

## Reading together: The relation between the oxytocin and the reading out loud

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Nowadays, reading together is usually associated with an activity address for someone with difficulty to understand the writing codec, like the children, that is not alphabetized, or with people who have vision problems. However, it was a social activity between adults until the eighteen century (Williams, 2017). Sonneschein and Munsterman (2002) identified that the quality of affect interaction is the principal children's motivation for the interesting in books. Likewise, Peixoto and Leal (2008) show that the activity offers pleasure also to the readeradult, even if the reader does not have the habit of reading. The oxytocin is considered the hormone of love. Many studies show how the oxytocin changes in accordance with the activities and with who you are developing the action. Seltzer et al. (2010) demonstrates that the vocalization higher the levels of oxytocin in humans. The study proves that this hormone is produced in the same way with touch interaction or oral communication (without touch). Furthermore, Leslie et al. (2011) showed that the levels of oxytocin mushrooms with touch and vocal contact, but not change with a text message. The relation between the voice with the hormone was not tested yet between adults. The aim of this work is to do an experimental study, analyzing if it the level of oxytocin between couples will higher when they read out loud together, one for each other. This experiment will be done with a sample of 30 couples. The oxytocin of both (reading and listener) will be measured before and after the reading to analyze the change of the activity. The practice of reading out loud for a beloved one demands attention and dedication for both sides: the reader and the listener. Through the sharing reading, they might create a particular ritual to spend a moment that belongs only to them. Oxytocin also appears to modulate broad profiles of social and emotional behaviors in both males and females. One hypothesis is that oxytocin supports affiliative behavior. Indeed, injections of oxytocin increase prosocial behaviors in a variety of species, including primates, voles, rats, and sheep. In humans, intranasal administration of oxytocin increases generosity, trust eye gaze and the ability to infer the affective mental states of others Furthermore, assessments of plasma oxytocin in humans find that oxytocin levels relate to parent-child bonding behaviors feelings of romantic love and trust , and empathy and subsequent generosity toward strangers.

Given these literature findings, we derived two a priori hypotheses about the social-emotional functions of oxytocin. We examined individual differences at a polymorphic site in the oxytocin receptor (OXTR) gene, which is localized in single copy to chromosome 3 of the human genome . Interestingly,

OXTR knockout mice display a variety of aberrant social and emotional behaviors, including increased aggression and deficits in nurturing and social memory , that are in keeping with the two hypothesized functions of oxytocin tested here. In humans, a single-nucleotide polymorphism (SNP) of an adenine (A) or guanine (G) within intron 3 of the OXTR gene (rs53576) has been associated with autism , a disorder characterized by impairments in social interactions and communication. This genetic variation has also been associated with the degree of warm and empathic parenting displayed toward offspring . Thus, individuals with one or two copies of the A allele, when compared to those homozygous for the G allele, have an increased likelihood of an autism diagnosis and display less parental sensitivity.

According to previous studies the results are consistent with past research relying on intranasal administrations or plasma assays of oxytocin showing that empathy and stress responsivity are both influenced by oxytocin . Although of the functionality of the rs53576 OXTR polymorphism is unknown and its position within an intron suggests that it is unlikely to confer any distinctive molecular function, future work is needed to determine whether it is related to oxytocin sensitivity and OXTR signaling pathways. Nevertheless, our results and the findings of other groups suggest that probing for variations at this site may be meritorious in mixed-population gene-association studies of individual differences in social and emotional processing. Given the limitations of single-gene approaches and that all socio-emotional behaviors are influenced by multiple genes, future research should determine how the OXTR gene may interact with others involved in social and emotional processing.

The most commonly used self-report measure of dispositional empathy consists of three core facets of other-oriented empathic behavior, namely perspective taking (e.g., "I sometimes try to understand my friends better by imagining how things look from their perspective"), empathic concern (e.g., "I often have tender, concerned feelings for people less fortunate than me"), and fantasy (e.g., "I really get involved with the feelings of the characters in a novel."), all of which are positively intercorrelated, capture the broader concept of other-oriented empathy, and have been shown to predict helping for altruistic reasons. Participants rated each item from 1 (strongly disagree) to 5 (strongly agree). This 21-item composite measure of dispositional empathy had a Cronbach's alpha reliability of 0.81.To test the boundary conditions of the impact of the rs53576 OXTR polymorphism, we examined two possible



confounds, i.e., that OXTR variations are related to positive self-report bias or that they are linked to differential early-life experiences.

Using the caring scale of the Parental Bonding Instrument participants rated their father's and their mother's caregiving behavior before the participants' age of 16; the same 12 items are worded once for rating one's father and once for rating one's mother, using a five-point response scale from 1 (strongly disagree) to 5 (strongly agree). Items include "He/She could make me feel better when I was upset" and "He/She was affectionate to me." Cronbach's alpha was 0.94 for the paternal caring scale and 0.95 for the maternal caring scale.