

Babies' brains tuned to sharing attention with others

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Children as young as five months old will follow the gaze of an adult towards an object and engage in joint attention, according to research funded by the Wellcome Trust and the Medical Research Council. The findings, published today in the Royal Society's journal *Biology Letters*, suggests that the human brain develops this important social skill surprisingly early in infancy.

Joint [attention](#) - where two people share attention to the same object - is a vital human social skill necessary for many types of human behaviour such as teaching, collaboration, and language learning. Impairments in this skill are one of the earliest signs of autism.

Dr Tobias Grossmann and Professor Mark Johnson from Birkbeck, University of London, used a technique known as 'near infrared spectroscopy' (NIRS) to examine which areas of an infant's brain are activated when paying joint attention to an object.

NIRS, an optical brain imaging technique which involves measuring the blood flow associated with [brain activation](#), is well-suited to study freely-behaving [infants](#). With this non-invasive technique, near-infrared light travels from sources on a sensor pad located on the head, through the skin, skull and underlying [brain tissue](#), and is then detected by sensitive detectors on the same sensor pad.

In the experiment, conducted in Birkbeck's Babylab, the babies were shown the computer-animated image of an adult's face. The adult would

make eye contact with the baby, raise her eyebrows and smile, glance towards an object at her side, back to the baby and then finally turn her head to face the object. In the control conditions, the adult would look away from the object or would look at the object without making eye contact with the baby.

The researchers found that only when the babies engaged in joint attention with the adult, they used a specific region of their brain known as the left prefrontal cortex - an area to the front of the brain involved in complex cognitive and social behaviours.

"Infants engaged in joint attention use a similar region of their [brain](#) as adults do," says Dr Grossmann, a Sir Henry Wellcome Postdoctoral Fellow. "Our study suggests that the infants are tuned to sharing attention with other humans much earlier than previously thought. This may be a vital basis for the infant's social development and learning."

"In the future this approach could be used to assess individual differences in infants' responses to joint attention and might, in combination with other measures, serve as a marker that can help with an early identification of infants at risk for autism."

Provided by Wellcome Trust

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