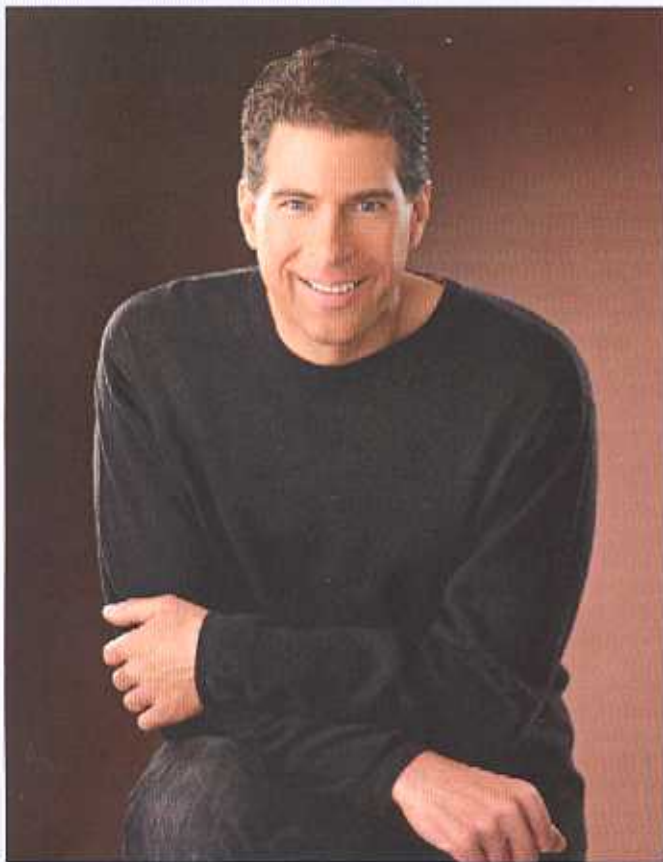


# Meet Paul Zak, the neuroscientist

by Mirjam Broekhoff



**He would prefer to be working quietly in the lab. Doing sound research aimed at improving the quality of people's lives. His career chose another path.**

**Paul Zak spends a lot of time travelling, promoting neuroscience, talking about his book, raising funds and teaching.**

**And, yes, occasionally he still manages to spend time in his lab. However,**

**nowadays his colleagues at the Center for Neuroeconomics Studies at Claremont Graduate University in Southern California do the actual lab work.**

I spoke to Paul by Skype to mobile phone. Ted.com reports that his TedX talk of November 2011, about compassion and trust, has been watched by 986,000 people (<http://bit.ly/U5Rz3t>). On the internet, I came across films of Paul performing research in New Guinea, taking blood samples from very unkempt and nearly naked Papua Indians for research purposes. Another clip shows Paul leaping from a plane to prove his scientific point. And I watch him taking blood samples immediately before and after a wedding ceremony in England. Both the wedding couple and their guests devote a lot of time to him on this very special occasion. He certainly succeeds in bringing neuroscience to people's doorsteps.

## The Origin of "Dr Love"

In 2010, a journalist christened Paul Zak "Dr Love". The name has stuck ever since. How does he feel about this? "When I first saw this nickname, it disturbed me a bit. My aim is to conduct serious research in the field of neuroscience and this name implies something different, as if I am a kind of guru. However, I must admit that this is not completely wrong. In my lab, our mission is to help people flourish. We want to do actionable research, to make science truly valuable for society. Many of our projects are designed to improve business practices and help people on an individual level to enhance their lives. When I acquired my nickname, I talked with the reporter about the fact that good relationships and real love are essential for the well-being of the human individual. After that, the title "Dr Love" became a kind of persona that I use when I am doing speeches and public presentations. It supports me and I use it as running gag: I hug people and tell audiences about the research my lab has done that shows that emotional attachments and physical contact will improve their lives. That all provides them with a nice show, but that really is not a purpose in itself. I act out these performances with a clear goal: explaining the meaning of scientific neuroresearch to a broad public and creating a platform of enthusiastic and supportive people."

"As a private individual, I am highly involved with the subject of morality. This may be an output of my childhood. My mother used to be a nun. She remained very religious; in her view morality was 'doing what the bible says'. When I grew up, I started thinking about the behavior of other people, some doing good, others real bad. I observed that there was not a real one-to-one connection between religious beliefs and morally bad or good behavior. This led to a lot of discussion with my mother, which helped me a lot in developing a clear

# who was nicknamed “Dr Love”

thinking. I enjoyed the opportunity to think freely and test my opinions. This background led to my interest in oxytocin. I was the first person to link the brain's release of oxytocin to their ability to trust other people. My research revealed that oxytocin makes people behave more generously and cooperatively. Individuals will take different decisions about, for instance, sharing money with others or lending to total strangers. I have also found that many rituals increase oxytocin levels and stimulate moral behavior. For instance, giving and receiving hugs leads to more oxytocin. But massage, dancing, praying and even using social media will also

## “I was the first to link the release of oxytocin to trust”

raise oxytocin levels. I did an experiment at a wedding where I took blood from 12 people, including the bride and groom. It showed that during the wedding ceremony, the level of oxytocin rose for many people, but in a very particular pattern. The highest increase was found in the bride, followed by her mother, the bridegroom and less, but also significantly higher levels occurred with family and friends. The effect of the wedding ceremony is this increase and that leads to a further bonding between all those taking part. In 2012, I ran an experiment to test if coupons stimulate oxytocin release in the brain (- in the sidebar). At the moment, Paul and his team work with a broad range of research techniques. For example, they are measuring the impact of oxytocin on the brain, heart and vagus nerve.

### Independent research

“My team and I want to work with the best research method possible in every situation. This means that we choose the method that is based on the best way to measure brain activity to understand the situation we are studying. This should result in obtaining the best possible predictions of behavioral outcomes in real life. Only too often, what you see is that the available technology steers the choice of research subjects and the approach taken to research. That is not a correct scientific way of doing things. In order to take the correct scientific approach, we work with various different methods: skin-conductance, eye-tracking, EEG and fMRI. But we also use blood tests, for example; I did so in my research on oxytocin. We are currently performing many studies that measure heart activity. We are also doing genetic research. Nevertheless, we rent the fMRI

### The effect of coupons



The company coupons.com asked Paul Zak to study the effect of coupons on the people that receive them. A coupon is a discount on a specific product or service to be bought at selected stores or from one or more service-providers. Coupons are a well known phenomenon all over the world and the global company Groupon has put them firmly on the marketers' minds. The aim of this study was to measure the impact of coupons on the human body. The researchers worked with two groups of participants: half of the group would receive an online coupon after shopping online, the other half would not. The total number of participants was 35. The treatment group received a \$ 10 coupon after grocery shopping online. The effect of the coupon was evaluated through multiple measurements: the level of hormones in the blood, cardiac activity using an electrocardiogram, respiration and perspiration and mood when receiving the coupon. All the reported results are statistically significant at standard levels. The respondents were paid for their participation, time and effort.

Based on this study, Paul Zak concludes the following. “We found three main results. When comparing the group receiving a coupon to the control group, we found that oxytocin levels increased by an average of 38%, which is very high. Respiration rates fell by 32%, heart rates dropped by 5% and the sweat levels on the palm of the hand were 20 times lower. This convincingly illustrates that stress levels decreased. Participants rated their own happiness on a scale from 0 - 10 and those who received a coupon were 11% happier. I think this shows that coupons have a significant, positive impact on the brain and on mood. This insight is particularly valuable for marketers who want to use coupons during the festive seasons, such as Christmas and Easter. Coupons will be received very well, even when stress levels tend to be at an all time high.” It shows that the brain processes coupons as if they are a gift from another person. The release of oxytocin makes the coupon receiver want to reciprocate after receiving this gift by purchasing from the retailer. The gift reduces stress and makes us just as happy as if a friend had given us an unexpected gift.

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scanner we use: calculations showed that investing in our own scanner would not be cost effective. Actually, this is a very pleasant situation, quite unlike when I started doing neuroeconomics research, 12 years ago. At the time, I had to start from scratch and borrow lab

**“My research revealed that oxytocin makes people behave more generously and cooperatively”**

space and equipment. Then Claremont built me a lab four years ago. My job was to find the funding, attract the staff and organize the equipment. I started out with a few assistants and now there are 30 people working at the lab!”, says Paul Zak.

It seems paradoxical: being Dr Love on one hand and a serious scientist on the other. Does Paul Zak's image help his scientific work? “My first instinct is to say no. When I want to do funded research, I talk with highly educated people. They know everything about control conditions, sample size, research design and so on. I am judged by my record of research that is published in leading scientific journals. Big funders, such as, for instance, the Department of Defense, want to have

solid and reliable results. And funding agencies will not spend money on projects that do not have reliable outcomes. However, on second thoughts - I think it does

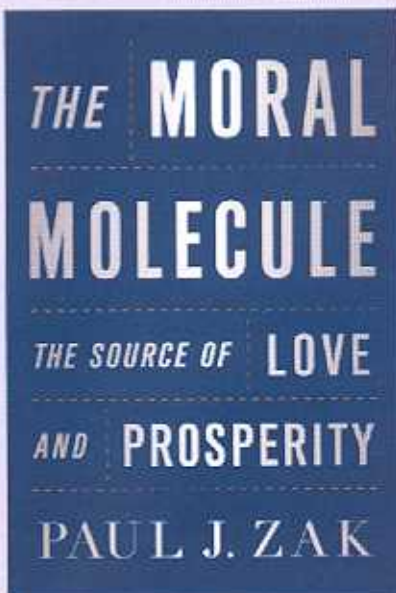


help. My image as 'Dr Love', being a very minor celebrity, demonstrate to our funders and colleagues that we are serious about doing research with an impact. We genuinely want to help people to improve their lives and give them more options to choose from. My team and I do really care about people. The fact that this is widely known will help us to acquire the necessary means for sound scientific research.”

### Trust is an economic asset

In 2008, Paul Zak edited the book *Moral Markets: The Critical Role of Values in the Economy*, with a foreword by Michael Jensen. This work established that the degree of personal trust in a country is closely related to its prosperity. For example: 75% percent of Norwegians trust other people, 45% of Americans do and only 2 % of Columbians. Trust is very important as it broadens the circle of people you can interact with.

In a culture that exhibits a lesser degree of trust, this group is limited to the people you know very well: your family and a few intimate friends. In this case, there are fewer opportunities to engage in economic transactions. When the state structure is sound, when the judicial system and the police are well established and when their interventions are not often needed, it is possible to trade and do business with total strangers. Economist Adam Smith was the first person to formulate this theory, when he developed the theory of moral sentiments in 1759. It is amazing that the man who became known as the author of *The Wealth of Nations* already recognized that humans are social creatures and that this has huge influence on their economic success.



The research on oxytocin provided important input for Paul Zak's book *The Moral Molecule*, which was published in May 2012. The book is an enormous success. Paul spent the last few months travelling the world, giving lectures and promoting the book. And with success: the book is being translated into ten languages at the moment, including Spanish, Portuguese, Japanese, Chinese and Korean.