

# Study shows some male pheromones may cause other males to be more cooperative

June 4 2013, by Bob Yirka

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(Medical Xpress)—Two researchers in Finland have together found that some male pheromones appear to cause an increase in cooperative behavior in other men. In their paper published in the journal *PLUS ONE*, the two describe how they conducted a sniff test using test volunteers and monetary rewards to find a possible connection between pheromones and male human response.

Pheromones are chemicals that animals emit into the environment that cause a reaction in other animals—generally sexual in nature. Prior research has shown that humans too emit and respond to pheromones given off by members of the opposite gender. In this new effort, the researchers looked to see if pheromones given off by men have any noticeable impact on other men.

To find out, the researchers enlisted the assistance of 40 male volunteers, all of whom were in their mid 20's—each was asked to play a [video game](#) with one other volunteer. Each pair of players was given €10 as part of [game play](#) with the [expectation](#) that it would be shared. Players were then allowed to take turns offering to split the money with the other (with the amount at their discretion) or to take money offered to them.

In the first run of the game, all of the players were monitored to see how they would share the money. Then, prior to running the game a second time, half of the volunteers were asked to sniff either a plain [yeast](#) sample, or a yeast sample that had the male pheromone androstadienone mixed in with it. After completion of the second round of play, the

researchers once again compared how the money was shared by the players, noting any differences in how players responded between the two runs.

Surprisingly, the exercise showed that the men that sniffed the pheromone offered to share on average, half a Euro more than did those in the first run of the game. Also surprising was that they were also willing to accept less when offered—on average half a Euro.

The researchers also monitored the [hormone levels](#) of the volunteers as they were playing the game and found that those men with higher levels of testosterone were more likely to be more generous with their fellow men—offering more and accepting less money than did those with lower levels of the hormone.

The researchers suggest their findings may indicate that pheromones likely played a role in fostering cooperation between men early in human history, making survival of everyone more likely.

**More information:** Huoviala P, Rantala MJ (2013) A Putative Human Pheromone, Androstadienone, Increases Cooperation between Men. *PLoS ONE* 8(5): e62499. [doi:10.1371/journal.pone.0062499](https://doi.org/10.1371/journal.pone.0062499)

## Abstract

Androstadienone, a component of male sweat, has been suggested to function as a human pheromone, an airborne chemical signal causing specific responses in conspecifics. In earlier studies androstadienone has been reported to increase attraction, affect subjects' mood, cortisol levels and activate brain areas linked to social cognition, among other effects. However, the existing psychological evidence is still relatively scarce, especially regarding androstadienone's effects on male behaviour. The purpose of this study was to look for possible behavioural effects in male subjects by combining two previously distinct branches of research:

human pheromone research and behavioural game theory of experimental economics. Forty male subjects participated in a mixed-model, double-blind, placebo-controlled experiment. The participants were exposed to either androstadienone or a control stimulus, and participated in ultimatum and dictator games, decision making tasks commonly used to measure cooperation and generosity quantitatively. Furthermore, we measured participants' salivary cortisol and testosterone levels during the experiment. Salivary testosterone levels were found to positively correlate with cooperative behaviour. After controlling for the effects of participants' baseline testosterone levels, androstadienone was found to increase cooperative behaviour in the decision making tasks. To our knowledge, this is the first study to show that androstadienone directly affects behaviour in human males.

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