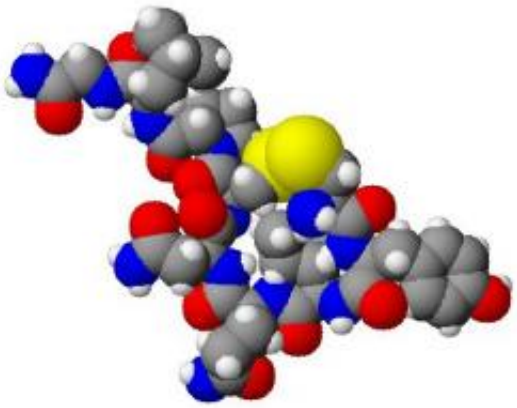
Oxytocin impact on eye response during interactions found to reduce trust

March 1 2017, by Bob Yirka



Spacefilling model of oxytocin. Created using ACD/ChemSketch 8.0, ACD/3D Viewer and The GIMP. Credit: Wikipedia.

(Medical Xpress)—A team of researchers with Leiden University in the Netherlands has found that increased levels of oxytocin can lead to suppression of pupil dilation mimicry, which in turn can reduce the amount of trust felt between interacting people. In their paper published *in Proceedings of the Royal Society B*, the group describes experiments they carried out involving pairs of interacting volunteers, manipulating their oxytocin levels artificially and using a reward system that revealed trust levels.

Prior research regarding the natural production of oxytocin by the

human body has led to the hormone being described as the "cuddle drug," because increased levels in interacting partners can lead to warm feelings towards one another. But the researchers with this new effort have found that it might also lead to suspicion in some instances. Prior research has also found that when two people talk to one another at close range, they tend to trust one another more if their pupils are dilated and less if there is constriction.

To learn more about how increased levels of oxytocin can impact how people view each other, the researchers enlisted the assistance of 56 people—half were given a dose of oxytocin while the other half received a placebo. The volunteers were then paired up and asked to play an investment game—players were given varying amounts of money and were told they could invest it themselves (with a likelihood of it being tripled) or let their partner do it. As the volunteers pondered their decision, they watched video clips that had been made beforehand of their partner with eyes dilated, constricted or matching their own.

In studying their results, the researchers found that the volunteers given the hormone tended to invest less in partners if their eyes were constricted compared to those given a placebo, which the researchers suggest was due to less trust. There were gender differences, too—males tended to withhold trust more than females and females tended to trust partners more who had dilated eyes, but not if they were given a dose of oxytocin. The researchers also found that pupil dilation mimicry was reduced when one or more of the partners had higher levels of oxytocin, again suggesting less trust. The researchers also asked the volunteers if they had noticed anything about the eyes of their partners and all replied that they had not, which suggests that people are unaware of the impact that oxytocin levels may be playing when they make judgments or decisions about other people.

More information: Mariska E. Kret et al. Pupil-mimicry conditions

trust in partners: moderation by oxytocin and group membership, *Proceedings of the Royal Society B: Biological Sciences* (2017). DOI: 10.1098/rspb.2016.2554

Abstract

Across species, oxytocin, an evolutionarily ancient neuropeptide, facilitates social communication by attuning individuals to conspecifics' social signals, fostering trust and bonding. The eyes have an important signalling function; and humans use their salient and communicative eyes to intentionally and unintentionally send social signals to others, by contracting the muscles around their eyes and pupils. In our earlier research, we observed that interaction partners with dilating pupils are trusted more than partners with constricting pupils. But over and beyond this effect, we found that the pupil sizes of partners synchronize and that when pupils synchronously dilate, trust is further boosted. Critically, this linkage between mimicry and trust was bound to interactions between ingroup members. The current study investigates whether these findings are modulated by oxytocin and sex of participant and partner. Using incentivized trust games with partners from ingroup and outgroup whose pupils dilated, remained static or constricted, this study replicates our earlier findings. It further reveals that (i) male participants withhold trust from partners with constricting pupils and extend trust to partners with dilating pupils, especially when given oxytocin rather than placebo; (ii) female participants trust partners with dilating pupils most, but this effect is blunted under oxytocin; (iii) under oxytocin rather than placebo, pupil dilation mimicry is weaker and pupil constriction mimicry stronger; and (iv) the link between pupil constriction mimicry and distrust observed under placebo disappears under oxytocin. We suggest that pupil-contingent trust is parochial and evolved in social species in and because of group life.

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