

Significantly higher interoceptive awareness was found in *highs* with respect to *mediums* and *lows*, whereas significantly lower BIS scores were found in *highs* and *lows* with respect to *mediums*. In addition, significant correlations between MAIA and Carver scales were found in *mediums* (who better represent the general population), but not in *highs* and *lows*. The *highs'* and *lows'* few significant correlations between MAIA and BISBAS differed between each other, which can be accounted for by not studied traits as well as by the hypnotizability-related structural and functional brain differences in the insula and cerebellum which are relevant to both interoception and emotion.

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The importance of fMRI functional connectivity analysis of a motor network in patients with movement disorders after severe traumatic brain injury

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An unbiased assessment of motor function in patients with severe traumatic brain injury (STBI), followed by movement disorders in 2 out of 3, is of current interest.

Objective: to evaluate the functional activity of a corticospinal motor network after STBI, comparing fMRI connectivity in resting state (RS) and passive movement.

Methods: The experimental group consisted of 20 patients with right-sided hemiparesis after STBI; the control group, of 15 healthy volunteers. The degree of hemiparesis was evaluated on the muscle strength scale.

Each examination included fMRT and DTI 3T.

fMRI was recorded in RS with closed eyes and with passive right fist clenching (by experimenter). There was conducted a comparative group analysis of the functional connectivity (FC) of a corticospinal tract's motor network in RS and movement by the CONN program. The network included areas involved in right arm's fMRI responses, such as the left motor cortex, additional motor cortex, right cerebellum hemisphere, and also the right motor cortex. FC intensity between the selected points and their significance was assessed.

DTI estimated a state of the corpus callosum (CC), calculating fractional anisotropy (FA) in 7 topographic zones in the occipital-frontal direction. The Spearman correlation coefficients between the regional FA of the CC and hemiparesis severity were calculated.

Results: FC intensity for homologous pairs of ROI within a given motor network in RS and movement was close in degree. FC tended to weaken from the norm to gross hemiparesis. In RS, those changes were almost linear in most pairs (4 of 6). In passive movement, the values for 1 out of 6 connections (between left and right motor cortex) decreased linearly, with hemiparesis increase.

Thus, both in RS and movement, FC-fMRI changes between symmetric motor cortex regions were most clearly associated with hemiparesis severity. This result agrees with DTI data on a significant and high correlation between some regional FA of the CC, especially in Genu (SCC 0.71), and hemiparesis severity.

Conclusion: The evaluation of the FC in a corticospinal motor network, especially of a paretic hand, is informative in case of STBI. In RS, it has a greater diagnostic potential. In movement, changes in spatial organization of FC, as hemiparesis increases, may rather reflect the plasticity of the system studied.

The functional interaction between symmetrical motor cortex regions is shown to be important in the development of posttraumatic hemiparesis, and FC, associated with the CC state.

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Unconscious detection of verbal and non-verbal ambiguous stimuli

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Ambiguity plays an important role in our everyday cognitive experience. Since the 1980s, the neural bases for the perception of ambiguous information have been investigated but remains poorly understood. In our previous research, an increase of the N400 ERP component was found to be a common response for the perception of two different types of ambiguous stimuli: "canned" verbal jokes and ambiguous figures (Shcherbakova, Filippova, 2016; Filippova, Shcherbakova, Shtyrov, 2018). The current experiment aimed to understand the relationship between the error related negativity (ERN) component arising from jokes and ambiguous figures mistaken for non-humorous texts and non-ambiguous figures.

Fourteen participants (9 females) went through two similar experimental procedures with 36 ambiguous and 36 non-ambiguous figures; 14 verbal jokes and 14 similar but non-humorous short stories. Firstly, participants were presented with figures of both types and asked to identify whether each figure was ambiguous or non-ambiguous. We recorded ERPs that were time-locked to each answer about ambiguity/non-ambiguity of the figure presented. Secondly, participants were presented with the verbal stories and asked to identify whether each story was a joke or not. In this case, ERPs were time-locked to each answer about the key phrase of a joke/non-joke presented word-by-word on the computer screen after the whole text.

But we found an increase of the ERPs' negativity in ambiguous figures that were mistaken for non-ambiguous ones in the ERN time window (Fz ($F(3,622) = 12,6; p < 0.00$) and Cz ($F(3,625) = 6,96; p < 0.00$)). Also, the results revealed no increase of the ERPs' negativity in verbal jokes that were mistaken for non-jokes in the ERN time window. The results show that participants appeared to be sensitive (without awareness) to ambiguous figures that were identified as non-ambiguous ones. The level of this unconscious sensitivity is therefore reflected by the increases in negativity.

When a participant cannot correctly identify ambiguous stimulus at a conscious level, increases in negativity may be indexing greater violations of incongruence within an internal representation of meaning. These violations may precede semantic reversion of ambiguous figures and the understanding of a joke's meaning.

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