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Personality, Stress, and Multitasking

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Introduction

Little is known regarding the association between personality, stress and workload stress. Knowledge about how different personality traits affect stress reactivity under conditions of high task load could inform clinical practice. These results could provide insights into the effects of different types of personality traits on stress and task load, allowing an accurate estimate of the effect of these personality traits on daily working life and handling adverse life events.

Methods

Workload stress was induced using the Purple multitasking framework (MTF), in this case consisting of simultaneous performance of mathematical processing task, stroop colour-word task, memory search task and a target tracker task. Before and after the MTF, participants filled out bond-lader visual analogue mood scales (VAS) that produced the mood factors 'alert', 'calm' and 'contented', as well as 'stress' and ' fatigue'. We analysed the difference between post-MTF and pre-MTF as a measure of the impact of the task on mood. As personality measures, participants filled in the Neuroticism-Exroversion-Openness Five Factor Inventory, and the trait portion of the State-Trait Anxiety Scale. As a measure of perceived workload, the National Aeronautics and Space Administration Task Load Index perceived workload questionnaire was completed amongst participants as well.

Results

160 individuals completed the study. The total score for the multi-tasking task was significantly associated with the change in NASA score on subjective performance (-0.333, p=0.000), change in calmness (0.196, p=0.014), and change in stress (-0.220, p=0.006). The change in stress was also significantly correlated with the NASA core on mental demand (0.261, p=0.001), the NASA score on temporal pressure (0.245, p=0.002), and NASA score on effort needed for the task (0.242, p=0.002). The NASA score on effort was also significantly related to the change in calmness (-0.207, p=0.009). The change in fatigue was significantly correlated with the NASA mental score (0.266, p=0.001), NASA temporal score (0.183, p=0.020), NASA effort score (0.237, p=0.003), and STAI-TRAIT score (-0.199, p=0.011). The STAI trait score was also significantly correlated with the change in alertness (0.243, p=0.002), and NASA score on frustration caused by the task (0.233,p=0.003)
Of the personality traits, neurotism was significantly associated with NASA score on frustration (0.241, p=0.002), change in alertness (0.178, 0.024), and change in fatigue (-0.181, p=0.022). The trait extraversion was significantly associated with change in calmness (0.162, p=0.041). The trait conscientiousness was significantly correlated with change in alertness (-0.237, p=0.003), stress (0.167, p=0.035), and fatigue (0.213, p=0.007).

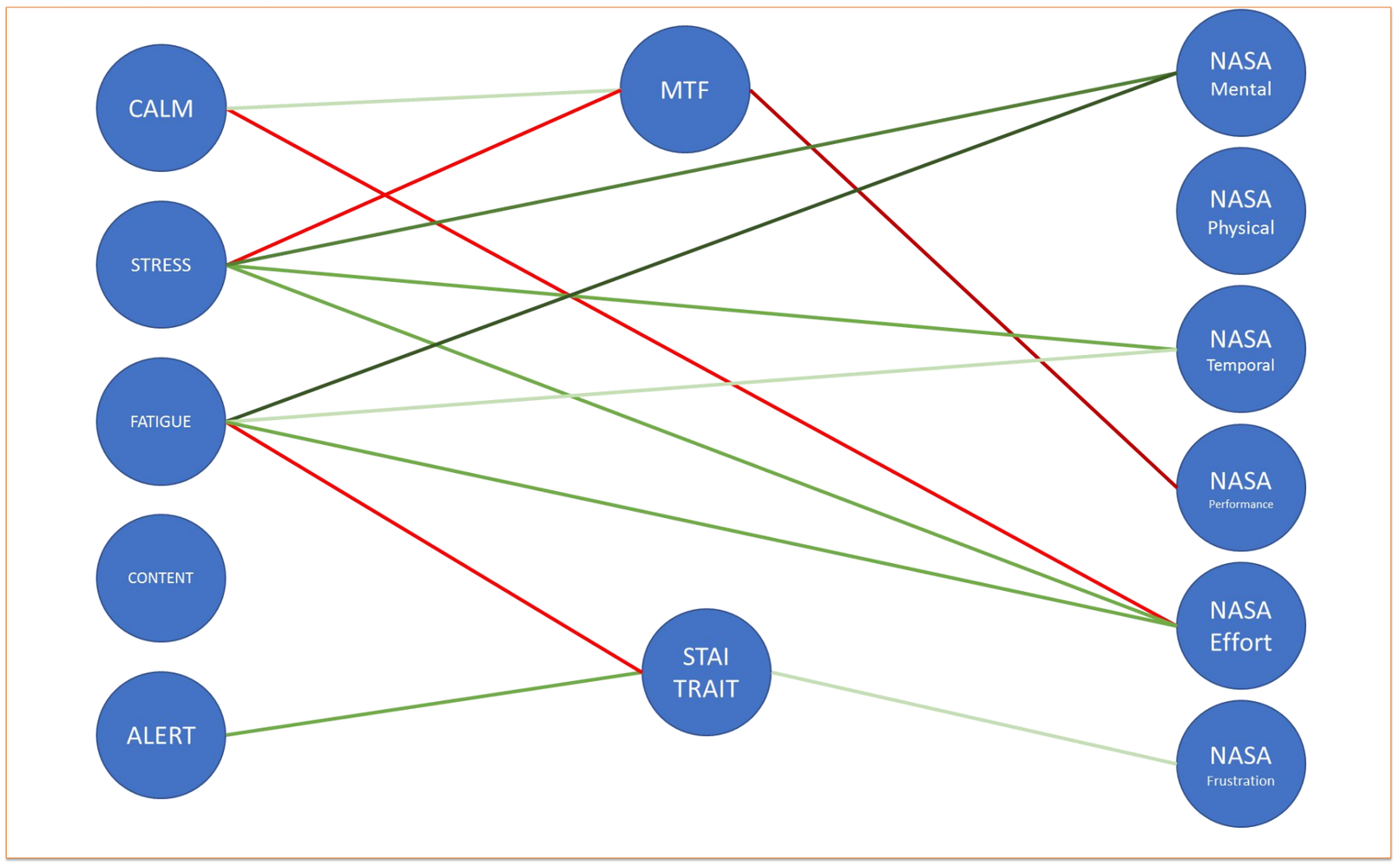

Figure 1: Correlations between mood scale changes, stress, perceived workload and multitasking score
Positive correlations are shown in green, negative correlations are shown in red. The darker the colour, the stronger the correlation. The correlations between personality traits and the factors mentioned above are not shown.

Conclusion

Participants who scored more highly on trait anxiety were less fatigued, more alert and more frustrated by the task. People who had more neurotic traits were more frustrated by the multitasking task, were less fatigued by the task and were more alert. People who were more extravert stayed more calmly during the test. People who were more conscientious were less alert, more stressed and more fatigued. These results have real-life implications and demonstrate that personality traits can affect the way a stressful task is perceived by these individuals.

Disclosure of interests
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