

Fiscal Year:	FY 2015	Task Last Updated:	FY 08/11/2015
PI Name:	LePine, Jeffrey Ph.D.		
Project Title:	Understanding and Preventing Crew Member Task Entrainment		
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) HSIA :Risk of Adverse Outcomes Due to Inadequate Human Systems Integration Architecture (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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Comments:			
Project Type:	FLIGHT,GROUND	Solicitation / Funding Source:	2013-14 HERO NNJ13ZSA002N-ILSRA. International Life Sciences Research Announcement
Start Date:	06/01/2015	End Date:	05/31/2018
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		
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Flight Program:	ISS		
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Wellman, Edward Ph.D. (Arizona State University)		
Grant/Contract No.:	NNX15AK77G		
Performance Goal No.:			
Performance Goal Text:			

Task Description:	The proposal responds to the request for research exploring Team Task Switching in Astronaut Crews on the International Space Station (ISS). We propose ground- and flight-based experiments to understand and mitigate the performance deficits caused by crew members switching between independent and interdependent tasks. Drawing on our own research, as well as that conducted by other scholars, we explain how crew member entrainment is produced by deep levels of cognitive, physical, and affective engagement or immersion in tasks, which make it difficult for members to disengage from those tasks – even after they have switched to a different task. With independent tasks, crew member immersion is grounded in features of the task, whereas in interdependent tasks, immersion is grounded in the task as well as in the connections that exist between members to coordinate interaction. We hypothesize that, as a result of this immersion/engagement, entrainment should cause the performance of teams that switch between independent and interdependent tasks to suffer. We further hypothesize that the strength of this effect influenced by member cognitive ability, goal difficulty, engagement, task complexity, and time spent on the prior tasks. We draw upon our understanding of the entrainment process to propose an intervention that will help crews transition more efficiently between critical independent and interdependent tasks and improve collective performance.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2015.
Bibliography Type:	Description: (Last Updated: 03/20/2020)