

What can infants learn from contingently reacting entities?

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Young infants are equipped with cognitive mechanisms sensitive to statistical relations that may play an important role in identifying not only regularities in the physical environment, but also different levels of social contingencies. While most cues indicating infant-directed communicative intention, such as eye contact and infant-directed speech are derived from human-like features or human behavior, contingency can provide a more abstract cue that allows for higher flexibility in finding communicative partners.

In a series of studies involving a variety of age groups (preverbal infants, preschoolers and adults), we have explored different aspects of the contingency perception mechanism. On the one hand, we investigated cognitive and physiological indexes (e.g. pupil dilatation) of contingency detection. On the other hand, we studied whether some characteristics of these mechanisms remain unchanged during development or whether they are damaged in certain developmental disorders (e.g. autism).

Central to this approach are the kind of inferences participants may draw about the identity of the entity they interacted with based on the cumulated statistical evidence. We will suggest that specific information about the interactivity patterns can help infants to judge whether they elicited responses from a mechanical device or from a reactive social agent even in the absence of other featural cues. Thus, we explore the characteristics of the agency attribution process that relies on the experienced contingent interactivity. First, we ask whether infants follow the orientation change of objects significantly more often if these objects were reacting contingently to their behavior than that of non-contingent objects. Then, we study whether contingent reactivity triggers inferences related to the referential nature of communication. Furthermore, we test whether infants are able to learn from contingently reactive entities. Our results confirm the hypothesis that the role of contingency detection in identifying potential communicative partners is crucial. Infants do not only follow the orientation of contingently moving objects but they also show an encoding bias specific to communicative interactions, even though no human agent was actually present.