

Exhaustion syndrome leaves measurable changes in the brain

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Exhaustion syndrome, also called burnout and exhaustion depression, leaves objectively measurable changes in the brain – including reduced activity in the frontal lobes and altered regulation of the stress hormone cortisol. This is shown in a new dissertation from Umea University in Sweden.

Certain personality traits heighten susceptibility to psychiatric disorders. Therefore a research team at Umeå University wanted to study whether this patient group had any susceptibility factors that could explain the development of their disorder. The patient group is distinguished by being anxious and pessimistic, with a weak sense of self, which is common in many psychiatric disorders. What was special about this group was that they stood out as persistent, ambitious, and pedantic individuals.

Being ambitious, fastidious, and overachieving also appears to make a person more prone to exhaustion syndrome. According to Agneta Sandström's dissertation, individuals with exhaustion syndrome demonstrate impaired memory and attention capacity as well as reduced brain activity in parts of the frontal lobes. Regulation of the stress hormone cortisol is also impacted in the group, with altered sensitivity in the hypothalamic-pituitary-adrenal axis (HPA axis).

The dissertation addresses whether it is possible to use neuropsychological tests to confirm and describe the cognitive problems reported by patients suffering from exhaustion syndrome. Above all,

patients demonstrate problems regarding attention and [working memory](#). Patients were also asked to perform working memory tests while lying in a functional magnetic resonance camera that measures the brains activity patterns. Exhaustion syndrome patients proved to have a different activity pattern in the brain when they performed a language test of their working memory, and they also activate parts of the frontal lobe less than healthy subjects and a group of patients who had recently developed [depression](#).

The HPA axis in the patient group shows reduced sensitivity in the pituitary, with less secretion of adrenocorticotrophic hormone (ACTH) following stimulation with corticotropin (CRH), as well as heightened sensitivity in the adrenal cortex, with increased release of cortisol in relation to the amount of ACTH secreted. There is also a difference in the diurnal rhythm of cortisol, with the patients presenting a flatter secretion curve than the other two groups. The researchers could not detect any reduction in the volume of the hippocampus in the patient group. The proportion of individuals with measurable levels of the pro-inflammatory cytokine interleukin 1 is higher in the patient group.

In summary, the studies indicate that there is an association between personality, general health, cognitive ability, and neuroendocrinal dysfunction in exhaustion syndrome. The cognitive problems reflected in the test scores are also mirrored in a different activity pattern in the [brain](#) for patients with exhaustion depression. Agneta Sandström has also found support for there being similarities with clinical depression, but with well-defined differences.

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