña. "Some systems are more or less sensitive to external stimulation, but others can be more influenced by biological maturation."

More information: pss.sagepub.com/content/early/.../97614544307.abstract

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