

The development of concept learning

You just completed a developmental psychology experiment! We are studying how people of different ages learn about concepts in the world. This experiment focuses on category learning, or how people learn to classify items into different concepts. We are having both kids and adults participate in this experiment to test whether they learn about concepts differently.

We asked you to categorize animal-like creatures into different groups. You either sorted the animals into birthday parties, represented by different houses, or according to which cells they had in their body. The animals had two intrinsic body features that differed (ears and tail) and two extrinsic interest features that differed (favourite sport and place to play). Some people learned by trial and error to sort the animals based on a single body feature and while others sorted the animals by one of their interests. *Dependent Variable*: We measured your learning rate on this categorization task by how many trials it took to reach 80% accuracy (8/10 trials correct). More trials to reach 80% accuracy indicates greater difficulty in learning. The experiment ended when you got 10/10 trials correct in a row.

Independent Variables: We varied the type of feature that determined an animal's category (extrinsic or intrinsic), the type of categorization decision (extrinsic/birthday party or intrinsic/cells), and the age of participants (3-35 years).

We hypothesize that there are developmental differences in category learning when concepts are based on extrinsic features, like the animals' interests. Specifically, we predict that younger kids may take longer when learning to sort animals based on their sport or location preference compared sorting based on ear or tail shape. As age increases, however, we expect a decrease in the number of trials it takes to learn extrinsic feature-based concepts, while learning rate will remain relatively stable for intrinsic feature-based concepts. We are also interested in whether there are developmental differences in category learning depending on the type of decision being made. We predict that it may be easier to sort animals based on extrinsic features, like their favourite sport, if the decision is also about something extrinsic, like which birthday party they should go to. Similarly, category learning based on intrinsic features (ears or tail) may be enhanced when the decision is intrinsic (cell type). Further, there may be developmental differences in this relationship.

This project will constitute an important step towards understanding how people learn about new concepts across development and could inform future work on the neural basis underlying this cognitive process. If you are interested in reading about this research, check out these journal articles:

Gelman, S. A., & Davidson, N. S. (2013). Conceptual influences on category-based induction. *Cognitive psychology*, 66(3), 327-353.

Sloutsky, V. M., & Fisher, A. V. (2004). When development and learning decrease memory: Evidence against category-based induction in children. *Psychological science*, 15(8), 553-558.

For more information about our research, check out our website:

<http://buddingmindslab.utoronto.ca>

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