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Physiological and Social Stress on Cognitive Performance

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Title: Physiological and Social Stress on Cognitive Performance

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Abstract

Humans are highly social creatures and this provides us with a number of benefits, such as protection and support, but it also brings new avenues for stress from social sources¹⁻⁹. Basic and translational neuroendocrine research has yielded a rich set of findings and a general understanding of how acute and chronic stress can result in reduced health, earlier aging, and earlier death¹⁰⁻¹³. Although stress can be indexed by level of cortisol, the major stress hormone in humans, many interrelated physiological systems are involved in a stress response, including the cardio and vascular systems. Research toward greater understanding of stress buffering mechanisms holds value for improved human health in the face of entrenched social stressors¹⁵.

In particular, acute and chronic stress have consistently been found to impair cognitive performance^{16,17}. Many adults in high stress environments also face a changing social landscape during college years: changes in living partners, less control over noise, sleep, exercise, and nutrition. In this pilot investigation, we are interested in measuring the influences of acute stress on cognitive performance and whether social support, a factor that is modifiable, would be protective on the multi-systems relationships between stress and cognition.

Broadly, we found (1) that higher levels of cortisol measured in saliva was associated with a faster return to resting levels of salivary cortisol (a measure of flexible, adaptive functioning of the central HPA stress system) after the stressor is removed and may also be associated with lower cortisol in the initial response to the stressor. In parallel, we found (2) that higher levels of cortisol were associated with impaired cognitive performance after the stress task, (3) finally, we found that those reporting high social support showed faster recovery to baseline in the cardiovascular systems and greater social support produced some buffering of stress response on their post-stress cognitive performance.

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