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## Some animals can reflect upon, monitor, regulate their states of mind

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Washington, September 15 (ANI): Conducting extensive research into animal cognition, psychologists at the University at Buffalo have found that some animals may share humans' ability to reflect upon, monitor or regulate their states of mind.

"Comparative psychologists have studied the question of whether or not non-human animals have knowledge of their own cognitive states by testing a dolphin, pigeons, rats, monkeys and apes using perception, memory and food-concealment paradigms," said Dr. J. David Smith, a comparative psychologist at the university.

"The field offers growing evidence that some animals have functional parallels to humans' consciousness and to humans' cognitive self-awareness," he added.

He counts dolphins and macaque monkeys among such species.

Recounting the original animal-metacognition experiment with Natua the dolphin, Smith said: "When uncertain, the dolphin clearly hesitated and wavered between his two possible responses, but when certain, he swam toward his chosen response so fast that his bow wave would soak the researchers' electronic switches."

He added: "In sharp contrast, pigeons in several studies have so far not expressed any capacity for metacognition. In addition, several converging studies now show that capuchin monkeys barely express a capacity for metacognition. This last result," Smith says, "raises important questions about the emergence of reflective or extended mind in the primate order. This research area opens a new window on reflective mind in animals, illuminating its phylogenetic emergence and allowing researchers to trace the antecedents of human consciousness."

Smith describes metacognition as a sophisticated human capacity linked to hierarchical structure in the mind because the metacognitive executive control processes oversee lower-level cognition, to self-awareness because uncertainty and doubt feel so personal and subjective, and to declarative consciousness because humans are conscious of their states of knowing and can declare them to others.

Therefore, Smith says: "It is a crucial goal of comparative psychology to establish firmly whether animals share humans' metacognitive capacity. If they do, it could bear on their consciousness and self-awareness, too."

He concludes, "Metacognition rivals language and tool use in its potential to establish important continuities or discontinuities between human and animal minds."

A research article describing his study has been published in the journal Trends in Cognitive Science. (ANI)

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