Fiscal Year:	FY 2021	**Task Last Updated:**	FY 07/23/2021
PI Name:	Dinges, David F. Ph.D.		
Project Title:	Standardized Behavioral Measures for Detecting Behavioral Health Risks during Exploration Missions		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Behavior and performance		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	(1) **HFBP**:Human Factors & Behavioral Performance (IRP Rev H)		
Human Research Program Risks:	(1) **BMed**:Risk of Adverse Cognitive or Behavioral Conditions and Psychiatric Disorders (2) **Team**:Risk of Performance and Behavioral Health Decrements Due to Inadequate Cooperation, Coordination, Communication, and Psychosocial Adaptation within a Team		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	19104-4209	**Congressional District:**	2
Comments:			
Project Type:	FLIGHT,GROUND	**Solicitation / Funding Source:**	2013-14 HERO NNJ13ZSA002N-BMED Behavioral Health & Performance
Start Date:	07/21/2015	**End Date:**	09/30/2022
No. of Post Docs:	0	**No. of PhD Degrees:**	0
No. of PhD Candidates:	0	**No. of Master' Degrees:**	0
No. of Master's Candidates:	0	**No. of Bachelor's Degrees:**	0
No. of Bachelor's Candidates:	0	**Monitoring Center:**	NASA JSC
Contact Monitor:	Whitmire, Alexandra	**Contact Phone:**	
Contact Email:	alexandra.m.whitmire@nasa.gov		
Flight Program:	ISS		
Flight Assignment:	NOTE: End date changed to 9/30/2022 per L. Barnes-Moten/JSC (Ed., 4/7/21) NOTE: End date changed to 2/28/2021 per PI and NSSC information (Ed., 5/20/2020) NOTE: End date changed to 2/28/2020 per NSSC information (Ed., 5/22/19) NOTE: End date changed to 7/20/2019 per NSSC information (Ed., 8/10/18) NOTE: Element change to Human Factors & Behavioral Performance; previously Behavioral Health & Performance (Ed., 1/18/17)		
Key Personnel Changes/Previous PI:			

COI Name (Institution):	Basner, Mathias M.D. (University of Pennsylvania) Mollicone, Daniel Ph.D. (Pulsar Informatics, Inc.) Stuster, Jack Ph.D. (Anacapa Sciences, Inc.) Strangman, Gary Ph.D. (Harvard Medical School) Stahn, Alexander Ph.D. (University of Pennsylvania) Gur, Ruben Ph.D. (University of Pennsylvania)
Grant/Contract No.:	NNX15AK76A
Performance Goal No.:	
Performance Goal Text:	
Task Description:	The success of long-duration spaceflight missions depends on astronauts' abilities to appropriately respond to and cope with a variety of behavioral and psychosocial stressors throughout the mission, including prolonged confinement, isolation, and threat to life (Slack KJ, Williams TJ, Schneiderman JS, et al. Risk of adverse cognitive or behavioral conditions and psychiatric disorders: Evidence report. 2016.). NASA simulates these stressors in spaceflight analog environments to examine individual behavioral responses with the ultimate goal of predicting, preventing, and mitigating the consequences of these stressors during spaceflight. The space exploration analog missions we and others have studied for NASA have varied in duration (i.e., from 1 month to 14 months) and in the severity of stressors (e.g., magnitude of confinement, social isolation). To evaluate astronaut behavioral health and performance, NASA developed "Standardized Behavioral Measures," (SBM) which is a battery of neurobehavioral assessments that probe astronaut neurocognitive and operational performance, as well as astronaut behavioral health and team cohesion. Upon the completion of the original "Standardized Behavioral Measures for Detecting Behavioral Health Risks during Exploration Missions" project, we initiated two supplemental studies: (1) Data harmonization of the SBM across long duration spaceflight analogs (2) Continued collection of the Robotic On-Board Trainer for Research (ROBoT-r) from astronauts on the ISS.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	This project will deliver a suite of Standardized Behavioral Measures (SBM) that will be tested for feasibility, flexibility, and acceptability in research studies in both short and long duration space analog environments and on the International Space Station (ISS). With the SBM, it will be possible for NASA's HFBP (Human Factors & Behavioral Performance) program to much better assess and quantify the Risk of Adverse Cognitive or Behavioral Conditions and Psychiatric Outcomes for exploration class missions. With the proposed work we will relevantly contribute to Human Research Program's (HRP) goal to provide human health and performance countermeasures, knowledge, technologies, and tools to enable safe, reliable, and productive human space exploration. More specifically, the SBM will constitute an important technology to provide mission planners and system developers with strategies for monitoring and mitigating crew health and performance risks. Additionally, Standardized Behavioral Measures could be beneficial for monitoring behavioral health during Earth-based operations, especially those involving isolated, confined, and extreme environments (e.g., Antarctic research expeditions).
Task Progress:	The data to be harmonized from the original sites and the 2018 and 2019 14 month missions in the Antarctic Neumayer station are currently in the process of being compiled and the meta data is being generated. We are meeting regularly with the statistician, Dr. Warren Bilker, to discuss the dimensionality reduction technique and potential issues of combining the outcomes of the SBM into a single long-form database. These issues and their solutions have been recorded and will be included in the final report. A submission to the LSDA (Life Sciences Data Archive) was completed in order to include the astronaut data from the Reaction Self Test (RST) on ISS study. A presentation to the Life Science Advisory Board is scheduled for July 27th, 2021, to justify the use of the astronaut data in the harmonization project.
Bibliography Type:	Description: (Last Updated: 03/24/2024)