Mechanisms of early causal reasoning: Investigating infants' sensitivity to confounded information in a causal reasoning task, using EEG and eyetracking

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Abstract

Distinguishing spurious correlations from unconfounded causal evidence is a challenge in every day reasoning. Adapting the classic "blicket detector" paradigm (Sobel et al., 2014), we investigate whether 15-17-month-old infants' neural activity (theta oscillations), indicates that infants recognize when the information they are expecting or observing is confounded or not. By concurrently tracking infants' eye-movements, we investigate also whether infants correctly infer the functionality of unknown objects (when such an inference is possible, i.e. when data is unconfounded) and predict future events based on these causal inferences. Data collection is on-going (current N = 29) and preliminary analysis suggests infants show increased theta activity in anticipation of receiving un-confounded (as opposed to confounded) information. By relating the neural measures of information expectation to the accuracy of infants' subsequent predictions, we hope to offer a unique insight into the mechanisms, development, and individual differences in early causal reasoning.