The Cognitive 'Glitch' of Humans: Laurie Santos on What Makes the Human Mind So Special

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Researchers have documented in a growing number of studies that animals possess cognitive abilities once thought to be exclusive to the inner workings of the human mind. Despite evidence that other species share many of our cognitive talents, APS Fellow Laurie R. Santos maintains that the human mind still holds its special and unique status.

“We are constantly engaging in things that might seem mundane but are the kinds of things that no other species on the planet does,” said Santos, citing a list of activities typically associated with humans, including teaching, reading and writing fiction, taking photographs, watching films, and engaging in the scientific enterprise.

“No other species is doing any of this,” said Santos, as she recited some activities and the high-level cognitive abilities they demand. “It’s really just us, and that raises a question: ‘How do we get to do all of these weird things,’” said Santos in remarks made to an audience attending the 2017 APS Annual Convention in Boston.

Santos is a professor of psychology and cognitive science at Yale University, where she focuses on research exploring the evolutionary origins of the human mind. As part of this research, Santos conducts studies investigating the cognitive abilities of nonhuman primates and domesticated dogs.

One area of cognitive abilities that Santos targets in her research involves how humans and other animals think about other minds. Santos told audience members gathered for her presentation during the convention’s “Bring the Family” Address that thinking about other minds is achieved through a set of cognitive mechanisms or “glitches” that exist in humans and animals — with the exception of one that may be unique to humans.

Shared ‘Glitches’

Santos pointed to two phenomena as examples of how glitches aid in the transfer of information to others in processes that may occur either consciously or without our awareness.

One of the two phenomena, behavioral contagion, involves the spontaneous copying of behavior by others in close proximity to us. In such cases, the information being shared may relate to group norms governing expected behaviors.

“We are subtly copying the kinds of postures and behaviors of all the folks around us,” said Santos, who likened the automaticity of human copying behavior to that observed in schooling fish. Among humans, the copying may lead to the adoption of specific behaviors of those around us — such as smiling, laughing, or yawning. Santos noted how at sports events, for example, fans might take on similar outward behaviors in response to the fortunes, or misfortunes, of their team.

“We are copying automatically without realizing it,” Santos said. “This is behavioral contagion in that it gets us in behavioral sync with someone else.”

Santos cited studies showing how other animals, including chimpanzees and dogs, also yawn in response to similar behavior by those in close proximity to them. In addition, she referred to a study in which chimps appeared to laugh in an automatic response to others.

The cognitive mechanism implicated in behavioral copying may lead to a second phenomenon involving the transfer of information related to the emotional state of those around us. People may become bored after seeing others yawn during a long lecture or experience increased positive affect after the smiles of others motivate them to smile as well.

“This is classical glitchy emotional contagion,” said Santos. “By copying behaviors, we might be getting emotions for free.”

Santos attributes some of the emotional response to “neural resonance,” a process triggered when neural systems associated with the emotion in question becomes overworked. Santos indicated that humans share this process with other animals.

Mind-Meld: Mental Contagion

While the cognitive mechanisms or glitches associated with behavioral and emotional contagion exist in humans and other animals, a second mechanism is one that humans may claim as their own. This mechanism, according to Santos, facilitates the transfer or sharing of one’s beliefs, perceptions, attitudes, and preferences. The work of this mechanism may spur “mind-meld,” a term Santos borrows from *Star Trek* to describe the unrestricted exchange of thought from one individual to another.

The cognitive mechanism connected to mind-meld, says Santos, can lead individuals to adopt the beliefs and attitudes of others or become confused about their own beliefs versus those of someone else.

Santos said the mechanisms associated with the wholesale transfer or sharing of beliefs and attitudes is understudied in the field of psychology. One example of the process, she said, is captured by “altercentric interference,” where we confuse others’ perspectives with our own. Similarly, “belief

interference" describes a process whereby people become confused about their beliefs and those of others. Why might these processes occur?

At a neurological level, understanding another person's thoughts or beliefs requires individuals to inhibit the processing of their own thoughts or beliefs, Santos said.
"Sometimes we mess up," Santos said. "Sometime the act of keeping these [thoughts] separate doesn't work … we just get the information confused."

Citing findings from experiments she conducted involving monkeys and dogs, Santos said the process of mental contagion does not appear to exist in nonhumans. Santos indicated that this may be due to these animals not engaging in the simulation of others' mental content, as occurs with humans.

References

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