

# Hormone drug Oxytocin softens the hardest hearts

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It took three ghosts to weaken Ebenezer Scrooge's purse string, but German scientists achieved a similar effect on xenophobes using a chemical called oxytocin

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Ebenezer Scrooge woke up on Christmas morning with a heart that had been transformed from a wizened relic into a brimming vessel of generosity.

Science cannot replicate the feat of the three spirits in *A Christmas Carol*, but it can persuade xenophobes to donate money to refugees with little more than a nasal spray containing a "trust-enhancing" chemical.

Neuroscientists in Germany have found the first evidence that a bonding hormone called oxytocin can be used to make people welcome outsiders into their "in-group".

Oxytocin is thought to have evolved to help mammals bond with their children and sexual partners. Spritzing it up the noses of humans has been shown to boost their empathy, kindness and adherence to the social norms around them, although some researchers have noted that it can also turn us against strangers from other backgrounds.

A team led by Rene Hurlemann, professor of psychiatry at the University of Bonn, discovered that under the right circumstances it can overcome the instinctive hostility of "even the most selfish and xenophobic individuals" towards foreigners.

They measured the chauvinistic attitudes of 107 male students by asking them to say how strongly on a scale from one to ten they agreed with statements such as "Refugees get more from Germany than they can give back" or "The children of refugees should have the same right to go to state schools as German children do".

The participants were then given a fund of €50 (£45) and told they could choose to spend up to €1 each on 25 hard-up native German individuals or 25 struggling refugees in Germany and keep the remainder for themselves.

In one experiment, where the scientists simply squirted a dose of oxytocin up their subjects' noses, it made no difference to the more xenophobic half of their test group, who on average gave a mere €1.51 to all the Germans and €1.79 to all the refugees. They pocketed the rest.

Another experiment was similar in all respects to the first except that the participants were told how much on average their peers had donated to each individual – for example Safiye, a 24-year-old asylum seeker from Aleppo who cannot afford to buy fruit and vegetables, received 52 cents from each player.

This time the people who had started out with harder feelings towards immigrants were 74 per cent more generous towards the refugees after the oxytocin spray than they were after a placebo.

"This is quite novel," Professor Hurlemann said. "I think it hasn't been shown before. I'm very happy that we now have results showing that oxytocin can stimulate in-group members to donate to outsiders and to incorporate them into their in-group."

The results are published in the journal *PNAS*.