Timing & Time Perception

Knowing your Heart Reduces Emotion-Induced Time Dilation

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Supplementary material

Text S1.

1.1. Visual Analogue Scale

How exactly does the number of counted heartbeats correspond to the number of your actual heartbeats on a scale from 0 to 100%?

Please show by drawing a line on the below scale

1.2. Proprioception Task and Results

1.2.1. Task

Participants were positioned upright on a chair and were presented with a tablet screen (Microsoft Surface Pro 6) on the desk in front of them. They were asked to raise their

dominant hand while keeping the center of the tablet screen right under their elbow. The tablet screen included a red dot at the center. Participants were told to tap on the red dot with the index finger of their dominant hand. Then, they were told to close their eyes and not to open them until instructed to do so. After five seconds, they were asked to raise this hand and keep it this way. After another five seconds, they were asked to tap on the screen where they think the red dot is (note that they are not yet instructed to open their eyes). The location of this tapping is recorded. Participants were then asked to raise the hand and open their eyes. On the tablet scree, they were asked to indicate the radius of a circle that they think will include their tapping response. The size of this circle was also recorded. This procedure is repeated for four times in total. Participants did not receive feedback.

1.2.2. Data Analysis and Results

The radiuses of the tapped and indicated responses were collected for four trials. The proprioceptive accuracy was calculated regarding the maximum possible radius, according to the formula:

$$\frac{1}{4}\sum\left(\frac{|\text{tapped radius} - \text{maximum radius}|}{\text{maximum radius}}\right) \quad (3)$$

Similarly, proprioceptive confidence was calculated regarding the maximum possible radius according to the formula:

$$\frac{|\text{indicated radius} - \text{maximum radius}|}{\text{maximum radius}} \quad (4)$$

A lower score would indicate participant being less confident about the given tapping response. As Meessen et al. (2016) did in a pilot study, we calculated an awareness score for each trial as:

$$1 - \frac{1}{4}\sum(|\text{proprioceptive accuracy} - \text{proprioceptive confidence}|) \quad (5)$$

Here a lower score would mean worsened judgment of one's own performance. A perfect judgment would result in 1. In case the tap was made outside of the screen, the response would be recorded as maximum possible radius, but trhis did not happen in our sample.

Table 3.

Mean and standard deviation values of proprioceptive measures

Measure	Mean	SD
Proprioceptive accuracy	0.66	0.14
Proprioceptive awareness	0.80	0.11

Proprioceptive accuracy and Pproprioceptive awareness did not correlate with PSE shift (all $p > 0.05$, BF < 1).

1.3. Temporal Sensitivity

Based on cumulative Gaussian fits, we computed Weber Fractions as an index of temporal sensitivity. We used the following formula (Kopec & Brody, 2010): {$t[p(\text{long}) = 0.75] - t[p(\text{long}) = 0.25]\}/t[p(\text{long}) = 0.5]$, in which $t[p(\text{long}) = X]$ means the time point where the probability of long responses corresponds to X. We have compared Weber Fractions between high and low arousal conditions and found that a high arousal stimulus led to greater Weber Fractions (M = 0.29, SD = 0.05) than a low arousal stimulus (M = 0.26, SD = 0.04; $t(24)$ = 5.12, $p < 0.001$, d = 1.02, BF = 779). As we did with the accuracy measure of timing (PSE), we calculated how temporal sensitivity has changed from low arousal to high arousal stimuli on an individual level. To do so, we subtracted the Weber Fraction for low arousal from the

Weber fraction for high arousal. We have found that this shift index did not correlate with any interoceptive or proprioceptive measures (for all pairs, $p < 0.05$, BF < 1).

Reference

Kopec, C. D., & Brody, C. D. (2010). Human performance on the temporal bisection task. *Brain Cogn.*, *74*, 262–272. doi: 10.1016/j.bandc.2010.08.006