NOW YOU SEE IT, NOW YOU DON'T: PRESCHOOLERS' SENSITIVITY TO SPATIOTEMPORAL CONTINUITY

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ABSTRACT

Research suggests that infants understand spatiotemporal continuity (Baillargeon, Spelke, & Wasserman, 1985; Wynn, 1992). Continuity can be violated by an object discontinuously appearing or disappearing. Work with infants (Wynn & Chiang, 1998) suggests that infants find discontinuous disappearances more surprising. We extend this research to preschoolers by asking (1) if preschoolers are able to detect continuity violations and, (2) if the same asymmetry will be found with them. In Experiment 1, children witnessed "magical" appearances and disappearances and were asked to report whether a magic trick had occurred. Like infants, preschoolers detected continuity violations. However, unlike infants, they detected both types equally well, suggesting that for preschoolers, both types of violations are equally salient.

Because children could have been tracking the *number* and/or the *continuous extent* in order to detect the violations, in Experiment 2, we pitted number against continuous extent. Under these circumstances, children successfully detected continuity violations and again were more likely to detect "magical" number changes than "magical" volume changes. This is contrary to previous infant research in which infants often track continuous extent better than number (Feigenson, Carey, & Spelke, 2002). There was no difference in the rates of detecting disappearances and appearances.

Experiment 3 was designed to see if preschoolers could be induced to detect "magical" volume changes by providing them with familiarization events in which the correct labels ('yes' that's magical or 'no' that not) were provided. Despite this, preschoolers were no better than chance at detecting "magical" volume changes, but again detected "magical" number changes reliably better than chance. In sum, this work suggests that, like infants, preschoolers are sensitive to continuity violations. But unlike infants, appearances and disappearances are equally salient to preschoolers. And finally, children's ability to detect violations of continuity appears to be accomplished by their tracking number of objects, rather than the continuous extent of the hidden set.