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CORRELATION OF ETHO-SOCIAL AND PSYCHO-SOCIAL DATA FROM "MARS-500" INTERPLANETARY SIMULATION

Abstract

Studies of social groups under isolation and confinement for the needs of space psychology were mostly limited by questionnaires completed with batteries of subjective tests. Such an approach gives us subjects' perception of the interrelations and attitudes that can be different from the real communication and interaction. From this point of view, new instrumental methods such as utilization of the special sensors, calculating distances between the crew members, joint instrumental tasks requiring interactions as well video recordings in experimental situations can provide us with more precise and objective data about the socio-psychological processes in isolated and confined groups. The ethological approach deals with this last issue. The objective of the present study is to identify crewmembers' behavioral profiles for better understanding group dynamics during a 520-day isolation and confinement of the international crew (n=6) participating to the "Mars-500" interplanetary simulation. We propose to correlate data from PSPA (Personal Self-Perception and Attitudes) computerized test, sociometric questionnaires and color choices test (Luscher test) used to measure anxiety levels, with data of video analysis during group discussion (GD) and breakfast time (BT). All the procedures were implemented monthly - GD, or twice a month - BT. Firstly, we used descriptive statistics for displaying quantitative subjects' behavioral profiles, supplied with a software based-solution: The Observer XT®. Secondly, we used Spearmen's nonparametric correlation analysis. The results show that for each subject, the level of non-verbal behavior ("visual interactions", "object interactions", "body interaction", "personal actions", "facial expressions", "collateral acts") is higher than the level of verbal behavior ("interpersonal communication in Russian", "interpersonal communication in English"). From the video analyses, dynamics profiles over months are different between the crewmembers. From the correlative analyses, we found highly negative correlations between anxiety and interpersonal communications; and between the sociometric parameter "popularity in leisure environment" and anxiety level. We also found highly significant positive correlations between the sociometric parameter "popularity in working environment" and interpersonal communications, and facial expressions; and between the sociometric parameter "popularity in leisure environment " and interpersonal communications, and facial expressions. As a whole, the findings show high importance of ethological investigations with video monitoring for assessment of group behavior in extreme environment. At the same time, correct interpretation of video recording results requires their comparison with the results of classical socio-psychological methods. We discuss about the different approaches: objective vs. subjective; active vs. discursive; exhaustive vs. restrictive; descriptive vs. introspective.