

successful self-regulation was also associated with some psychological differences and types of individual performance strategies. Thus, the background spatiotemporal VEP patterns, and especially the relationship between VEP components in the central and occipital recordings may predict the success in the self-regulation of VEP parameters in our experiments. As in previous studies, these relationships as well as our data on some personal questionnaires and EEG recordings indicate that our "successful" subjects had relative prevalence of the verbal thinking.

Dimensional EEG complexity and performance during creative thinking

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Creativity is a distinct category of adaptive mental functioning that has limited overlap with intelligence. Reliable indications of creativity are provided by tests of divergent thinking, however, surprisingly little is known regarding its biological foundations. Attempts have been made to distinguish manifestations associated with creative thinking in the ongoing electroencephalographic (EEG) activity. Measures of dimensional complexity of the EEG activity proved to be very sensitive for the discrimination of cortical processing invoked by tasks of divergent creative thinking as compared with tasks requiring convergent analytical thought.

In 28 healthy young men the EEG was recorded at frontal, central, parietal, and occipital locations while solving tasks of divergent and of convergent thinking, and during mental relaxation. During divergent thinking the EEG's dimensional complexity was clearly increased in comparison to convergent thinking. Dimensional complexity during divergent thinking was compared between subject groups who obtained high versus low performance scores during the respective divergent thinking tasks. Surprisingly, EEG complexity was generally lower in subjects scoring high on the divergent thinking tests than in subjects with poor performance, in particular over frontal cortical areas.

Based on Hebb's view of neuronal cell assemblies as functional processing units, the results indicate that creative thinking involves concurrent activation of a greater number of independently oscillating processing units than analytical thinking. The finding of lower dimensional complexity in subjects with higher scores on the divergent thinking tasks suggests that controlled allocation of attentional resources was additionally required for the maintenance of good and the inhibition of inappropriate ideas in working memory, i. e., for efforts to rehearse and evaluate ideas. Thus, the behavioral scores of creative output do not primarily reflect the ongoing operations during creative divergent thinking.

Induction of olfactory sensitivity in women with specific anosmia to androsterone

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By training people with specific anosmia over 6 weeks to the volatile steroid androsterone Wysocki et al. showed that 50% of the trained subjects learned to smell androsterone. However, the authors did not differentiate between men and women.

Considering possible gender effects in the following study only the inducibility of olfactory sensitivity to androsterone in women was investigated. For this examination three experimental groups were tested: trained anosmics (AT), untrained anosmics (A), and untrained osmics (O).

All subjects were screened for unspecific as well as specific anosmias. Unspecific hyposmia was excluded by presenting the odor of pyridine prior to the presentation of androsterone. In two experimental sessions (t_1 and t_2) androsterone sensitivity was assessed by the olfactory detection threshold for this odor, carried out by a 2-alternative-forced-choice staircase detection procedure according to Doty (1991). Both t_1 and t_2 were set during menstruation to control for possible variations in olfactory acuity due to the menstrual cycle. A concentration series (16 steps) of androsterone, diluted in propanediol, served as stimulus material (step 1: 1.25 mg/ml, step 16: 0.0000381 mg/ml). Subjects were regarded as anosmics until step < 4 (0.156 mg/ml). At the beginning of the training, small flasks containing 0.3 ml of a high concentration of diluted androsterone (1.25 mg/ml) were distributed to all members of AT. During the whole training period, one cycle length, subjects smelled that dilution once a day.

Preliminary results show that about 83.33% of the AT-group developed the ability to perceive androsterone, whereas the members of the A-group remained anosmic. With one exception the changes from t_1 to t_2 in the O-group were negligible. At present AT- and A-group are not complete. In every group seven subjects will be investigated.

The mean threshold value of AT at t_2 is considerably higher than at t_1 or that of A at t_2 without however reaching the mean value of O. With about 83.33% the rate of sensitivity induction is clearly higher than that revealed by the study from Wysocki et al. (1989). The results indicate that androsterone sensitivity is probably easier to induce in women than in men. To verify this hypothesis, further research is needed. Furthermore, it would be interesting to examine whether extending the training period would improve threshold values in AT up to a level more similar to the values of group O.