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Correlation of Perceived and Physiological Measures of Stress with Cognitive Decline in Multiple Sclerosis

BACKGROUND: Multiple Sclerosis (MS) is an autoimmune neurodegenerative disease of the central nervous system manifesting with chronic inflammation and demyelination. Despite its heterogenous symptom profile, over half of individuals with MS have cognitive impairment affecting their processing speed, memory, attention, and spatial perception. While the exact etiology of MS is unknown and likely multivariate, several studies suggest that stressful life events could predispose a diagnosis or exacerbation of MS. The research is conflicted as to a direct relationship of stress causing MS, though it is clear that the disease itself can impart undue stress by hindering one's daily activities, work performance, and social engagement.

OBJECTIVE: Our aim is to investigate the relationship between stress and cognition in people with MS. We hypothesize that participants with higher self-reported stress will demonstrate poorer cognitive performance. Additionally, an interaction with physiological levels of stress may exacerbate these cognitive deficits, suggesting that higher cortisol levels could further impair cognitive function in the setting of elevated perceived stress.

METHODS: Participants with MS alongside healthy controls were assessed for cognitive function and processing speed using the Montreal Cognitive Assessment (MoCA) and Symbol Digit Modalities Test (SDMT). Participants also completed the Perceived Stress Scale (PSS), a questionnaire evaluating the degree of stress in their daily life and circumstances. Physiological stress was measured using a 3-centimeter hair sample to reliably determine mean cortisol concentration over the prior 3 months.