Fiscal Year:	FY 2019	**Task Last Updated:**	FY 05/24/2019
PI Name:	Yule, Steven J. Ph.D.		
Project Title:	Simulation-Based Countermeasure Development to Mitigate Team and System Vulnerabilities During Medical Event Management on Long Duration Space Missions		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:			
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) **HSIA**:Risk of Adverse Outcomes Due to Inadequate Human Systems Integration Architecture (3) **Medical Conditions**:Risk of Adverse Health Outcomes and Decrements in Performance Due to Medical Conditions that occur in Mission, as well as Long Term Health Outcomes Due to Mission Exposures (4) **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		
PI Email:	syule@partners.org	**Fax:**	FY
PI Organization Type:	UNIVERSITY	**Phone:**	781-960-3228
Organization Name:	Brigham and Women's Hospital/Harvard Medical Center		
PI Address 1:	75 Francis Street		
PI Address 2:	STRATUS Center for Medical Simulation		
PI Web Page:			
City:	Boston	**State:**	MA
Zip Code:	02115-6110	**Congressional District:**	7
Comments:			
Project Type:	GROUND	**Solicitation / Funding Source:**	2017 HERO 80JSC017N0001-Crew Health and Performance (FLAGSHIP1, OMNIBUS). Appendix A-Flagship1, Appendix B-Omnibus
Start Date:	03/26/2019	**End Date:**	03/25/2020
No. of Post Docs:		**No. of PhD Degrees:**	
No. of PhD Candidates:		**No. of Master' Degrees:**	
No. of Master's Candidates:		**No. of Bachelor's Degrees:**	
No. of Bachelor's Candidates:		**Monitoring Center:**	NASA JSC
Contact Monitor:	Williams, Thomas	**Contact Phone:**	281-483-8773
Contact Email:	thomas.j.will1@nasa.gov		
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Lipsitz, Stuart Sc.D. (Brigham and Women's Hospital, Inc.) Pozner, Charles M.D. (Brigham and Women's Hospital, Inc.) Robertson, Jamie Ph.D. (Brigham and Women's Hospital, Inc.) Smink, Douglas M.D. (Brigham and Women's Hospital, Inc.) Thorgrimson, Joelle M.D. (Northern Ontario School of Medicine, Canada) Doyle, Thomas Ph.D. (McMaster University, Canada) Musson, David M.D., Ph.D. (Northern Ontario School of Medicine, Canada) Dias, Roger M.D., Ph.D. (Brigham and Women's Hospital, Inc.)		
Grant/Contract No.:	80NSSC19K0745		

Performance Goal No.:	
Performance Goal Text:	
Task Description:	One of the risks of long duration exploration missions that needs further investigation is the potential for unanticipated medical events to affect crew health and capacity in-flight, and potentially compromise mission success. Like technical problem solving, medical emergencies require rapid diagnosis of probable cause, concurrent treatment, and containment of problems. Effective crew dynamics are essential to both. However, when there is a medical emergency one of the team members is incapacitated by the nature of the event; crew members must rapidly coordinate themselves to deal with an ill-defined event that may be outside of their primary technical expertise, and the impact of time delay means that real-time communications and data flow between crew and medical emergency specialists on Earth may not be possible. The central objective of our proposal is to provide guidance for the development of evidence-based countermeasures against these vulnerabilities. This is important to determine so we can add the right behavioral skills to astronaut training. We plan to implement the study and measure interactions during a medical emergency in a space analog setting that replicates some features of long-term isolation, crew autonomy, and time-delay as experienced on long duration missions. We propose to do this by studying capacity to manage medical emergencies in space using a range of methods. We will use high fidelity simulation to study how the astronaut crew performs together to resolve simulated medical emergencies in a lab setting. We will measure adherence to key processes, team behavior, mental workload, and physiological metrics to better understand the demands faced by space crew and ground personnel.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2019.
Bibliography Type:	Description: (Last Updated: 11/09/2023)