



THE IMPORTANCE OF CENTRAL-PERIPHERAL COMMUNICATION: A NEUROVISCERAL INTEGRATION PERSPECTIVE

A TALK BY
OHIO STATE UNIVERSITY

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**AULA SEMINARI VIMM
FONDAZIONE RICERCA
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The intimate connection between the brain and the heart was enunciated by Claude Bernard over 150 years ago. In our neurovisceral integration model we have tried to build on this pioneering work. In the present talk we further elaborate our model and update it with recent results. A meta-analysis of neuroimaging studies on the relationship between heart rate variability and regional cerebral blood flow identified a number of regions, including the amygdala and ventromedial prefrontal cortex, in which significant associations across studies were found. These results are supported by other functional, structural, connectivity, lesion, and pharmacological blockade studies. We further propose that the default response to uncertainty is the threat response and may be related to the well known negativity bias. Heart rate variability may provide an index of how strongly 'top-down' appraisals, mediated by cortical-subcortical pathways, shape brainstem activity and autonomic responses in the body. If the default response to uncertainty is the threat response, as we propose here, contextual information represented in 'appraisal' systems may be necessary to overcome this bias during daily life. Thus, HRV may serve as a proxy for 'vertical integration' of the brain mechanisms that guide flexible control over behavior with peripheral physiology, and as such provides an important window into understanding stress and health.



Dr. Julian F. Thayer, PhD, is the Ohio Eminent Scholar Professor in Health Psychology at the Ohio State University.

He has published over 350 research papers and book chapters covering a wide range of topics including behavioral medicine, cardiology, emotion, psychopathology, bioengineering, research design and multivariate statistical techniques.

Dr. Thayer has received numerous research awards including the Sigma Xi Research Recognition Award, the Early Career Award for Contributions to Psychosomatic Medicine from the American Psychosomatic Society, and the Distinguished Scientist Award from the Association for Applied Psychophysiology and Biofeedback.

Dr. Thayer is currently the President of the Rocky Mountain Bioengineering Symposium and Past-President of the Academy of Behavioral Medicine Research.



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