Hormone study finds monkeys in long-term relationship look strangely human

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(PhysOrg.com) -- Monkeys in enduring relationships show a surprising correspondence in their levels of oxytocin, a key behavioral hormone, according to research published online June 28 in the journal *Hormones and Behavior*.

While measuring oxytocin in the urine of 14 pairs of cotton-top tamarins, Charles Snowdon, a University of Wisconsin-Madison professor of psychology, observed a wide range of hormone levels.

But he also saw a striking correspondence among the couples: When one mate had a high level of oxytocin, so did the other, and vice versa.

Furthermore, partners with a high level of oxytocin performed correspondingly more cuddling, grooming and sex, while those with low levels of oxytocin spent less time on these relationship-building activities.

The hormone oxytocin was originally studied for its role during childbirth, when it helps cement the mother-child emotional attachment. More recently, it has been linked to many other attachments. "Only in the past 20 years have we started to think more broadly about oxytocin's social function in forming and maintaining long-term relationships," says Snowdon.

In monogamous mammal species, he says, "We see that oxytocin in parts of the brain in females leads to pair-bonding." An oxytocin nasal spray

makes people more willing to trust strangers. Oxytocin rises after orgasm, massage and petting. "All this together suggests that oxytocin would play some role in creating strong pair bonds in these cotton-top tamarins, who are socially monogamous," says Snowdon, "and that the amount of cuddling, grooming, stroking and sex might be related directly to the oxytocin level."

In the new study, Snowdon, Toni Ziegler, a scientist at the Wisconsin National Primate Research Center, and their collaborators measured urine samples for oxytocin and recorded behavioral activity three times a week for three weeks, and then noticed the surprising correspondence between both members of the pairs.

Predictably, the study showed that high oxytocin among females was associated with more cuddling and stroking, and that among males, the major element was the amount of sex.

Snowdon may have been the first to respond "Isn't that familiar!" to this part of the results: It doesn't take a high-tech lab to notice that women and men have different emotional and physical needs, and the monkeys seem to echo this need.

But he noticed something else: The high-oxytocin monkeys seem to know how to soothe their partners. In previous studies, after monkey pairs were mildly disturbed either by removing one animal for a half hour or by introducing the scent of another female, both partners increased cuddling and sex as though to mend the relationship.

In the current study, the partners seem to know what the other partner needed. "Males in a high-oxytocin relationship were more likely to initiate cuddling, and females were more likely to initiate sex," Snowdon says. "These males were initiating the behavior that the female needed for high oxytocin, and the females with high oxytocin were initiating the

behavior that male partner needed for high oxytocin."

Snowdon says this "monkey version of 'kiss and make up' suggests that sex and affiliative behavior may play an important role in maintaining a relationship."

Stroking, sex and cuddling are critical parts of what it means to be a cotton-top tamarin, and to be human, Snowdon says. "Here we have a nonhuman primate model that has to solve the same problems that we do: to stay together and maintain a monogamous relationship, to rear children, and oxytocin may be a mechanism they use to maintain the relationship. Therapeutically, I'd suggest this would have relevance to human couples."

Provided by University of Wisconsin-Madison