Fiscal Year:	FY 2013	Task Last Updated:	FY 07/27/2012
PI Name:	Tannenbaum, Scott Ph.D.		
Project Title:	Composing and Developing Resilient, Adaptive, and Self-Sustaining Teams for Long Duration Space Exploration		
Division Name	Human Dasaarah		
Division Name.			
Program/Discipline:	HUMAN RESEARCH		
Element/Subdiscipline:			
Joint Agency Name:		TechPort:	No
Human Research Program Elements:	(1) <b>BHP</b> :Behavioral Health & Performance (archival in 201	7)	
Human Research Program Risks:	<ol> <li>(1) BMed:Risk of Adverse Cognitive or Behavioral Conditions and Psychiatric Disorders</li> <li>(2) Team:Risk of Performance and Behavioral Health Decrements Due to Inadequate Cooperation, Coordination, Communication, and Psychosocial Adaptation within a Team</li> </ol>		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
PI Email:	scott.tannenbaum@groupoe.com	Fax:	FY
PI Organization Type:	INDUSTRY	Phone:	518-456-7738
Organization Name:	The Group for Organizational Effectiveness, Inc.		
PI Address 1:	727 Waldens Pond Road		
PI Address 2:			
PI Web Page:			
City:	Albany	State:	NY
Zip Code:	12203-6006	Congressional District:	20
Comments:			
Project Type:	Ground	Solicitation / Funding Source:	2010 Crew Health NNJ10ZSA003N
Start Date:	10/01/2011	End Date:	09/30/2014
No. of Post Docs:		No. of PhD Degrees:	
No. of PhD Candidates:	3	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:	Leveton, Lauren	<b>Contact Phone:</b>	
Contact Email:	lauren.b.leveton@nasa5.gov		
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Alliger, George (The Group for Organizational Effectiveness, Inc.) Mathieu, John (University of Connecticut) Salas, Eduardo (University of Central Florida)		
Grant/Contract No.:	NNX11AR22G		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	Flight crews in Long Duration Space Exploration (LDSE) missions are isolated for prolonged periods with access to only limited, time-lagged communications with ground operations. This creates numerous team-related challenges. Under such conditions, a single crew member who is a "poor fit" can jeopardize mission effectiveness, and even a well-formed team must adapt during its time together to remain effective. The proposed research addresses how best to compose an LDSE team, as well as how to use subsequent team countermeasures to optimize team resilience, adaptability, and viability during a mission. The research program represents a synthesis of existing technologies and knowledge, and the advancement of new methods and applications, all grounded in the unique demands of LDSE. We consider team effectiveness as not only traditional task performance, but also, given the LDSE setting and mission, team sustainability and viability over time. Based on a synthesis of existing research, input from subject matter experts, and new empirical studies, we will recommend evidence-based guidelines for composing LDSE flight teams, identify diagnostic measures to guide preemptive actions, prototype a self-sustainment countermeasure to address psychosocial vulnerabilities, and develop specifications for an automated, diagnostic-driven, Team Autonomous Self-Development and Sustainment (TAS2) module.	
Rationale for HRP Directed Research:		
Research Impact/Earth Benefits:	The isolation and time-lagged communications that astronauts experience in Long Duration Space Exploration (LDSE) can create numerous team-related challenges (Caldwell, 2005; Dion, 2004; Halbesleben, Bowler, 2007; Schmidt, Keeton, Slack, Leveton, & Shea, 2009). Mitigating these challenges involves not only selecting appropriate crew members but also ensuring that they have sufficient team resilience, adaptability and vitality to meet the demands of LDSE. This multi-year effort focuses on assisting the LDSE team formation process by extending traditional team member selection models to integrate teamwork and psychosocial requirements with traditional position and mission requirements; utilizing longitudinal multiplex network analysis techniques to better diagnose and anticipate challenges to team coordination and effectiveness before they evolve into problems that could impact team viability and mission success; helping teams sustain their performance and coordination over the duration of the mission by building upon existing debriefing techniques and developing diagnostic-driven, team-guided countermeasures that address psychosocial needs and vulnerabilities as well as more traditional team development needs; and identifying principles for ground-based team training to help ensure teams can and will engage in self-sustainment activities during LDSE missions.	
Task Progress:	<ul> <li>Proposed tasks for Year I included: 1) understanding the LDSE requirements and team effectiveness criteria, 2) examining team selection/composition and developing initial guidelines, 3) examining diagnostic options and developing initial guidelines, 4) validating preliminary findings and establishing Year 2 and 3 research plans. Year I progress includes: Group for Organizational Effectiveness, Inc. (gOE) personnel conducted an initial kick-off meeting and reviewed the literature to clarify LDSE team requirements. In addition, gOE established connections with other NASA researchers (e.g., other team researchers; sleep researchers) to help ensure integration where appropriate. gOE developed structured interview protocols and initiated the process to conduct structured interviews with subject matter experts (SMEs). In addition, gOE worked on understanding the criteria domain (i.e., on-going crew effectiveness) including traditional performance indices, as well as team viability, adaptability, learning, and resilience. Based on this work, gOE is focusing on team resilience as a critical yet under-studied construct which will be reported in a subsequent white paper.</li> <li>During Year I, progress was made integrating and synthesizing relevant research on team composition. Based on that research synthesis and results from the forthcoming subject matter expert interviews, gOE will craft a set of initial team composition recommendations. These recommendations will offer preliminary advice about pertinent individual and team level characteristics for forming effective, resilient LDSE crews. This work is also driving the identification of key team composition variables for Year 2 and 3 empirical research studies.</li> <li>gOE reviewed the literature on team diagnostics and related interventions. Based on this understanding and the requirements of an LDSE mission, we have identified team self-sustaining debriefs as target countermeasures that we will study in subsequent years. gOE convened a panel of experts in</li></ul>	
Bibliography Type:	Description: (Last Updated: 02/02/2024)	
Abstracts for Journals and Proceedings	Cerasoli CP, Tannenbaum SI. "Debriefs Predict Performance: A Qualitative Review and Meta-Analysis." Presented at the 27th Annual Society of Industrial and Organizational Psychology Meeting, San Diego, CA, April 26-28, 2012. 27th Annual Conference for the Society for Industrial and Organizational Psychology, San Diego, CA, April 26-28, 2012. , Apr-2012	
Articles in Peer-reviewed Journals	Tannenbaum SI, Cerasoli C. "Do team and individual debriefs enhance performance? A meta-analysis." Human Factors, 2013 Feb;55(1):231-45. Published online before print June 4, 2012. <u>http://dx.doi.org/10.1177/0018720812448394</u> , Feb-2013	
Articles in Peer-reviewed Journals	Salas E, Tannenbaum SI, Kraiger K, Smith-Jentsch KA. "The science of training and development in organizations: What matters in practice." Psychological Science in the Public Interest, 2012 Jun;13(2):74-101. http://dx.doi.org/10.1177/1529100612436661, Jun-2012	