Are children irrational category learners? Evidence from a process model

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Abstract: How do multiple labeling events influence children's understanding of objects that can be named at multiple levels of specificity ("Rover" or "dog")? To investigate, we replicated Xu & Tenenbaum (2007, Psychological Review, 114, 245-272), who found that children generalized more narrowly when three identical toys (e.g., plush Dalmatians) were labeled with a novel word compared to one toy labeled three times. Xu & Tenenbaum suggested the extra two referents provide statistical evidence that rationally supports a narrow hypothesis. In our "extra labeling" condition, however, children generalized broadly when each object was labeled ten times instead of once. This violates the predictions of a purely rational account and suggests situational, lower-level processes are critical to novel word generalization. A Dynamic Neural Field model is used to examine these processes, and further shows how process-oriented models can solve the problem of overlapping extensions.