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Differential patterns of object-location binding in children and adults: Pruning the special role of location

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Abstract

Object location and identity interact with each other asymmetrically in adults: Participants tend to judge two sequentially presented objects as more similar when they appear in the same location compared to in different locations (a phenomenon referred to as Spatial Congruency Bias). Yet no comparable identity congruency bias is found, suggesting that location is special in object-binding. To investigate whether such a special role of location is inherent in our visual system or acquired during development, we conducted experiments in both 5-year-old children and adults performing location-judgment and identity-judgment tasks. The study replicated asymmetric bias in adults by finding that location biased their identity judgments, but not vice versa. However, symmetric bias was found in children, suggesting fused processing and reciprocal influence between location and identity in early childhood. The results indicate that location maintains its influence across development, whereas object identity's influence on location gets pruned away during development.

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