Fiscal Year:	FY 2017	**Task Last Updated:**	FY 01/25/2017
PI Name:	Rose, Raphael Ph.D.		
Project Title:	Self-Guided Multimedia Stress Management and Resilience Training		
Division Name:	Human Research		
Program/Discipline:	HUMAN RESEARCH		
Program/Discipline--Element/Subdiscipline:	HUMAN RESEARCH--Behavior and performance		
Joint Agency Name:		**TechPort:**	Yes
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		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	90095-1563	**Congressional District:**	33
Comments:			
Project Type:	Ground	**Solicitation / Funding Source:**	Directed Research
Start Date:	12/11/2013	**End Date:**	06/30/2018
No. of Post Docs:		**No. of PhD Degrees:**	
No. of PhD Candidates:	2	**No. of Master' Degrees:**	
No. of Master's Candidates:		**No. of Bachelor's Degrees:**	2
No. of Bachelor's Candidates:		**Monitoring Center:**	NASA JSC
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Flight Program:			
Flight Assignment:	NOTE: End date is now 6/30/2018 per K. Ohnesorge/JSC (Ed., 1/10/18) NOTE: Element change to Human Factors & Behavioral Performance; previously Behavioral Health & Performance (Ed., 1/18/17) NOTE: End date is now 12/31/2017 per NSSC information (Ed., 11/29/16) NOTE: Period of performance changed to 12/11/2013-12/10/2016 per NSSC information (previously noted as 9/18/2013-10/31/2015 per HRP information)--Ed., 9/9/14		
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Craske, Michelle Ph.D. (University of California, Los Angeles) Smith, Scott Ph.D. (NASA-Johnson Space Center Nutrition Biochemistry Lab)		
Grant/Contract No.:	NNX14AC47G		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	Stress and anxiety-related problems are some of the most common and costly behavioral health problems in society. For those working in operational environments (i.e., astronauts, flight controllers, military), stress and anxiety-related problems before, during, or after missions can seriously compromise efficiency, safety, and performance. To address behavioral health issues like stress, it is important to maximize the privacy, validity, and acceptability of the training and countermeasures used. Technology-based behavioral health programs (e.g., computer or web-based programs) are effective for treating behavioral health problems. These programs increase availability of evidence-based interventions to individuals who are not able or willing to receive such in-person treatments. Our prior research validated the autonomous multimedia resilience training program we created (i.e., Stress Management and Resilience Training for Optimal Performance; SMART-OP). SMART-OP interactively trains users to manage stress and build resilience over 6 weekly training sessions lasting approximately 45 minutes each. Results from a randomized controlled trial with a stressed but otherwise healthy sample (N=66) indicated that SMART-OP decreased perceived stress, improved perceived control over stress, and was rated as significantly more useful than an attention control group that received marketed videos and published material on stress management. SMART-OP was also rated as “excellent” in terms of user-friendliness, acceptability, and had low dropout, and high homework adherence. We propose to evaluate the effectiveness, usefulness, and usability of SMART-OP with a sample of flight controllers and instructors (including those in training flow) at Johnson Space Center (JSC) by comparing it to a Wait List Control group. Additionally, we will examine the effects of self-guided stress management and resilience training on biomarkers for stress (i.e., cortisol, a-amylase), heart rate, and cognitive and behavioral performance. Based on several meetings with the Space Flight Resource Management (SFRM) Working Group, we learned that trainees are not progressing through the training flow satisfactorily and that they identified stress as a potential contributor to poor trainee performance. Additionally, stress was identified as an area of concern to address with flight controller and instructors. Since SMART-OP significantly reduced perceived stress, increased perceived control over stressors, and was rated as highly useful, SMART-OP could provide helpful stress management training for flight controllers. Also, since SMART-OP is evidence-based, confidential, and self-directed, it may be more acceptable to flight controller trainees than other programs.
Rationale for HRP Directed Research:	This research is directed because it contains highly constrained research.
Research Impact/Earth Benefits:	An important aspect of the research that NASA supports is the potential applications on Earth and benefits to society in general. Stress-related health and mental problems are among the most common and costly in the country. Further validation and development of SMART-OP can help potential further dissemination of the program to other populations, for example, those who work in operational settings (e.g., military, police, emergency room personnel), including their family members, or to those who lead stressful lives (which could be applicable to nearly any individual). SMART-OP could have significant impact on Earth in helping people manage the deleterious effects of stress thereby addressing a major aspect of the important work that NASA pursues and supports.
Task Progress:	SMART-OP (Stress Management and Resilience Training for Optimal Performance) is a self-guided, multimedia, interactive, computer-based, stress management and resilience training program based on evidenced-based cognitive-behavioral principles and emotion regulation approaches. The main aim of this project is to evaluate SMART-OP for effectiveness and acceptability in a randomized controlled trial (RCT) with a sample of stressed, but healthy flight controllers, instructors and directors at NASA-JSC, in comparison to wait list control (WLC) group. So far, 26 eligible participants have been randomized either to SMART-OP or to WLC, and 22 of these have already completed the study including post-assessment. Study Implementation: The randomized controlled trial was launched at the end of 2014, and implementation has successfully continued for two years. Participants are randomized either to begin SMART-OP right away, or to a 6-week wait-list control. Before and after training, and before and after the wait period, participants complete a pre- or post-assessment that takes about two hours, and is administered by the Nutritional Biochemistry Lab at JSC. The self-guided SMART-OP sessions are conducted weekly and take about 35-45 minutes to complete. Participants in the wait-list control group complete a weekly stress measure that takes a minute or two to complete. Recruitment: Participant recruitment is being addressed by the UCLA team in conjunction with Test Subject Screening (TSS) and Behavioral Health & Performance (BHP) element personnel. Several presentations were made by the Principal Investigator (PI) at JSC to generate study interest, and advertising is regularly done in the JSC Today. Since the time of this report last year, 68 new potential participants have expressed interest (through informational sessions/presentations, and advertisements) in the study. Fifteen of those have been cleared by TSS and were screened for eligibility, and 8 met inclusion criteria (no medical or psychiatric diagnoses, but stressed based on self-report). Data collection: Collected data is extracted approximately weekly by our research team, and a data entry system has been developed in preparation for data analysis. We will be looking at self-report measures of stress, resilience, depression, anxiety, personality, emotion, sleep, and health behaviors, neurocognitive performance when stressed, psychophysiological data such as 24-hour heart rate, alpha amylase, and cortisol, and user feedback such as perceived system usability, working alliance, and treatment credibility.
Bibliography Type:	Description: (Last Updated: 02/11/2021)