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The advantage of fear stimuli in accessing visual awareness

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Introduction Several studies have shown that evolutionary relevant fear stimuli hold a privileged access to the fear module, an independent behavioral, psychophysiological and neural system that is automatically and selectively activated, and is relatively encapsulated from more advanced human cognition. However, to the best of our knowledge no study has yet directly assessed whether such stimuli are granted a facilitated access to visual awareness, compared to stimuli without such evolutionary relevance.

Objective In the present study we used an interocular suppression technique, the Continuous Flash Suppression, known to reduce the activity along the geniculostriate pathway and to strongly suppress processing in the visual cortex.

Aim Our goal was to investigate whether ecologically relevant fear stimuli (snakes and spiders) overcame suppression and accessed awareness to a larger extent than non-evolutionary relevant animal stimuli (birds).

Method Thirty university students volunteered to participate. Participants were asked to identify the screen quadrant in which the stimulus was presented in order to ensure that there was indeed a conscious processing.

Results The results confirmed our hypothesis by showing an advantage of fear stimuli (snakes and spiders) over the control stimulus (birds) in emerging from suppression into awareness, which was evidenced by significantly shorter response times.

Conclusions Our findings support the notion that evolutionary relevant stimuli hold a privileged access into awareness, most likely involving a direct brainstem-thalamic route to the amygdala. Importantly, they contribute to elucidate the functions and mechanisms of the fear system and may have important implications for understanding emotional disorders, since many of these involve the fear system.

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Alterations in retinal processing in regular cannabis users

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Introduction Cannabis is one of the most prevalent drugs used worldwide. However, the neural consequences of cannabis remain poorly understood. There is a need for a rapid improvement of the scientific knowledge on the cerebral impact of cannabis use. Since the retina is an easy-to-access part of the central nervous system, it can reflect the neurochemistry of the brain.

Objectives Considering the anatomical and functional distribution of the cannabinoid system in the retinal ganglion cells, the objective of this study was to assess whether the regular use of cannabis could affect the ganglion cells functioning.

Aims Assessment of the ganglion cells function in regular cannabis users compared to healthy controls.

Methods Recordings of pattern electroretinogram (PERG) were performed in regular cannabis users and healthy controls using standard of the International Society for Clinical Electrophysiology of Vision (ISCEV). The amplitude and implicit time of the PERG N95 were assessed.

Results The N95 implicit time of PERG was significantly decreased in regular cannabis users compared to healthy controls.

Conclusions We found alterations in the ganglion cells function in regular cannabis users, as showed by the increase in N95 implicit time. The ganglion cells represent the ultimate retinal relay before the visual information is relayed to the brain and, according to these results, we suppose that the signal elicited by these cells and transferred through the visual pathways is altered in cannabis users. A direct action of exogenous cannabinoids in the retinal glutamatergic transmission is discussed.

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Characteristics of selected cognitive functions in patients with systemic lupus erythematosus using Cambridge neuropsychological test automated battery

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Introduction Cognitive dysfunction in patients with systemic lupus erythematosus affects 10–36% of them.

Objective To determine a profile of selected cognitive functions in systemic lupus erythematosus.

The aim To investigate and characterize selected cognitive parameters in patients with systemic lupus erythematosus (SLE) using a standardized, comparable and reproducible computer-based method.

Material and methods The study included 25 patients with SLE. For neuropsychological assessment, the Cambridge Neuropsychological Test Automated Battery was used. Following parameters were investigated: mean latency and mean error in motor screening (MOTML, MOTME), big little circle (BLC), paired associated learning (PAL), problems solved in minimum moves in stockings of Cambridge (SOC PSMM) and graded naming test (GNT). Results were referred automatically to determined ranges of norms matched according to age and gender.

Results In patients with SLE results displayed by median and upper and lower quartiles were as follows: MOTML = 1.1 (0.9–1.34), MOTME = 0.41 (0.31–0.52), BLC = 0.16 (0.16–0.18), PAL = −0.43 (−1.28; −0.18), SOCPSMM = −0.62 (−1.19–0.04), and GNT = −0.8 (−1.6; −0.32).
MOTML correlated negatively with MOTME ($r = -0.51$), MOTME correlated with SOCPSMM ($r = 0.41$), and PAL correlated with GNT ($r = 0.48$) ($P < 0.05$).

Conclusions In our study, predominant abnormalities were those related to lexical and semantic memory, revealed by the GNT, spatial planning and spatial working memory, assessed by the SOC,