

Health Psychology Intervention: Identifying Early Symptoms in Neurological Disorders

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Abstract : Early indicator of neurological disease has been proposed by the expanded Thompson Cortisol Hypothesis which suggests that yawning is linked to rises in cortisol levels. Cortisol is essential to the regulation of the immune system and pathological yawning is a symptom of multiple sclerosis (MS). Electromyography activity (EMG) in the jaw muscles typically rises when the muscles are moved - extended or flexed; and yawning has been shown to be highly correlated with cortisol levels in healthy people. It is likely that these elevated cortisol levels are also seen in people with MS. The possible link between EMG in the jaw muscles and rises in saliva cortisol levels during yawning were investigated in a randomized controlled trial of 60 volunteers aged 18-69 years who were exposed to conditions that were designed to elicit the yawning response. Saliva samples were collected at the start and after yawning, or at the end of the presentation of yawning-provoking stimuli, in the absence of a yawn, and EMG data was additionally collected during rest and yawning phases. Hospital Anxiety and Depression Scale, Yawning Susceptibility Scale, General Health Questionnaire, demographic, and health details were collected and the following exclusion criteria were adopted: chronic fatigue, diabetes, fibromyalgia, heart condition, high blood pressure, hormone replacement therapy, multiple sclerosis, and stroke. Significant differences were found between the saliva cortisol samples for the yawners, $t(23) = -4.263$, $p = 0.000$, as compared with the non-yawners between rest and post-stimuli, which was non-significant. There were also significant differences between yawners and non-yawners for the EMG potentials with the yawners having higher rest and post-yawning potentials. Significant evidence was found to support the Thompson Cortisol Hypothesis suggesting that rises in cortisol levels are associated with the yawning response. Further research is underway to explore the use of cortisol as a potential diagnostic tool as an assist to the early diagnosis of symptoms related to neurological disorders. Bournemouth University Research & Ethics approval granted: JC28/1/13-KA6/9/13. Professional code of conduct, confidentiality, and safety issues have been addressed and approved in the Ethics submission. Trials identification number: ISRCTN61942768. <http://www.controlled-trials.com/isrctn/>

Keywords : cortisol, electromyography, neurology, yawning

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