UNRAVELLING THE NEURAL DYNAMICS OF HYPNOTIC SUSCEPTIBILITY: APERIODIC NEURAL ACTIVITY AS A CENTRAL FEATURE OF HYPNOSIS

Mathieu Landry[1], Jason da Silva Castanheira[2], Jérôme Sackur[3], Amir Raz[4], David Ogez[5], Pierre Rainville[6] & Karim Jerbi[1,7,8]

[1] Département de psychologie, Université de Montréal, Canada; [2] NEURO, McGill University, Montreal, Canada; [3]Laboratoire de Sciences Cognitives et Psycholinguistique, ENS, PSL University, EHESS, CNRS, Paris, France; [4]Institute for Interdisciplinary Behavioral and Brain Sciences, Chapman University, Irvine, CA, USA.; [5]Maisonneuve-Rosemont Hospital, Montreal, Canada; [6]Faculty of dental medicine, Université de Montréal, Canada; [7]MILA - Quebec Artificial Intelligence Institute, Montreal, Canada; [8]UNIQUE Center (Quebec Neuro-AI Research Center), Montreal, Canada

Grant 280/16

Background: The ability for hypnotic responding is marked by inter-individual differences in the population, while the neural underpinning of this variability remains elusive.

Aims: The current work leveraged multivariate statistics and machine learning to probe the neural dynamics underlying hypnotic susceptibility differences.

Method: We assessed the efficacy of linear classifiers in distinguishing between high and low hypnotic susceptibility using neural features from resting-state electroencephalography (EEG) both pre- and post-hypnotic induction. Grounded in prior EEG studies on hypnotic phenomena, our focus encompassed both aperiodic and periodic components of the power spectrum, and graph theoretical measures derived from connectivity patterns.

Results: Several neural features from both pre- and post-induction significantly differentiated susceptibility levels, which underscores the complex dynamics of hypnotic phenomena. Based on model comparisons and feature ranking, we discerned the pre-induction slope of the power spectrum's aperiodic component as the primary discriminating neural feature.

Conclusions: This novel finding not only resonates with the increasing emphasis on this neural component in broader EEG research but also promotes the idea that the primary neural distinction in hypnotic susceptibility is evident at baseline, even before hypnosis. Our findings support the idea that hypnotic susceptibility might be an inherent trait reflected in the aperiodic component of the EEG signal.

Keywords: Hypnosis, Hypnotic susceptibility, Electroencephalography, Machine learning, Multivariate pattern classification.

Publications:

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E-mail contact: mathieu.landry@umontreal.ca