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IRREGULAR SHIFT WORK AFFECTED WORK ENGAGEMENT IN AN ISOLATED
ENVIRONMENT**Abstract**

Objective: Both astronauts and ground controllers may work in shifts during space missions. Shift work may influence individual sleep quality and circadian rhythm, increase individual negative emotions and impair individual cognitive abilities such as perception and psychological flexibility. Sleep quality is related to work engagement. The main purpose of this research is to investigate the effects of irregular shift work in an isolated environment on individual's work engagement, emotions and cognitive abilities. Methods: Six healthy male adults participated a 30-day irregular shift work experiment in an isolated environment. Their work engagement, emotions and cognitive abilities were measured on day 6, 12, 18, 24, 30 of the shift work, and once before, once after the mission. Work engagement scale was used to assess work engagement (including vigor, dedication and absorption) of volunteers. Depression anxiety stress scale and UCLA loneliness scale were used to assess emotions of volunteers. For cognitive abilities, a time reproduction task, a go/no-go task, an emotional flanker task and a visual spatial memory task were used to test time perception, inhibitory control and visual spatial memory of volunteers. Results: The results showed that volunteers' vigor and absorption had significant differences in the 7 time points. Volunteers had less vigor and absorption on day 24 of the shift work than before the shift work. However, there were no significant differences in volunteers' dedication, stress, anxiety, depression, loneliness across the 7 time points. For cognitive abilities, there were no significant differences in volunteers' time perception, inhibitory control and visual spatial memory across the 7 time points. Conclusion: Irregular shift work in an isolated environment reduces healthy adults' work engagement, especially their vigor and absorption, which may influence one's task performance and contextual performance. However, Irregular shift work doesn't influence healthy adults' emotions and cognitive abilities. These findings suggest that monitor and countermeasures of vigor and absorption are required to protect healthy adults' work engagement during irregular shift work such as space mission.