Tiny Foragers: How Do We Know What's Safe To Eat?

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It's the holiday season, and we'll soon be decorating our home with greenery—holly sprigs, poinsettia, maybe a mistletoe, and of course the tree, probably some kind of spruce. We'll have young kids around, and most of this greenery is benign. But some of these plants are toxic, possibly even deadly, if eaten. So what we are doing in effect is creating a treacherous world for our youngest revelers to explore.

Re-creating really. Our holiday home will be a microcosm of the ancient world in which our early ancestors lived, and died. Throughout evolutionary history, humans have gathered leaves and berries to eat, but they have done this with little information to guide their choices. Poisonous plants don't advertise themselves with color or shape or texture, so early foraging was a very costly guessing game. How did our forebears know which plants to collect and which to avoid? And how do young children do that today?

Yale psychological scientist Annie Wertz wondered if ancient humans and modern kids might share some sort of cognitive mechanism for making such judgments. Perhaps today's children inherited some deep-wired "rules" that allow them to minimize their risk in a varied world of vegetation. Wertz and her Yale colleague Karen Wynn suspected that young children are learning about plants from observing others in their social world—their parents, for example. But it's not simple imitation of adults, as any parent knows. They decided to explore just how young children learn this crucial skill.

They recruited a group of 18-month olds for a laboratory experiment. They wanted to study how kids distinguish between edible and toxic plants, but first they wanted to see if children identify plants in general as edible—compared to toys, for example. To do this, they built a plant from realistic but artificial leaves and branches, and put it into a pot. They also constructed an artifact, which was also made from leaves and branches, but painted silver and encased in a glass cylinder. The idea was that the artifact would resemble the plant in shape and texture, but it wouldn't look like a plant. Both the plant and the artifact had dried fruit hanging from it.

To simulate the social learning environment, an experimenter took a piece of fruit from both the plant and the artifact and put it in his mouth, saying in a neutral way, "Hmmm." Some of the babies observed this, while other babies saw the experimenter take hanging fruit (from both tree and artifact) and put it behind his ear. This is a well-tested lab strategy for signaling food or non-food. After this modeling, a different experimenter asked the children, referring to the food: Which one can you eat? Referring to the non-food, they asked: Which one can you use?

The results were just what the scientists expected. The babies were more likely to choose, as food, the fruit from the plant, even though they saw the adult do the same mouth action with fruits from both plant and artifact. That is, they had the same information about both fruits, but still preferred the fruit that came from a plant. By contrast, infants who saw the behind-the-ear action picked randomly—meaning that babies don't generally prefer plants over artifacts. They do so only when it comes to eating.

So do kids view all plants as a potential source of food? Well, that wouldn't work as a strategy, given all the poisonous, unpalatable plants out there—including my holiday holly. Where do kids look for evidence that this or that plant is a safe source? If they are indeed watching adults for signals of what to do, then absent such a signal, they should remain wary of plant food. This is what the scientists tested in another experiment.

This study was identical to the first, except that the infants saw the experimenter merely look at the plant, then the artifact, all the while keeping his hands at his side and saying, "Hmmm." Then, as before, another experimenter offered the infants the fruits from both the plant and the artifact, asking: Which one can you eat?

This time the infants picked randomly, suggesting that, without the in-mouth modeling, they no longer identified the plant as a more likely food source. As reported in a forthcoming article in the journal *Psychological Science*, the information gleaned from watching adults was crucial to the children's decision making. In a final experiment, the scientists showed that infants as young as 6-months-old are using such social information from adults to help identify plants as a safe food source.

So very young children preferentially identify plants as a reliable food source, but only when an adult has signaled that it's okay. This cognitive rule of thumb is protective, but it is also flexible enough to allow for cultural and individual differences. And it's also not rigid enough to offer foolproof protection to an unattended child exploring a perilous holiday household.

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