cally significant difference among them ($F = 0.592$; p-value < 0.44). So, it seems that when the EOG signals are included during the ICA decomposition, ICA separates more properly the ocular artifacts. But until now, there is not any clear evidence proposing for sure the use of EOG signals in ICA.

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Audiovisual stimulation to influence alpha brain oscillations: An EEG study of gender differences

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We focused on gender differences regarding audiovisual stimulation on the alpha activity, as measured by the EEG. The bipolar "double banana" montage was used, placing nineteen scalp electrodes according to the 10–20 system. Subjects were 30 healthy, right handed, individuals, 15 males (mean age: 23.47 ± 3.39) and 15 females (mean age: 22.8 ± 3.74). The protocol consisted of 12 audiovisual stimuli: an 8 Hz binaural beat (right 450 Hz–left 442 Hz) combined with an 8 Hz flickering light at 4 different colours (RGBY), a 10 Hz binaural beat (right 450 Hz–left 440 Hz) combined with a 10 Hz flickering light at 4 different colours (RGBY), and 4 placebo stimuli (100 Hz flickering RGBY light combined with 100 Hz at both ears). The duration of the experiment for each subject was 653 s. Results were analyzed using the ERD/ERS method for lower (8–10 Hz) and upper (10–12 Hz) alpha band. Statistical analysis highlight significant gender differences concerning the stimuli' effect at P4-O2 channel at specific time intervals:

1. Lower alpha: Green 8 Hz (0–300 ms) and Placebo red (500–900 ms) resulted in synchronization for females and desynchronization for males. Green 10 Hz synchronized (0–200 ms) for males and desynchronized for females.
2. Upper alpha: Placebo blue resulted in synchronization (200–600 ms) for females and desynchronization for males. Green 10 Hz synchronized (600–800 ms) for males while it desynchronized for females.

Enhancing spatial recognition memory in five-year-old children through differential outcomes

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Background: Previous studies have reported that delayed face recognition is facilitated in adults and in aging people when each face to be remembered is paired with its own unique reinforcer. In the present study, we extend this differential outcomes procedure (DOP) to five-year-old children who were asked to remember spatial locations.

Methods: Two computerized spatial working memory tasks were used. Either short (1 or 5 s) or long (10 or 15 s) delays were interposed between the sample and the comparison stimuli. In the differential outcomes condition each location was paired with its own outcome. By contrast, in the non-differential condition outcomes were randomly arranged.

Results: The Differential Outcomes Effect (DOE) was evident in both experiments. That is, participants showed a better terminal accuracy when differential outcomes were arranged.

Conclusions: To our knowledge this is the first demonstration that differential outcomes can enhance spatial recognition memory performance in children. This finding, along with those of Hochhalter et al. (2000) and López-Crespo et al. (2009) draw attention to the potential of this procedure as a memory aid technique.

Neuropsychological assessment of semantically bound information processing: A case report

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Background: During the past ten years, working memory (WM) literature focused on the ability to bind information across domains in order to form integrated units [1]. In particular, previous studies suggested that information binding may be supported by the hippocampal structures [2].

Objective: To provide insight into the process of binding semantically related information through neuropsychological assessment of a patient with extensive damage in memory circuits.

Methods and results: ThV, aged 45, suffers from a severe amnesic disorder due to HSV encephalitis. Brain MRI scans revealed extensive damage of the temporal lobes, particularly affecting their medial parts, the insula and the orbito-frontal cortices. WM was investigated in two sequential experiments.

Experiment 1: Four tests were administered in order to assess separately the four WM components (Digit Span Forward, Corsi Span Forward, Digit Span Backwards and WMS-III-Logical Memory Immediate). Immediate prose recall was severely disturbed while performance in the other tests was normal. These results could be interpreted either in terms of an "episodic buffer" disruption or as reflecting a wide deficit in long-term memory. Accordingly, Experiment 2 was conducted in order to (a) minimize the contribution of long-term memory and (b) discriminate between formation and maintenance of bound information.

Experiment 2: Three 9-word lists were constructed and administered into three different conditions: 1. Processing of semantically related-bound words. 2. Processing of semantically related-unbound words. 3. Processing of semantically unrelated words. The results revealed that while ThV's was still able to recall semantically related lists of words (span = 7), he was no longer able to create semantically bound information (condition 2, span = 5).

Conclusions: Our data suggest that temporal and frontal lobe regions are crucial in order to form and maintain, respectively, bound information. The specific role of hippocampal structures is further discussed.