

## A new take on why social cues confuse babies and dogs in a classic hiding game

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A study by developmental scientists at the University of Iowa and Indiana University challenges the conclusions of two recent studies on how babies and dogs respond to certain social cues. The new findings, published in this Friday's edition of the journal *Science*, indicate that babies and dogs may not be as clever as the other studies suggest.

Last year, a surprising study led by József Topál of the Hungarian Academy of Sciences showed cues from adults -- like nodding, speaking and pointing -- cause babies to perform worse in a classic toy-hiding game. The September 2008 report in *Science* suggested that babies have a unique ability to "read" social cues in a way that misled them in this particular task. Then, in a follow-up paper published earlier this month, the same research team reported that dogs, like babies, are confused by social cues -- but wolves aren't. The authors concluded that dogs have become sensitive to social cues from humans due to our shared evolutionary past.

Today's UI and Indiana study used a 10-year-old theory based on how the brain works to provide another explanation for these hiding-and-finding mistakes. Led by John Spencer, professor of psychology in the UI College of Liberal Arts and Sciences and director of the UI Delta Center, the work indicates that babies age 10 months or younger are distracted by social cues -- they focus on adults' faces and gestures rather than paying attention to where the object is hidden and do not have a unique ability, as the earlier study suggested.

Because dogs show a similar pattern of behavior with social cues present, the computer model used by Spencer's team can explain their behavior, too. Spencer and his colleagues suspect that wolves succeed in this task for the same reasons older babies do -- they can form a robust memory for the hiding location. They say this makes particular sense given that the experimenters hid bits of food in the study with wolves.

"You don't often see cases in which the same data are interpreted in such fundamentally different ways," he said. "We say the infants and the dogs are easily distracted by social cues and the wolves are the clever ones; they say the infants and the dogs have a special ability to process social cues, and the wolves are inferior. It's exactly the opposite. It will be interesting to see where that tension takes us."

The studies in question examine a classic error made by babies up to 10 months old. When they repeatedly see an object hidden in one spot, they look for it there. Even when they witness it being hidden somewhere else, they continue to search in the original hiding location. By age 1, [babies](#) figure it out. This odd "A-not-B" error is the subject of five decades of research. Discovered by child psychologist Jean Piaget, it's a staple topic in developmental psychology courses and covered in parenting books.

Topál and his team are among the first to investigate how social cues influence babies' and other animals' performance on the task. Spencer considers the studies provocative but has concerns.

"It's against our intuition that social cues seem to hurt the infants' performance -- you'd think encouragement from adults would be helpful. And it shows that social cues make a difference," he said. "But we disagree with the explanations put forth that are not grounded in what we know about infants' perceptual and cognitive abilities. This is, after all, a hiding and finding game -- attention and memory should matter."

To show how attention and memory matter in this task, Spencer and colleagues ran computer simulations of a theory that was originally published in 1999 by co-author Linda Smith and her colleagues from Indiana University. This theory has explained infants' performance in many different versions of the A-not-B task. In the paper published this Friday in *Science*, Spencer and colleagues show that when the computer model fails to focus on the hiding event because distracting social cues are present, it shows the same behavior as infants.

"Research indicating that infants or dogs are extraordinary in some way tends to make a splash. We like to think our kids and pets are special, and in many ways they are," he said. "But in our view, there is no special ability at play here. Using neural network models, we demonstrated that other mundane things underlie infants' behavior. Infants and dogs are simply being distracted by social cues in this hiding game."

Spencer and his co-authors, UI postdoctoral researcher Evelina Dineva and Linda B. Smith, a chancellor's professor of psychological and brain sciences at Indiana University, propose a particular lesson from the debate. They want to see a move away from explanations that only explain a specific result -- how infants interpret [social cues](#) in a hide-and-seek game -- toward more comprehensive explanations that bring a host of findings together.

"This has been one of the really powerful aspects of our theory -- it has unified a diverse array of findings with infants in this task and with older children in related memory tasks. Our paper nicely illustrates a new extension into the social domain," Spencer said. "In our view, this is something to celebrate -- that we can bring social cognition together with basic cognitive processes. The downside, of course, is that infants, and by analogy [dogs](#), don't have a special mind-reading ability. For some people, that's an unpleasant pill to swallow."

Source: University of Iowa ([news](#) : [web](#))

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