Auditory oddball paradigm during hypnosis

11.11.2014

Ruben G.L. Real, Andrea Kübler

Institute of Psychology, University of Würzburg

ruben.real@uni-wuerzburg.de, andrea.kuebler@uni-wuerzburg.de

Experimental paradigm

The dataset consists of 4 EEG recordings from two healthy subjects (S01: right-handed male; S02: right-handed female).

EEG recording

EEG was recorded with a sampling rate of 512 Hz (band pass 0.01-100 Hz, notch 50 Hz) using active electrodes (LADYbird, g.tec medical engineering, Schiedlberg, Austria; nose reference). Vertical and horizontal eye movements were recorded with two pairs of electrodes at the outer cantii and above and below one eye.

Procedure

The subject sat in a comfortable reclining chair. Stimuli were presented in two conditions. In an active condition, the subject was told to listen to a tone stream, and that he/she should count the occurrence of the odd (low) tones. In a passive condition, the subject was told to listen to a series of tones and that he/she would just have to listen to the tones.

After the first recording ("PRE"), the subject listened to an Erickson-type hypnotic induction, where the subject imagined being on a ship in dense fog, making hearing and seeing difficult. Then, the EEG experiment was repeated (datasets "POST"). Finally, the subject listened to instructions designed to take back a hypnotic state.

Stimuli

Via in-ear headphones (E-A-RTONE Gold, Auditory Systems, Indianapolis, Indiana), the subject was presented with a binaural stream of 420 short complex high (440 + 880 +1760 Hz) tones into which 60 short complex low (247 + 494 + 988 Hz) tones were pseudo-randomly interspersed. Stimulus duration was 50 ms, linear rise/fall time was 5 ms, intensity was 70 dB, and SOA was 900 ms.

Data file description

Data is stored in Matlab's .mat-file format. Each file includes a cell-array "data" which includes 4 structs corresponding to the four recordings. Within each struct, the following variables are defined.

- **X**: the recorded EEG data matrix (samples x channels)
- **y**: the stimulus classes (numeric vector)
- **trial**: when the stimulus was presented (numeric vector)
- **classes**: strings identifying the stimuli (cell array)
- **fs**: sampling frequency (scalar)
- **subject**: subject identifier (char vector)
- **condition**: active vs. passive (cell array)
- **type**: pre or post hypnosis (char vector)