CHRONIC STRESS INDUCES A HYPOREACTIVITY OF THE AUTONOMIC NERVOUS SYSTEM AND IMPAIRS COGNITIVE PERFORMANCE IN BUSINESS EXECUTIVES

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Relevant studies about stress have focused on the response of either the HPA axis or the ANS to a stimulus that induces stress; the HPA axis is evaluated via cortisol levels, which indicate perceived stress overtime, and the ANS is evaluated using salivar alpha-amylase (sAA) or catecholamines levels, which indicate acute arousal. The present study examined the incidence of chronic stress in business executives (109 subjects: 75 male, 34 female) and its relationship with cortisol levels, cognitive performance, and autonomic nervous system reactivity after an acute mental stressor. Blood samples were collected from the subjects to measure cortisol concentration. After the sample collection, the subjects completed the Lipp Inventory of Stress Symptoms for Adults and the Stroop Color-Word Test to evaluate stress and cognitive performance levels, respectively. Saliva samples were collected prior to, immediately after, and five minutes after the test. At rest, the subjects with chronic stress showed higher cortisol levels. No differences were found between the stressed and non-stressed subjects regarding salivary amylase activity prior to test. Chronic stress also impaired performance on the Stroop test, which revealed higher rates of error and longer reaction times in the incongruent stimulus task. For the congruent stimulus task of the Stroop test, the stressed males presented a higher rate of errors than the non-stressed males and a longer reaction time than the stressed females. After the acute mental stressor, the non-stressed male group showed an increase in salivary alpha-amylase activity, which returned to the initial values five minutes after the test; this ANS reactivity was not observed in the chronically stressed male subjects. This study is the first to demonstrate a blunted reactivity of the ANS when male subjects with chronic psychological stress were subjected to an acute mental stressor, and this change could contribute to impairments in cognitive performance.

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