Extracting statistical relations from noisy visual scenes

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Abstract: When young infants are presented with statistical patterns in an extremely sparse environment, they demonstrate remarkable skill for learning deterministic relations among visual and auditory features (Kirkham et al., 2002; Fiser & Aslin, 2002; Saffran et al., 1996). While statistical learning is suggested to support complex skills such as object processing and language, previous studies have failed to test its robustness amid variability and distraction typical of the natural world. Variations in sequence probability have been shown to modulate infants' attention (Kidd et al., 2010) and are therefore predicted to impact learning. In an eye-tracking study, 8-month-olds were presented with sequences of visual events that differed within-subjects in their transitional probabilities from deterministic to random and differed between-subjects in the presence or absence of noise events. Results suggest that infants are indeed able to learn visual patterns with probabilistic transitions, but their learning is differentially affected by increases in noise.