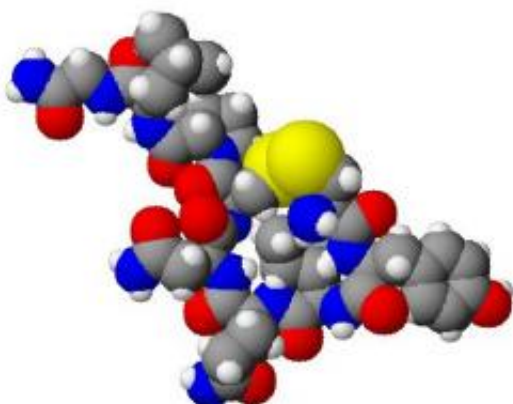


# Oxytocin improves synchronization in leader-follower interaction

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

When standing in a crowd at a concert, clapping hands along with the music on stage, it may be that people with higher levels of oxytocin are better synchronised with the beat of the music than those with lower levels of oxytocin.

A new study from Center for Music in the Brain (MIB) Aarhus University/The Royal Academy of Music, Denmark, published in *Scientific Reports* on the 8th of December 2016, shows that [participants](#) receiving [oxytocin](#) - a hormone known to promote [social bonding](#) - are more synchronized when finger-tapping together, than participants

receiving placebo. This effect was observed when pairs of participants, placed in separate rooms tapped together in a leader/follower relationship.

When people synchronise their movements together, for example by walking in time, clapping or making [music](#), they seem to like each other more and report feeling greater affiliation with each other. Oxytocin is a naturally occurring hormone that has been shown to promote social interaction, such as cooperation and affiliation. However, until now it has been unclear whether the social effect of oxytocin is a direct one, or whether oxytocin in fact primarily affects synchronisation and only secondarily social behaviours.

We set out to test these questions by measuring whether increased levels of oxytocin affected how pairs of participants synchronised together to a steady beat. One group of pairs received oxytocin through nasal spray, and another group received a placebo, also through [nasal spray](#).

Our results indicate that oxytocin indeed affects synchronisation between participants but we did not find that oxytocin influenced how much tappers liked their tapping partners. The followers in the oxytocin group were less variable in their tapping to the beat suggesting that they were better at predicting the taps of their leaders. Thus oxytocin's social effect may be explained by its role in facilitating prediction in interaction, even in the absence of subjectively experienced social affiliation.

The ability to synchronise to a musical beat is largely a human skill. Our study contributes to our understanding of how this form of human behaviour is affected by socio-biological factors, such as oxytocin and leader-follower relationships. It also highlights how music creates and maintains social cohesion in an evolutionary perspective.

**More information:** L. Gebauer et al, Oxytocin improves synchronisation in leader-follower interaction, *Scientific Reports* (2016). DOI: [10.1038/srep38416](https://doi.org/10.1038/srep38416)

Provided by Aarhus University

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