# TJ interviews: Oxytocin expert and researcher Dr. Paul Zak

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**Paul, your research on the hormone Oxytocin has revealed some interesting and important differences between men and women. Can you share more?**

In a decade's worth of experiments in my laboratory and in the field, my colleagues and I have shown that oxytocin (OT) is the biological basis for *The Golden Rule*: If you treat me well, my brain will synthesise oxytocin motivating me to reciprocate.

By taking blood samples before and after various social interactions, we have demonstrated that when one is trusted, one's brain produces OT in proportion to the degree of trust shown. For every experiment we have run, on average women release more OT than do men, and as a result, women are more trustworthy, compassionate, and empathic.

Women and men both release this neurochemical but we have shown that several other chemical messengers either promote or inhibit OT release. So, not every positive social interaction will be reciprocated in a trusting and empathetic manner.

For example, when we are highly stressed by conflict oxytocin is released in both sexes but so is epinephrine which appears to be a major inhibitor of OT.

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The primary female hormone estrogen appears to significantly increase one's sensitivity to OT. This compounds the effect of greater OT release by women. It also means that a women's response to social interactions varies over her menstrual cycle.

At the same time, testosterone, which is five to ten times higher in men than women, inhibits OT and thereby prosocial behaviors, especially in young males. As we age, testosterone in men decreases resulting in relatively higher OT responses in older men.

In fact, in variation of trust games we use for research, when males are are administered synthetic testosterone compared to men on placebos they demonstrate consistently less generousity and demand more from others.

**Recently, there have been several criticisms about the limits of OT in promoting prosocial behavior including the finding that sometimes it motivates in-group favoritism, gloating, and envy. These criticisms seem to suggest that context matters in terms of OT and trust. What are your thoughts?**

Many of these studies are poorly designed and poorly reported in the media. OT increases our sense of empathy and in these studies, artificial OT was used to cause the participants to follow the directions given by the experimenter to treat others badly.

This tells us nothing about where envy and other antisocial behaviors naturally come from. My studies have shown that about 2% of the thousands of people I have studied using blood draws have dysregulated Oxytocin and behave antisocially.

We have recently confirmed this dysregulation in a large study of criminals. In nearly everyone else, OT motivates a desire social interactions, collaboration, and trust.

**What are the implications of your research for organisations?**

In experiments run at for-profit companies, I have found that high-trust organisations have employees who are substantially more engaged and energised at work, more productive, happier, and healthier. The culture at high-trust organisations provides abundant opportunities for positive social interactions and thus stimulates OT release in employees throughout the day.

This is how trust is sustained.

**About the interviewee**

Paul J. Zak, Ph.D is founding director of the Center for Neuroeconomics Studies and professor of economics, psychology, and management at Claremont University.