

Even toddlers weigh risks, rewards when making choices

September 21 2018, by Kim Eckart



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Every day, adults conduct cost-benefit analyses in some form for decisions large and small, economic and personal: Bring a lunch or go out? Buy or rent? Remain single or start a family? All are balances of

risk and reward.

According to psychologists, [infants](#) weigh risks and rewards, too, but appear to boil down their decision-making to this: Do I want to?

But according to a study published in the August print issue of the journal *Cognition*, it turns out that the decision-making process for older infants and toddlers is more nuanced than that. According to University of Washington psychology professor and lead author Jessica Sommerville, 18-month-olds can make choices based on how much effort they want to expend, or on whether they like the people involved. That kind of cost-benefit analysis, she said, can guide the development of early pro-social behavior, like helping and sharing.

"By the middle of the second year of life, infants are making very sophisticated social decisions," Sommerville said. "We tend to think of situations in which infants help or want to help others as either cute and endearing, or as a result of their being finely tuned to the needs of others. But they also are weighing the costs of their actions against the perceived benefits."

Infants' decision-making is, of course, something to be evaluated based on behavior, not interviews. Researchers in this study focused on the ways these relatively new walkers and talkers could demonstrate interest and effort.

Sommerville and her colleagues examined how 160 toddlers decided whether to help an adult under two separate conditions. All the children were about 18 months of age.

In the first scenario, a researcher introduced a child to five vinyl blocks, each a different color and weight—from a quarter-pound to 5 pounds—which the child would discover upon lifting it. A facilitator

would then clean up the blocks, appearing to inadvertently leave a block behind. For some children, the randomly assigned "forgotten" block was the lightest of the blocks, while for others it was the heaviest that the child was able to lift. As the researcher proceeded to build a block tower on the other side of the room, she would ask the child for the missing block. Of those toddlers with the light, "low-effort" block, 67 percent carried it to the researcher, while 38 percent of the children with the heavy, "high-effort" block carried it over.

"These findings were of great interest because they show that infants decide whether to help an adult based on how much effort it requires of them. This required them to remember information from an earlier part of the study (how heavy the block was) and to anticipate the impact that information would have on their own behavior (how hard it would be to carry it across the room). So infants are much better at remembering and projecting the amount of effort an action requires, and using that information to make [social decisions](#), than we previously imagined"

The second "help" scenario focused on intrinsic motivation—a situation that didn't involve an immediate reward, but instead set up a potential social benefit: a person whom the child could see as "like" them. Through engagement with toys, the experiment established whether a child and adult would share an interest in the same toy (the "shared preference" condition), or would be interested in separate toys (the "opposite preference" condition). Then the adult would move to the other side of the room and build a block tower, leaving a 4-pound block behind. Over two trials of this experiment with different participants, 75 percent of toddlers in the shared-preference condition carried the block over and helped the adult, while only 57 percent of toddlers in the opposite-preference condition brought the block to the adult.

Searching for common ground is typical human social behavior, Sommerville said. Adults tend to spend time with people who share the

same likes and values—known in psychology circles as establishing one's own "in-group."

"In child development, there are benefits to interacting with in-group members beyond mere liking," she said. "In-group members are more likely to be able to teach you something culturally relevant, like what an object is called or how it works. So a bias to interact with others who are like you not only has immediate positive benefits, but is also beneficial down the road."

As the field of developmental psychology has shifted to focus more on how behaviors evolve rather than how they mark specific life stages, cost-benefit analysis is ripe for study, Somerville said.

"These findings suggest that infants are able to weigh multiple factors in deciding whether or not to help someone. This is something that [adults](#) and older children do: A decision to lend someone money might be a product of both how much money they need—is it \$5 or \$500?—and how close we are to them. We might be willing to lend \$5 but not \$500 to a neighbor, while we are willing to lend \$500 to a close friend or family member," Somerville said. "Our results suggest that infants' pro-social behavior is more complex than previously thought, and isn't driven by a single factor."

Sommerville's team is currently exploring the impact of parental praise on motivation, and, in a separate study, whether much younger infants—around 6 months of age—will exert more effort for an interesting toy than for a boring one.

"If we are correct, these findings would suggest that cost-benefit analyses play a central role in infants' [decision-making](#) even just as they are able to produce actions," she said.

More information: Jessica A. Sommerville et al. Infants' prosocial behavior is governed by cost-benefit analyses, *Cognition* (2018). [DOI: 10.1016/j.cognition.2018.03.021](https://doi.org/10.1016/j.cognition.2018.03.021)

Provided by University of Washington

Citation: Even toddlers weigh risks, rewards when making choices (2018, September 21)
retrieved 9 April 2024 from
<https://medicalxpress.com/news/2018-09-toddlers-rewards-choices.html>

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