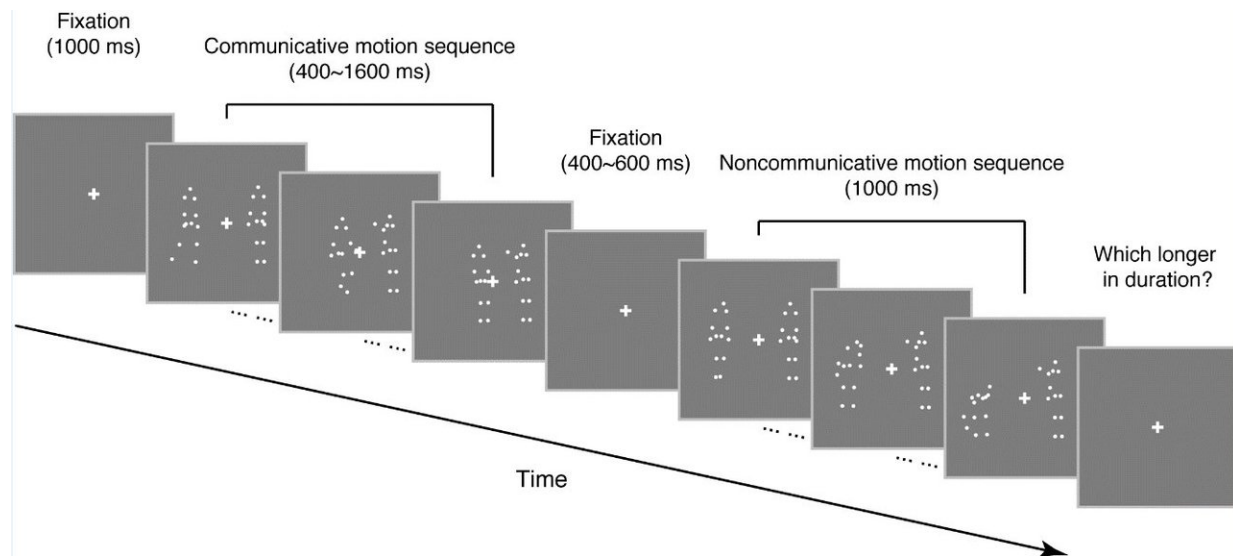


Oxytocin mediates subjective duration of social interactions

May 23 2018



Schematic illustration of an exemplar trial in the duration judgment task. (Figure 1) Credit: ZHOU Wen

"Put your hand on a hot stove for a minute and it seems like an hour. Sit with a pretty girl for an hour and it seems like a minute." As Einstein once joked, our subjective time deviates, sometimes significantly, from physical time.

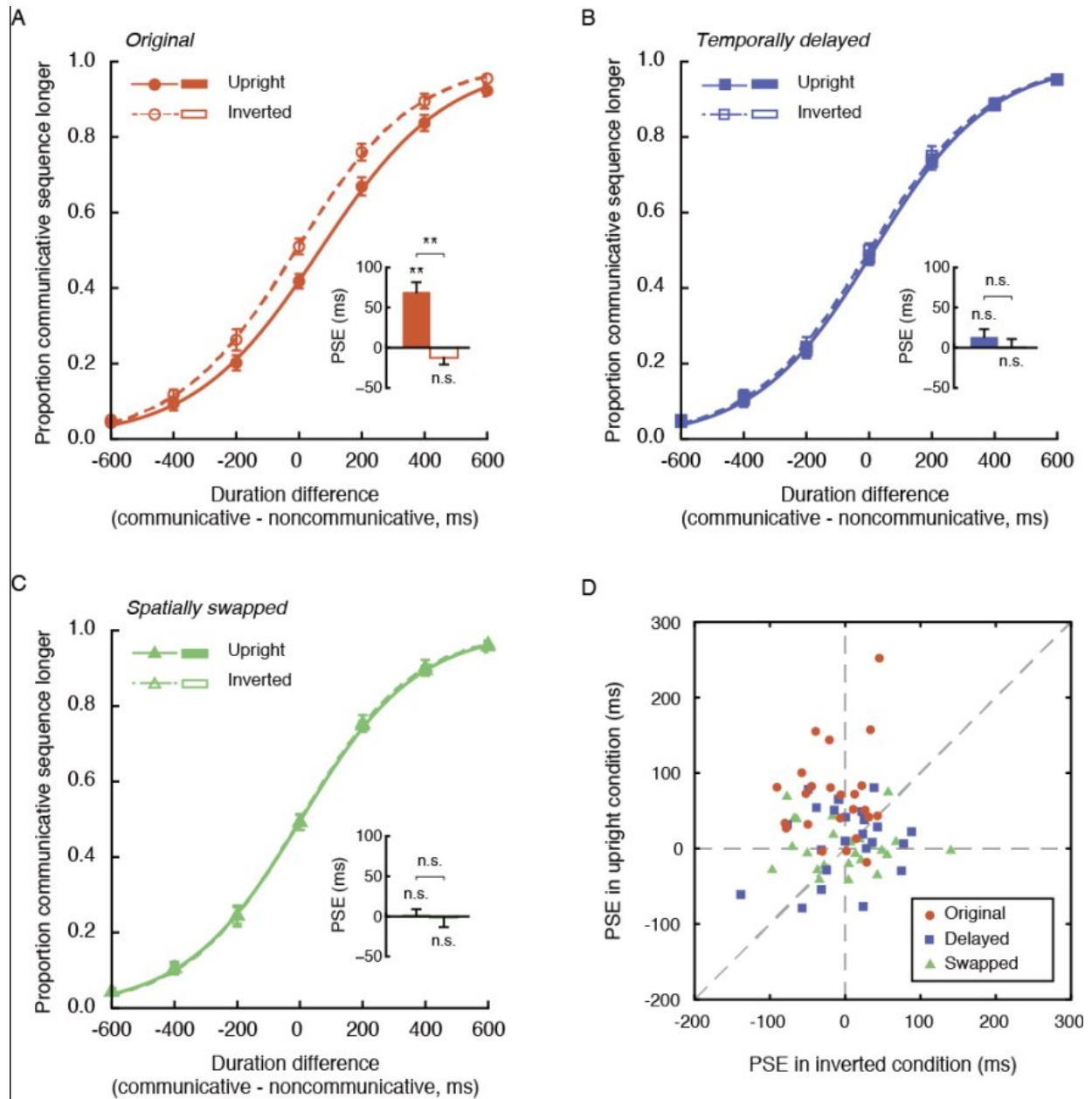
This is because the brain has no direct access to physical time and infers time from the neural representation of external events.

Subjective time is believed to be "warped" by the neural energy involved in representing sensory inputs. Its deviation from physical time has mostly been attributed to the sensory properties (e.g., size, luminance, speed, etc.) of external stimuli. But what role, if any, do we the experiencers play in our experience of time?

Psychologists ZHOU Wen, JIANG Yi and their colleagues at the Institute of Psychology, Chinese Academy of Sciences, probed this issue by examining individuals' temporal perception of social interactions and the variation among individuals, noting the gregarious nature of humans, the ubiquity of social interactions in daily life and the pronounced interindividual differences in social proficiency—a stable personality trait.

As part of this study, participants viewed two sequentially presented point-light motion sequences, one portraying two agents engaging in a face-to-face communicative interaction, the other noncommunicative, in random order (Figure 1).

One of the two motion sequences was presented for 1000 ms, the other for 400 to 1600 ms. Participants were then asked to press one of two buttons to indicate which motion sequence was longer in duration. Their duration judgments revealed a temporal compression [effect](#) (Experiment 1, Figure 2A): Motion sequences showing agents acting communicatively were perceived to be significantly shorter in duration in comparison with those acting noncommunicatively.



Psychometric functions and points of subjective equality (PSEs) for Experiments 1 (A), 2 (B), and 3(C). (Figure 2) Credit: ZHOU Wen

The effect disappeared when the motion sequences were shown upside down, when a temporal lag was inserted in between the original upright

acting agents (Experiment 2, Figure 2B), and when the two upright agents in each display were spatially swapped such that they faced in opposite directions (Experiment 3, Figure 2C).

In other words, the temporal compression effect was not due to the spatial-temporal correlation between the moves of the two agents. Could it be a manifestation of the observer's social proficiency?

The researchers assessed participants' social proficiency with the Autism Spectrum Quotient and found this to be the case: socially less proficient individuals were less susceptible to the effect than socially proficient ones (Experiment 4). Social proficiency has been linked to one's endogenous oxytocin level.

The researchers further showed that intranasal oxytocin administration promoted the temporal compression effect in socially less proficient individuals (Experiment 5). By contrast, in socially proficient individuals with overall higher levels of endogenous oxytocin, the very effect was diminished following the application of an oxytocin antagonist called atosiban (Experiment 6).

These findings highlight the idiosyncrasy of [subjective time](#) and represent an initial effort to trace it back to personality factors and their neuroendocrine origins. In the meantime, they open up an avenue for probing and manipulating automatic processing of complex social interplays at the individual level, and may lead to benefits for individuals with social deficits, e.g., those with autism spectrum disorder.

More information: Rui Liu et al, Perception of social interaction compresses subjective duration in an oxytocin-dependent manner, *eLife* (2018). [DOI: 10.7554/eLife.32100](https://doi.org/10.7554/eLife.32100)

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