Technical Report

The Space Therapist

“The Impact of Crew Isolation and Lunar Simulation on Human Behavior”

Project Title:	“The Impact of Crew Isolation and Lunar Simulation on Human Behavior”
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Project Location:	HI-SEAS, Maula Loa, Hawai’i

Introduction

Mental wellness, resilience, and grit are areas humans will have to consider as human spaceflight advances to live on the Moon and Mars. The goal is aiming to advance the next wave of space exploration by incorporating components of mental health and wellness during long duration spaceflight. Assessing daily basic needs of crew as well as looking at crew dynamics and interpersonal skills are the baseline for psychological mental wellness. The next step is looking at trends and adjusting therapeutic interventions to maintain crew psychological wellness. Starting on Earth with an analog astronaut mission is a safe way to start considering what variables will be important to sustain and thrive on the Moon, Mars, and beyond.

Analog astronauts simulate long-duration space missions, in geographically similar areas to the real missions that are being planned for future Moon and Mars crewed explorations. Research duties include organizing scientific, educational, and exploratory missions to identify problems, test in-situ resource utilization technologies, and train future astronauts.

The psychological focus of this mission was conducted via a quasi-experiment design, assessed at the HI-SEAS habitat on the Mauna Loa volcano in Hawaii. HI-SEAS stands for Hawaii Space Exploration Analog and Simulation. The mission’s name was EMMIHS-23 "Lokahi". EMMIHS-23 is the abbreviation for EuroMoonMars International MoonBase Alliance HI-SEAS 2023. The mission name, “Lokahi”, means Unity in Hawaiian.

The mission was 2-weeks long and consisted of a crew of 6. The main psychological objectives for this mission were to: 1. Look at spaceflight analogs to improve health and wellness on Earth by incorporating concepts such as the Overview Effect to maximize well-being. 2. Quantify preliminary levels of mental wellness using evidence-based assessments such as the GAD, PHQ-9, and Standard Intake Questionnaire. 3. Explore how elements of basic human needs affect one’s mental health. 4. Create a foundation for crew dynamics and interpersonal relationships in an analog astronaut space simulation. 5. Explore evidence based therapeutic interventions that might be helpful to incorporate in future analog missions, long duration spaceflight on the Moon, Mars, and beyond.

The focus wasn’t to address presenting problems as one might do when starting therapy in a traditional client-clinician relationship. It was to cast a wide net and start conceptualizing the elements of human behavior that would be most impacted by analog astronaut missions simulating long duration spaceflight missions. The mission method was set up as a quasi-experiment using a pre-posttest assessment using evidence-based practice that indicates functioning and optimal mental health. Results from the assessments and sessions during the analog missions were analyzed to start to draw support about the most important factors in human mental wellness. Research continues in the HI-SEAS habitat where the mission was conducted. The future goals

are for the results to be a catalyst for partnership and/or publication in future analog missions and beyond.