Poster Session (P)
Poster Lunch (1)

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THE RISK DECISION-MAKING BEHAVIORS IN AN ISOLATED AND CONFINED ENVIRONMENT: A SMALL SAMPLE STUDY

Abstract

Isolated, confined and extreme environment in human space exploration missions leads to psychological stress factors, which may further bring about decrements on quality of decision making. In current study, we employed classic Balloon Analogue Risk Task(BART) to measure the risk decision-making behaviors of crews in analogue space station named "4 Subjects 180 Days CELSS Integration Experiment", which was conducted at Shenzhen, China from June to December of 2016.

BART were tested 12 times during the whole experiment, including 1 pre-test, 10 tests on mission, and 1 post-test. Non-parametric analysis was used in analysis to cope with small size sample. In this study, we compared the BART results during mission and pre-test as well as pos-test, which revealed that the non-significant difference. Second, we testified time course during experiment. Spearman correlation result shows there is no significant time course on BART results. Description statistic of BART results revealed that data did not float toward one direction, their data fluctuate up and down rather than increase progressively or decrease progressively.

Third, due to different circadian rhythm applied during experiment, we also testified the quarterly difference of BART results to research the influence of changes of circadian rhythm and new experiment arrangement on risk decision-making behaviors. The Friedman test revealed that the average adjusted pump of BART in second quarter significantly higher than first quarters (MQ1=14.106, SDQ1=0.351; MQ2=16.024, SDQ2=0.224; $\chi 2$ Average adjusted pumps=6.00, p=0.050; Q1-Q2=-2.449, p=0.043).

Fourth, the result of BART also have correlation with WES, which suggested that work environment may have influence on crews'risk decision-making. Autonomy correlated with explosions (r=.753, p=.012), involvement have positive correlation with earnings and adjusted pumps (r=.665, p=.036). Crews may

revealed more tendency for risk-seeking when they were encouraged to make their own decision and self-sufficient. Moreover, when crews were concerned the task, they would put more cognitive resources to earnestly complete BART, so the earnings and adjusted pumps more.

Fiftieth, the personal value is related with BART results. The benevolence had negatively correlated with explosions (r=-.784, p=.037). It suggested that crews would decrease risk-seeking when they focus on preserving and enhancing the team's welfare. Furthermore, positive correlation also revealed between conformity and adjusted average pumps (r=.764, p=.046), which means the portrait of restraint of actions and impulses likely to harm others or social expectations would decrease the tendency of risky decision-making.