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A VIRTUAL PERSONAL ASSISTANT AS PSYCHOLOGICAL COUNSELING TOOL TO SUPPORT HUMAN EXPLORATION OF DEEP SPACE.

Abstract

Purpose: Deep space missions such as a journey to Mars will come with great challenges for the technology used and for the human body and mind. Particularly mental and social issues should be taken seriously since their unpredictable character. Therefore, they are regarded as a risk factor for the success of such missions. Based on analog studies on Earth, it is expected that being in isolation with a small crew in a confined space will result in feelings of loneliness and irritability among the crew, and potentially forms of depression. Even though astronauts are carefully selected, the human factor is an unpredictable one. On Earth, emerging technologies in healthcare are tackling similar problems. Artificial Intelligence, in the form of Virtual Personal Assistants (VPA), aimed at psychological coaching seems to obtain similar results as human coaching. Access to such technology might benefit future astronauts, bringing distraction from day to day patterns, having a chat, taking the role of mental coach, potentially even diagnosing (for example signs of depression). In this paper we present a prototype VPA designed for psychological coaching in space.

Methodology: To lay a foundation in thinking around technology aided psychological counselling during long duration space travel we will map the needs of future astronauts around potential mental health issues and psychological counselling in three ways. First, literature looking into psychological aspects that play a role in mission success in current day missions will be reviewed. Second, 8-12 in depth interviews will be held with (analog) astronauts and psychological counsellors to gain insight in personal experiences of past missions. Third, terrestrial applications of VPAs in mental health coaching will be examined. Our findings will be used to develop (prototype already available) a VPA designed for psychological coaching in space, ultimately to be tested in a simulated environment.

Results: This research resulted in a framework for thinking about technology aided mental health on long duration missions, when no direct communication with Earth exists. A prototype VPA for deep space astronauts was developed and will be presented during the conference.

Conclusions: Mental and social aspects of human space travel are unpredictable and therefore pose risks on mission success. AI psychological coaching might be of benefit for future deep space astronauts. Learning from best practices in terrestrial healthcare (innovation) and further testing using current day technology in similar to space environments is recommended to ensure optimal mental health for future astronauts.