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HOW OXYTOCIN MODULATES THE HUMAN BRAIN AND BEHAVIOR

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Social skills require specific cognitive and emotional competences. Individuals with High Functioning Autism (HFA) cannot engage in social interactions despite preserved cognitive abilities. Recently, it has been suggested that oxytocin, a hormone known to promote affiliation and mother-infant bonds, may be implicated in the social deficit of HFA. We investigated the effects of intranasal oxytocin administration on the social behavior of HFA patients¹. We used a double-blind, placebo-controlled within-subject design to study social behaviour of thirteen patients diagnosed with HFA after intranasal inhalation of oxytocin compared to placebo. In one task we developed a new social interaction paradigm, based on probabilistic algorithms, where participants interacted with fictitious partners. In a second task, we measured eye movement pattern, during examination of faces. When participants interacted with fictitious partners, we found that after oxytocin inhalation, patients exhibited stronger interactions with the most socially cooperative partner, and reported enhanced feelings of trust and preference. During free viewing of faces, oxytocin selectively increased patient's gazing time on the socially-informative region of the face, i.e. the eyes. These findings suggest that oxytocin enhanced patients' capacities to process facial stimuli and to learn from social relevant cues to interact with other partners. Our results highlight the therapeutic potential of oxytocin through its action on core deficits of autism.

References:

1. Andari E, Duhamel JR, Zalla T, Herbrecht E, Leboyer M, Sirigu A (2010) Promoting social behavior with oxytocin in high functioning spectrum disorder autism. **PNAS**, 107:4389-94.
2. Mottolese R, Redoute J, Costes N, Le Bars D, Sirigu A (2014) Switching brain serotonin with oxytocin. **PNAS**, USA 111:8637-8642.
2. Andari E, Richard N, Leboyer M, Sirigu A. [Adaptive coding of the value of social cues with oxytocin, an fMRI study in autism spectrum disorder.](#) **Cortex**. 2016, 76:79-88.
3. Lefevre A, Sirigu A. [The two fold role of oxytocin in social developmental disorders: A cause and a remedy?](#) **Neurosci Biobehav Rev.**, 2016 63:168-76.