Surprise-Based Learning with Non-Solid Substances

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Abstract

Violating infants expectations about solid objects (e.g., a ball passing through a wall) leads to increased exploration and learning about the objects properties (Stahl & Feigenson, 2015). How limited is this type of learning? Infants can anticipate how non-solid substances behave and interact (Hespos et al., 2009; 2016), but the non-cohesive nature of substances means that they have less predictable shapes and boundaries. Across four trials, we presented 12- to 14-month-olds with items that looked solid or liquid. For half the trials, the items behavior was consistent with its appearance, so, for example, it looked solid and remained cohesive. For the other half, the behavior was inconsistent. Infants spent significantly more time exploring the inconsistent items, whether solid or non-solid, $F(1, 57) = 24.00$, $p = .001$, $p = .29$. These results suggest that infants preference for learning from violations might be a general mechanism responsible for new knowledge.