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RELATIONSHIP BETWEEN EMOTIONAL STABILITY, GROUP STATUS AND COHESION IN THE  
INTERNATIONAL CREW DURING SIMULATED MARS EXPLORATION MISSION

**Abstract**

The activities of space crews in missions to explore other planets will be associated with increased autonomy, uncertainty, life and health hazard. Stability of group structure, as well as crew cohesion, are necessary to ensure the success of a long interplanetary flight. Our previous studies in “Mars-500” experiment showed that the individual preferences for communications in isolation are determined mainly by the level of emotional stability of the crew-members. Presented study was conducted in “Mars-160” experiment, which took place at the base of the Mars Desert Research Station (MDRS) isolation module (USA, Utah). An international crew, consisting of 7 volunteers (4 men and 3 women aged 30 to 58 years) from France, Canada, Japan, Russia, Australia and India took part in the study. During 80 days, life and work on the surface of Mars were simulated. The aim was to study the relationship between emotional stability of the participants and peculiarities of their interactions in a mixed international crew. The following methods were used: classical sociometric questionnaire (to assess group structure and cohesion), the PSPA (to study interpersonal perception and group dynamics), the M.Luscher’ color test (to evaluate current emotional state and intensity of anxiety). All methods were administered once in 2 weeks (6 times during isolation) and once after isolation. The results showed that the level of group cohesion in the course of isolation increased, especially in terms of joint leisure activities, reaching almost the maximum possible. A correlation analysis between sociometric status (popularity), anxiety, integrity of interpersonal perception and Self-image structure, was carried out. Like in “Mars-500” experiment, a significant negative correlation between anxiety level and sociometric status was found, i.e. the crew-members with lower anxiety had the most high status and popularity. Emotional stability, or low anxiety, was significantly correlated with higher integrity of interpersonal perception (ability to more clearly assess themselves and others), while more anxious crew-members were characterized by complexity and diversity of their perceptions. Regarding the crew selection for the autonomous missions, the preferences of less anxious partners for joint work and communications are crucial. The crew-members with a more mature Self, as well as sufficiently integrated perception of others will have a higher status in the group.