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Behaviour, Performance and Psychosocial Issues in Space (1)

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ASTRONAUTS COULD BE MORE CREATIVE ON THE MOON. RESULTS OF AN EMPIRICAL  
STUDY WITH ANALOGUE ASTRONAUTS ON THE ARTIFICIAL MOON BASE ‘LUNARES’

**Abstract**

Safe and successful future space missions of NASA require sustainable high levels of astronaut’s cognitive performance. However, studies show that cognitive performance declines during missions, even in highly motivated and rigorously selected astronauts. For example, studies show impacts on visual and short-term memory, spatial orientation, and psychomotor vigilance. Other affected cognitive functions need yet to be determined. This study focusses on creative cognition. Astronaut’s tasks are mostly procedural (e.g., during launch, spacewalks), but incidents on missions do occur. To find (scientific) creative solutions, astronauts therefore also need the skill to demonstrate creative cognitive performance. Creative cognition is related, but distinct from intelligence. Within the research domain of the psychology of creativity, extreme environments are rarely researched. It is generally thought that to be creative, optimal environments are best. Astronauts function on the contrary in the extreme human environment of space, and therefore are an interesting group to investigate pressing but still unanswered questions. When future astronauts for example land on the moon, will they be able to demonstrate higher or lower levels of divergent thinking? The present experimental study investigated astronaut’s divergent creative thinking in an analogue space habitat as well as during an ‘Extra Vehicular Activity’ (EVA) on an artificial moon base (LUNARES, Poland). The study (n=25) was carried out during 5 space analogue missions (two-week missions each). Results of within-subject analysis shows a surprising and significant increase of divergent creative cognition during EVA’s on the moon base, compared to the lower levels of divergent creative cognition in the space habitat. Over the course of the missions, levels of divergent thinking increased for some analogue astronauts but not for others. Results of statistical analysis are presented and consequences for future research are discussed.