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Behaviour, Performance and Psychosocial Issues in Space (1)

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DEALING WITH THE UNEXPECTED: HOW TEAM ADAPTATION DRIVES HUMAN  
PERFORMANCE IN ANTARCTICA**Abstract**

**Purpose:** In the next decades, Humankind will colonize the Moon and set foot on Mars. However, beyond radiation and microgravity, the greatest obstacle ahead is human nature. Will we be psychologically capable to endure the isolation, confinement and extremeness of long duration space missions? In order to answer these questions, we investigated teamwork during Antarctica summer campaigns. Antarctica is one of the Earth's best space analogue environments, because the extremeness of the continent challenges the human collaborative capacity in ways that are often analogue to what humans are expected to encounter in space. These factors elevate the importance of identifying which individual and collective psychological features contribute to teamwork effectiveness during Antarctica missions. In this research, we are particularly interested in understanding how science teams conduct field research in Antarctica, and how they maintain and restore team performance during campaigns. **Methodology:** We are using constructivist grounded theory. Participants were 39 individuals enrolled in two Antarctica Summer Campaigns. Participants were scientists (25), station managers (8), and staff (6). Individual interviews happened before, during, and after the campaigns. Field observations happened between February 23rd and March 8th, at King Sejong Station, Base Professor Julio Escudero, Great Wall Station, Ardley Island, Maxwell Bay, and Punta Arenas (Chile). Data collection is completed. Data analysis is proceeding iteratively and is being done using constant comparison. Key themes were identified from analysis and their relationships are being critically examined. **Results:** Our preliminary findings include a mapping of the most relevant stressors during summer campaigns (e.g., sudden and unpredictable weather changes; logistic-related incidents). Up to this point we observed that Antarctica science teams' ability to engage in team adaptation is a major contributor to mission success. Team adaptation seems to be driven by individual factors such as adopting positive psychological states (e.g., "being patient about weather changes"; "keeping a positive mind set"), and collective factors such as "engaging in task switching", or "collaborating with scientific or/and logistic teams". Also, the ability to build relationships with logistic staff and other science teams increases the likelihood of supportive behaviour and therefore the ability to quickly adapt to unexpected events. **Conclusions:** Through our research we are beginning to demonstrate that the main vehicle to ensure the success of Antarctic science teams is through the promotion of the conditions that will enable team adaptation as it is through such adaptation that these teams maintain and restore performance.