

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)  
Interactive Presentations - IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (IP)

Author: Ms. Mackenzie Haberman  
Dartmouth Medical School , United States

COMPUTER-BASED BEHAVIORAL HEALTH COUNTERMEASURE EVALUATION DURING AN  
ANTARCTIC WINTER-OVER POPULATION AS SPACE ANALOGUE

**Abstract**

The isolated, confined, and operationally-challenging Antarctic environment offers a unique long-duration space travel analogue. The Antarctic research station winter population must function at a high level within a physically and psychosocially stressful setting with minimal behavioral health resources. To address this we tested an autonomous, computer-based behavioral health suite (Expedition-APPP) that includes conflict resolution, depression treatment, and stress management modules during an Antarctic winter. Sixteen people used portions of the Expedition-APPP across the four Australian-Antarctic Research Stations (Mawson, Davis, Casey and Macquarie Island). Individuals were self-selected volunteers with access to the resources in public areas at their respective stations. Participants reported problems common within an isolated environment. Two individuals completed the insomnia severity index, with scores in the sub-threshold insomnia range (n=2, average 11.5 on a 0-28 scale), and two had mild to moderate burnout scores on the burnout questionnaire (n=2, average 20 on a scale of 0-50). One participant scored in the mild depression ranges on the PHQ-9. Within the Expedition-APPP, 6 engaged with conflict, 5 with stress, and 6 with the depression module. Individuals self-reported data and indicated they used the programs to address symptoms of depression, insomnia, burnout and interpersonal conflict. Participants in the conflict module reported positive reactions to the interactive structure, particularly the ability to “select different responses”, which enabled “visualization of the way conflicts escalate.” Within the depression module, 6 individuals completed the PHQ-9 baseline depression assessment. 1 person started working on a workplace-based problem but did not revisit the program to update problem solving plan or progress. All who used the interactive negotiation training found it valuable for learning about conflict (n=3, mode score 3, on 0-4 scale with 4=strongly agree). Opinions on the conflict briefing varied. One person strongly agreed that they learned a lot from the briefing, while others were neutral or disagreed (n=5, mode score 2, range (1-4) on a 0-4 scale with 4=strongly agree). On average, all the conflict content was judged to be valuable for new or veteran individuals deployed to Antarctica (n=5, average 3 on a 0-4 scale with 4=strongly agree). Given the findings of this pilot study, continued availability of autonomous behavioral resources with greater programmatic control tailored to participant interest is warranted in coming expeditions. Voluntary participant uptake indicates the viability of these programs in the Antarctic environment and their applicability to the everyday working life on a research base or during long-duration spaceflight.