

EEG Data of Human Face Video Observation in Ambiguous Lie/Truth Intent Execution

Contact: Yiyu Chen {yaya2808@korea.ac.kr}

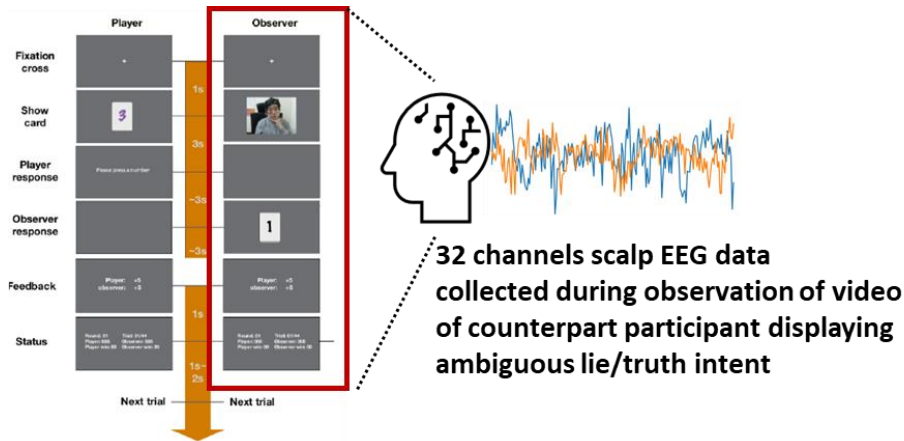


Figure. Screenshot of Full Paradigm

Experimental paradigm

This EEG dataset was collected as part of a human lie-detection study based on EEG signals. In this experiment, participants were asked to play a card game of deception with their counterpart participant. Their primary role was to observe the other player making truthful/deceptive decisions via a face video camera, and to subsequently make inferences of their actual intentions. In each trial the counterpart would see a card with a certain number and report the number either truthfully or falsely to the observer, depending on whether the prompt instructed a certain choice or left it to their own inclination. The observer would, after observing their counterparts' face video during decision making as well as their subsequent reported number, decide whether their counterpart was responding truthfully or deceptively. The game had 11 rounds in total with 44 trials within each, with 30 seconds long break between each round. Within these 44 trials, counterparts decided spontaneously (voluntarily) in half, truthfully as instructed in 11, and deceptively as instructed in the remaining 11. The trial orders were randomly shuffled. The observer would switch roles with the counterpart after one iteration of the game.

The stimuli in the card game (shown to the counterpart, not the observer) consisted of 6 numbers (range 1-6) displayed in 3 different colors. The colors would indicate whether the counterpart should respond truthfully or deceptively as instructed or respond completely voluntarily. The colors were black, purple, and blue, but the assigned instructions for each color would differ by participant. In each trial the observer participant would first see a fixation cross, then a facial video feed of their counterparts in the center of the screen, in which they are being shown their cards and making their truth/deception decision. After 3 seconds the counterpart's decision would be shown to the observer in a card with the number painted black, and the observer must respond with their guessed intentions of the counterpart as either "truth" or "lie." After the observer made their decision a feedback screen would appear, noting whether the observer was correct or not. Depending on what the instruction for the counterpart was as well as whether the observer guessed the truthful/deceptive intention correctly, scores would be assigned to both the observer

and the counterpart. When the counterpart was lying, the winner (observer if they correctly guessed, counterpart otherwise) would gain 15 points while the loser lost 5 points. When the counterpart was being truthful, the winner gained 10 points while the loser lost 5 points. The feedback would also contain total scores earned for the observer and the counterpart, as well as the number of “won” trials, rounds and game progress.

Data Acquisition and Description

24 healthy participants (12 males and 12 females, aged 19-34, mean 25 years (S.D. 4.34)) took part in the experiment. All participants had normal or corrected normal vision with no history of neurological disease or injury. Participants were students in Korea University who volunteered to take part in the study. All participants did not have prior exposure to the card game paradigm. Participants were briefed prior to the experiment and provided written informed consent before the experiment, and received monetary rewards for taking part in the study. Wet EEG Electrodes were used for data recording with a sampling frequency of 500hz using BrainAmp amplifiers connected to EasyCap passive electrodes (Brain Products, Munich, Germany). 31 EEG electrodes and one EOG electrode were used for the measurement, namely: Fp2,F9,7,3,z,4,8,10, FC5,1,2,6, T7,8, C3,z,4, CP5,1,2,6, P7,3,z,4,8, PO3,4, O1,z,2, and EOGv1 (EOG electrode, attached on skin below the right eye). Projected bipolar EOG channels were derived post-experiment from Channel F9, 10, Fp2, and EOGv1 for horizontal and vertical EOG data. The remaining 28 EEG electrodes were nasion-referenced, with a forehead ground placed in Fpz. Impedance in all electrodes were kept below 10k Ohm during the experiment. Setup time for electrodes were around 35 minutes on average. The datafile is in Matlab compatible format (v 7.3 .mat extension). It should be noted that importing such files on python requires HDF5 format compatible I/O libraries. All data were preprocessed and epoched to a range of -500ms to 300ms, with respect to the card stimulus onset of the counterpart participant. Using the dataset in matlab may require BCI toolbox and Fieldtrip.