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Statistical Learning Contributions to Semantic Knowledge Development

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Abstract: The organization of semantic knowledge according to relations between concepts influences many facets of higher cognition. Therefore, understanding the origins of relations knowledge is a key focus of cognitive development research. This study investigated the contributions of environmental statistical regularities to relations knowledge in preschool-age children. Using CHILDES to estimate co-occurrence between familiar items, we constructed triads consisting of a target, related distractor, and unrelated distractor in which targets and related distractors consistently co-occurred (e.g., sock-foot), belonged to the same taxonomic category (e.g., sock-coat), or both (e.g., sock-shoe). Using a Visual World paradigm, we then measured relations knowledge as the degree to which children looked at related versus unrelated distractors when asked to look for targets. The results revealed that co-occurrence, regardless of taxonomic relatedness, influenced whether participants looked significantly more at related versus unrelated distractors. These findings demonstrate that co-occurrence regularities between entities in the environment shape knowledge organization.