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## PHENOMENOLOGICAL EXPERIENCE AND NEUROPHYSIOLOGICAL CORRELATES OF TRANCE IN HEALTHY INDIVIDUALS

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**Background:** Trance is a modified state of consciousness that has been used for millennia in ancient traditions. Almost no scientific research has investigated the phenomenology and the neuronal underpinnings of trance. Self-induced cognitive trance is inherited from shamanic practice and can be practiced by any individual.

**Aims:** Characterize the phenomenological experiences of trance and measure its neurophysiological signatures.

**Methods:** We included 27 experts in cognitive trance. Each expert underwent a series of high-density EEG/ECG/breathing recordings: during normal wakefulness at rest, with auditory stimulations and with an imaginary task (previous intense trance), as well as during trance with and without auditory stimulations. Behavioural assessments were conducted after each condition, including a free recall, levels of arousal, absorption, and dissociation, as well as the Greyson scale and the Mystical Experience Questionnaire. We also quantified trance intensity. Behavioural analyses were expressed as mean±std, analyzed using t-tests. EEG preprocessing and statistical analyses included spectral power, functional connectivity, and complexity. Heart rate and respiration measured were also calculated.

**Results:** Phenomenological results showed that all participants entered in trance and rated the intensity of the experiences as high. During trance, they felt more awake, more absorbed and more dissociated. Their trances were comparable to a near-death experience, with mystical-type experiences. Analysis of the text corpora (Iramuteq) showed that trance had a specific speech compared to rest, auditory stimulations and imagination. The length of the subjects' reports (i.e., total word count) was higher for trance compared to the other conditions, reflecting more richness and vividness in trance. Neurophysiological results showed that trance was associated with increased power spectral density in high and low frequency bands, and changes in functional connectivity and complexity. In trance, heart rate increased while breathing decreased compared to the other conditions.

**Conclusion:** These results show phenomenological and neurophysiological changes in trance, different from the other conditions.

**Keywords:** Cognitive trance, Modification of consciousness, Phenomenology, Neurophysiology, EEG

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