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Physiological and psychological stress responses in adults with attention-deficit/hyperactivity disorder (ADHD)

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Summary

According to self-report and unsystematic observational data adult patients with attention-deficit/hyperactivity disorder suffer from increased vulnerability to daily life stressors. The present study examined psychological and physiological stress responses in adult ADHD subjects in comparison to healthy controls under laboratory conditions. Thirty-six subjects (18 patients with DSM-IV ADHD diagnosis, 18 sex- and age-matched healthy controls) underwent the Trier Social Stress Test (TSST; Kirschbaum, C., Pirke, K.-M., Hellhammer, D.H., 1993. The "Trier Social Stress Test"—a tool for investigating psychobiological stress responses in a laboratory setting. Neuropsychobiology 28, 76–81), a standardized psychosocial stress protocol which contains a stress anticipation phase and a stress phase with a free speech assignment and subsequent performance of a mental arithmetic. Physiological stress measures were salivary cortisol as an indicator of the HPA axis, heart rate (HR), and time- and frequency-domain heart rate variability (HRV) parameters. Subjective stress experience was measured via self-report repeatedly throughout the experimental session. In line with previous theoretical and empirical work in the field of childhood ADHD, it was hypothesized that the ADHD and control group would exhibit comparable baseline levels in all dependent variables. For ADHD subjects, we expected attenuated responses of the physiological parameters during anticipation and presence of the standardized stressor, but elevated subjective stress ratings. Hypotheses were confirmed for the baseline condition. Consistent with our assumptions in regard to the psychological stress response, the ADHD group experienced significantly greater subjective stress. The results for the physiological variables were mixed.

While ADHD subjects revealed an attenuated HR during the stress phase, no significant group differences were found for the other parameters, although a trend was observed for both the low frequency/high frequency (LF/HF) ratio of the HRV power spectral analysis and salivary cortisol (the latter possibly indicating generally lower cortisol levels in ADHD subjects). In summary, the present findings are the first to demonstrate a significant alteration of a specific physiological stress measure (HR) and, more clearly, of psychological aspects of the stress response in adults suffering from ADHD. In regard to the physiological stress response, it is recommended that future studies employ larger sample sizes and a more comprehensive range of physiological stress parameters. Additionally, the issue of transferability of laboratory results to real life stressors needs to be addressed.