
Disturbed regulation of wakefulness as a pathogenetic factor in affective disorders and ADHD

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Within the vigilance regulation model the hyperactivity and sensation seeking observed in overtired children, ADHD and mania are interpreted as an autoregulatory attempt to stabilize vigilance (central nervous arousal) by increasing external stimulation. Correspondingly the withdrawal and sensation avoidance in major depression is interpreted as a reaction to a state of tonically high vigilance (1, 2). Using an EEG-based algorithm to classify automatically short EEG-segments into different vigilance stages as observed during the transition from active wakefulness to drowsiness and sleep onset (VIGALL), both patients with ADHD and mania show an unstable vigilance regulation with rapid drops to lower vigilance stages under quiet rest. The contrary was found in unmedicated patients with major depression (2). Studies will be presented supporting the validity of VIGALL (simultaneous EEG-fMRI and EEG/FDG-PET studies, as well as the neurophysiological, clinical and predictive validity of the vigilance regulation model of affective disorders. Among the far reaching consequences of the vigilance model is the question whether psychostimulants have similar beneficial effects in mania as observed in ADHD (3), an aspect which is presently studied in an international, randomized controlled trial (4).

1) Hegerl U & Hensch T 2012, *Neurosci Biobehav Rev*

2) Hegerl U et al 2011, *World J Biol Psychiat*

3) Schönknecht P et al 2011, *Biol Psychiatry* (in press)

4) Kluge M et al 2013, *BMC Psychiatry*, doi: 10.1186/1471-244X-13-71