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A Virtual Pack, to Study Canine Minds

By CARL ZIMMER

In 1995, Brian Hare began to wonder what his dog Oreo was thinking.

At the time, he was a sophomore at Emory University, where he was studying animal psychology with Michael Tomasello. Dr. Tomasello was comparing the social intelligence of humans and other animals.

Humans, it was known at the time, are exquisitely sensitive to signals from other humans. We use that information to solve problems that we might struggle to figure out on our own.

Dr. Tomasello discovered that chimpanzees, our closest living relatives, typically fail to notice much of this social information. Pointing to the location of a hidden banana will usually not help a chimp find the banana, for example. Perhaps the pointing test revealed something important about how the human mind evolved.

But Mr. Hare had his doubts. “I think my dog can do that,” he declared.

To persuade his mentor, he videotaped Oreo chasing after tennis balls. And indeed, when he pointed left or right, off the dog would run, in the indicated direction, to find a ball.

He then followed up with a full-blown experiment, using food hidden under cups in his garage; Oreo consistently picked out the right cup after Mr. Hare pointed to it, and other dogs (including some who had never seen Mr. Hare) did well too.

After he got his doctorate in biological anthropology from Harvard, Dr. Hare and his colleagues **finally published their results**: Dogs could indeed pass the pointing test, while wolves, their wild relatives, could not.

Dr. Hare, now an associate professor at Duke, has continued to probe the canine mind, but his research has been constrained by the number of dogs he can study. Now he hopes to expand his research geometrically — with the help of dog owners around the world. He is the chief scientific officer of a new company called **Dognition**, which produces a Web site where people can test their dog’s cognition, learn about their pets and, Dr. Hare hopes, supply him and his colleagues with scientific data on tens of thousands of dogs.

“Because it’s big data, we can ask questions that nobody could have a chance to look at,” he said.

From his previous research, Dr. Hare has argued that dogs evolved their extraordinary social intelligence once their ancestors began lingering around early human settlements. As he and his wife, Vanessa Woods, explain in their new book, “The Genius of Dogs,” natural selection favored the dogs that did a better job of figuring out the intentions of humans.

While this evolution gave dogs one cognitive gift, it didn’t make them more intelligent in general. “If you compare them to wolves as individuals, they look like idiots,” Dr. Hare said. “But if you then show them having a human solve the problem, they’re geniuses.”

To explore dog cognition further, he set up the [Duke Canine Cognition Center](#) in 2009. He and his colleagues built a network of 1,000 dog owners willing to bring in their pets for tests.

Dr. Hare began to investigate new questions about dogs with this willing pack of animals. With a grant from the Office of Naval Research, for example, he is looking at ways to identify dogs for jobs like bomb detection.

“They spend two years trying to get these dogs ready to go, and then most programs lose 7 out of 10,” he said. “Maybe they can’t take the commands, or maybe they can’t take the perspective of the humans.”

He is trying to find the “cognitive style” of the successful service dogs. To do so, he and his colleagues have developed a battery of 30 tests that altogether take four hours to administer. They have tested 200 dogs and are searching for hallmarks that set the service dogs apart.

He helped form Dognition, he said, partly because of interest from dog trainers who asked him if they could test their own dogs’ cognitive style.

The tests are now available online: For a fee, dog owners get video instructions for how to carry them out. (Besides the pointing test, they include a test in which the owner yawns and then watches to see if the dog does too — a potential sign that dog and owner are strongly bonded.) The company then analyzes how a given dog compares with others in its database for qualities like empathy and memory.

Not every expert is convinced, however, that such seemingly objective judgments can be gleaned from research that is still in its early stages.

“To me, part of being a dog scientist is acknowledging up front how little we know about their cognition,” said Alexandra Horowitz, a dog cognition expert at Barnard College. “I’d like to see a company which tries to strengthen relationships between dogs and people by getting people excited about the fact that science has just begun to investigate the dog mind, and our current understanding is minimal. It would be honest to admit how mysterious this other mind really

is.”

Dr. Hare agrees that dog owners should not look at the tests as a canine equivalent of the SATs. “What we’re desperately trying to stay away from is, ‘Your dog is a 99, and your dog is 20, and 99 is better than 20,’ ” he said. “Maybe one cognitive style is better in one context than another.”

Adam Miklosi, a dog cognition expert at Eotvos Lorand University in Budapest and a scientific adviser to Dognition, says the tests should not be prescriptive. “It’s not like a phone number you call to get your washing machine fixed,” he said. “It’s a fun thing to do.”

Dr. Hare says his main goal is to build a database that will shed light on longstanding questions about behavior, breeding and **genetics** — for example, whether the cognitive styles of various breeds can be linked to their genes. (Dr. Miklosi cautions, however, that the data that comes from people playing games with their dogs in their living room won’t be as carefully controlled as the experiments scientists run in their labs.)

One hypothesis has already emerged from Dognition’s users, Dr. Hare said. A surprising link turned up between empathy in dogs and deception. The dogs that are most bonded to their owners turn out to be most likely to observe their owner in order to steal food. “I would not have thought to test for that relationship at Duke, but with Dognition we can see it,” said Dr. Hare.

As the science of dog cognition comes into better focus, Dr. Hare hopes that scientists can use Dognition to deliver their insights to dog trainers. Science-based dog training would take into account what dogs are good at, what they’re bad at and the biases that influence their minds.