A Neurophenomenological Approach to Better Understand the Effects of Eliciting Positive Experiences in Virtual Reality

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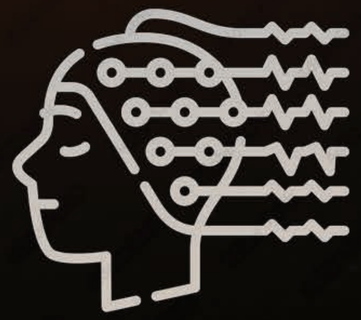
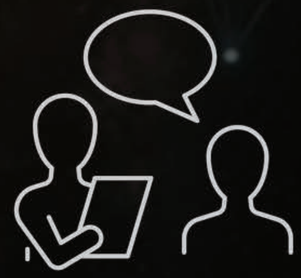
Background and Objectives: Social isolation can lead to adverse behavioral psychiatric conditions. Sensory deprivation critically contributes to these risks, and is of increasing concern for situations in which people have to live in confined spaces for prolonged times, such as long-duration expeditions, space missions, or social distancing. This project integrates qualitative and quantitative methods to investigate the potential of Virtual Reality to mitigate some of the negative psychological and physiological effects associated with isolation and sensory deprivation.It builds on a collaboration between Simon Fraser University and Charité on the development of an innovative VR simulation to reduce stress levels, and foster positive affect and mental well-being by elicitating of self-transcendent emotions and sense of connection. This project is a complementary study to the 8-month long confinement study in Scientific International Research in Unique Terrestrial Station (SIRIUS) in Moscow using this VR simulation. This project aims to enrich our understanding of the effects of the designed VR system on well-being using a neurophenomenological approach. The results will identify the neural correlates of the phenomenological experiences of positive emotions elcited in the VR experience and inform how VR interventions can be better designed to mitigate adverse situations in which sensory and social experiences are limited.

VR Stimulation of Earthgazing



EEG and ECG recordings



Micro-phenomnological and phenomenological interviews

Research Questions

RQ1 (neurophen.): What are the neurophysiological correlates of experiencing self-transcendent emotions in VR?

RQ2 (quant): Does the immersive Earthgazing VR simulation support aspects of mental well-being, i.e. positive affect, stress reduction and sense of connection?

RQ3 (qual): How is the Earthgazing VR subjectively experienced, what are the structure and qualities of the experience, and how does it unfold overtime?

RQ4 (design): What aspects of the design of the simulation are eliciting, supporting, or inhibiting the experience of awe and self-transcendent emotions and its well-being outcomes?

Methodological Questions for Discussion

- How to study a long (30 min) experience with neurophenomenology (micro-phenomenology and EEG) in an absence of repeated trials?
- How to align phenomenological reflections and recollections of subjective experience with physiological recordings, in a way that accounts for accomodation?
- What methodological benefits can the controllability of VR stimuli provide for the study of self-transcendent emotions with micro-phenomenology?
- Considering that self-transcendent emotions are charecterized by ego-dissolution, how does it relate to the experience of one's body and self boundaries and what could be the expected neurocorrelates of such experiences?

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DAAD Deutscher Akademischer Austauschdienst German Academic Exchange Service

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