

Infants are well equipped to make highly demanding social judgements

23 May 2014, by Declan Perry



Familiarization trial: Grasp condition Familiarization trial: Back-of-Hand condition Test Trial for both conditions

Examples of video stimuli. Depiction of the final video frames for the single familiarization trial in the Grasp and Back-of-Hand conditions, as well as the final video frame for a test trial. AOIs for the person and the objects were identically sized and shaped across conditions for the familiarization trial and for the test trials. The AOIs are depicted here for the test trial image. The individual featured in this figure has given written informed consent (as outlined in PLOS consent form) to publish these images. Credit: *Plos ONE*, doi:10.1371/journal.pone.0098085.g001

(Medical Xpress)—We all have a set of special skills we use in social situations. One of these is the ability to predict the actions of others, based on what they have done in the past. This helps us make friends and deal with day-to-day life. In a recent paper, published in *PLOS ONE*, researchers found that infants also have the ability to predict the actions of others, even though it is very cognitively demanding.

It has already been shown that infants are able predict the actions of others in situations where goal-oriented behaviour is observed. Goal-oriented behaviour is an action that results in a clear outcome. For instance, in a previous study (1), it was shown that if an infant was shown a video of hand grasping an object (the goal in this scenario was the grasping of the object), they were then able to predict the action of the hand in subsequent videos. This indicates the infants

understood that the goal of the person in the video was to pick up the object.

But other similar studies have not always shown the same results. One study (2) argued that infants relied on observing how many times a certain object was grasped in order to predict actions, rather than truly understanding the goal of the person who was being observed. There has also been debate on whether infants are able to understand the goal-oriented behaviour of others, and then rapidly use this information to predict later behaviour. This process would no doubt take a lot cognitive processing that may be beyond the ability of an infant.

Dr Krogh-Jespersen and her colleagues at the University of Chicago, Illinois, set out to confirm whether infants could truly understand the goal-oriented behaviour of others. They also decided to measure how long it took infants to generate goal predictions in the hope that this would indicate how cognitively taxing the process was.

A group of 40 infants, aged between 16 and 18 months, were used in the experiment. Boys and girls were equally represented in the group. First, the researchers recorded videos of a woman with two objects on a table in front of her—a toy bear and a toy horse. During one video, the woman reached out and grasped one of the toys, an example of goal-oriented behaviour. During another video, the woman reached out to a toy and placed the back of her hand on it; here, the goal of the woman was less clear because an obvious action wasn't completed.

The infants were then split in to two groups. One group was shown the video in which a toy was grasped; the other group was shown the video in which the woman placed the back of her hand on a toy. Following this, both groups were shown a video in which the objects' positions were reversed. During this video, the woman reached her hand out

but did not contact either object. Whilst watching this video, the gaze direction of the infants was observed. If they could understand goal-oriented behaviour, their gaze should lie on the toy that had originally been grasped, regardless of its change in position. The toy toward which the infant directed their gaze was interpreted as a prediction, because in the video, the woman did not touch either toy. The time it took for the infant's gaze to rest on an object was also measured.

The results confirmed that infants were able to understand goal-oriented behaviour, and almost always rested their gaze on the object that had originally been grasped. For example, if in the first video, the woman grasped the toy horse, the gaze of the infant rested on the toy horse in the second video – as the infant understood that it was the woman's goal to grasp the horse. This was true no matter which toy was grasped and which toy was left alone in the first video, proving the infants did not simply prefer one toy over the other.

However, after watching the video in which the woman touched the back of her hand on a toy, the infants mostly failed to rest their gazes on the object that had previously been touched. Because the goal was less clear in this video, it confirmed that infants rely on understanding goal-oriented behaviour to predict the actions of others and find it harder to do this when the goal is not so obvious.

Krogh-Jespersen said, "Our study shows that by 15 months of age, infants are able to rapidly recruit their knowledge of a person's goal to predict her future behaviour."

The study also shed light on how cognitively demanding the process of understanding and predicting goal-oriented behaviour is for infants. Krogh-Jespersen said, "Recruiting this goal analysis imposed a cognitive demand on infants, resulting in longer latencies to generate goal-based predictions—it took more time to make a prediction based on goal information. When thinking about others' future actions, infants need time to make appropriate judgements."

Krogh-Jespersen also said that it is important to be able to understand the [goal](#)-oriented behaviour of

others, but it is equally important to be able to deploy this knowledge in real time to predict the behaviour of others during [social situations](#). Although it was cognitively demanding, the [infants](#) in this study were well equipped to do exactly this.

More information: Krogh-Jespersen S, Woodward AL (2014) Making Smart Social Judgments Takes Time: Infants' Recruitment of Goal Information When Generating Action Predictions. *PLoS ONE* 9(5): e98085. DOI: [10.1371/journal.pone.0098085](https://doi.org/10.1371/journal.pone.0098085)

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APA citation: Infants are well equipped to make highly demanding social judgements (2014, May 23) retrieved 2 November 2022 from <https://medicalxpress.com/news/2014-05-infants-equipped-highly-demanding-social.html>

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