

**SOME MENTAL HEALTH PROBLEMS AND LONG TERM MANNED SPACE MISSIONS.** R. Chahal<sup>1</sup> & A. Mardon<sup>2</sup>, <sup>1</sup>University of Alberta (Edmonton, Alberta, Canada, [ravichahal@gmail.com](mailto:ravichahal@gmail.com)), <sup>2</sup>Antarctic Institute of Canada (Post Office Box 1223, Station Main, Edmonton, Alberta, Canada T5B 2W4, [aamardon@yahoo.ca](mailto:aamardon@yahoo.ca)).

**Introduction:** With the establishment of the International Space Station (ISS) and establishment of an international selection program for astronauts from different countries and cultural backgrounds to man and perform scientific studies, the psychological health of the inhabitants becomes an intriguing area of research. With the ultimate goal of, once again, manned missions to the Moon and a lunar base as a launch pad for further missions to perhaps Mars, the mental health of the astronauts has never been of higher concern.

With the tragic destruction of the space shuttle Discovery, upon re-entry, and the state of NASA fleet of Shuttle's being grounded, manned missions of any sort by NASA will be limited at best, as the spots for the personnel will have to be bought from the Russian Federal Space Agency (RFSa). Therefore the amount of time required for the astronauts to be in isolation will increase along with the subsequent danger to their mental health. The longest mission on the ISS thus far ended on the March of 2008 with the Endeavour of 14 days docked with 5 space walks. With the eventual goal of a Manned Lunar Missions, how would the astronauts cope with the prolonged isolation, from all the comforts of home and under tremendous pressure.

All factors from lighting conditions, to social networking must be considered and implemented. An example of the effect of lighting conditions can be observed in the prevalence of Seasonal Affective Disorder (SAD). SAD is most prevalent in the winter time and around the Arctic regions[1]. The main cause of the syndrome is thought to be the availability of light, and a common treatment is one in which the sufferer is exposed to a light source with a full spectrum of light. Though the physiological pathway of the disorder is not completely known, theories have been put forth regarding the amount of serotonin, or the melatonin which is produced in the pineal gland in dim light, suggesting the perhaps a connection pathway between the pineal gland and the rods or cones present in the eye. Though the obvious solution to this problem is artificial or supplements, the long term effects include nightmares, drowsiness, reduced flow among others which could compound over the period of months, requiring additional intervention to deal with the side effects.

The advent of the internet and more specifically social networking sites, offers an ideal mode by which astronauts in prolonged isolation can keep in touch with friends, family (if they choose) without any real adverse effect on their efficiency. Studies conducted regarding

prolonged isolation have indicated reduced efficiency and overall wellbeing of the isolated individuals. Allowing for continual networking between the astronauts and their kin on Earth allows the individual an outlet to talk from and maintain productivity, and efficiency.

Continual interaction with broad community has been known to increase the resistance to diseases and, in general has shown to increase feelings of well being [2]. Though sending entire families into space would be, impractical with the advent of social networking sites, and the prevalence of their use on our culture has offer an intriguing solution.

Websites such as Facebook, and Myspace and instant messaging software's allow users to essentially talk across the globe, and potentially work in space. With increasing stress being placed on resources, the key to, efficiency in prolonged isolation is resourcefulness, and not essentially resources. Instead of video conferencing between the astronauts and their social network, requiring immense load on equipment, technical support and other resources, instant messaging, which requires far less bandwidth, equipment, could serve as the medium through which communication can flourish on long term missions and could be utilize on a computer with limited power.

**Conclusion:** Space travel, the final frontier, poses many great opportunities for exploration of our universe, and ourselves. Though the steps are small, the leaps in our understanding will come with continual exploration and lunar missions. How will this effect humans is still yet to be determined, however in order to make any discoveries the, progress on our understanding of our selves, and our limits must coincide with technological discoveries.

**References:** [1] MOGENS K. et al. "The prevalence of seasonal affective disorder (SAD) in Greenland is related to latitude.." Nordic Journal of Psychiatry 63, no. 4 (2009): 331-335. [2] BERKMAN L. F. and Syme L. "Social Networks, Host Resistance, and Mortality: A Nine Year Follow up study of Alameda County Residents." Am. J. Epidemiol. 109, no. 2 (February 1, 1979): 186-204.

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