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| Fiscal Year: | FY 2016 | Task Last Updated: | FY 09/30/2016 |
| PI Name: | Fiore, Stephen Ph.D. | | |
| Project Title: | Macroognition in Teams: Examining and Developing Team Cognitive Processes and Products in the Context of Long Duration Exploration 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) 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: | 32826-3281 | Congressional District: | 7 |
| Comments: | | | |
| Project Type: | GROUND | Solicitation / Funding Source: | 2015-16 HERO NNJ15ZSA001N-Crew Health (FLAGSHIP, NSBRI, OMNIBUS). Appendix A-Crew Health, Appendix B-NSBRI, Appendix C-Omnibus |
| Start Date: | 08/01/2016 | 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 | | |
| Contact Monitor: | Contact Phone: | | |
| Contact Email: | | | |
| Flight Program: | | | |
| Flight Assignment: | NOTE: End date changed to 5/31/2018 per NSSC information; original end date was 7/31/2019 (Ed., 5/7/19) NOTE: Element change to Human Factors & Behavioral Performance; previously Behavioral Health & Performance (Ed., 1/18/17) | | |
| Key Personnel Changes/Previous PI: | | | |
| COI Name (Institution): | Burke, Shawn Ph.D. (University of Central Florida) Salas, Eduardo Ph.D. (Rice University) | | |
| Grant/Contract No.: | NNX16AO72G | | |
| Performance Goal No.: | | | |
| Performance Goal Text: | | | |

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| Task Description: | <p>Teams conducting long-duration exploration missions (LDEM) face the pervasive risk of decrements due to inadequate collaboration within the spaceflight crew as well as between and across Mission Control teams. Given that team cognition has been shown to be a significant predictor of team performance across a number of domains and tasks (DeChurch et al., 2010; Salas & Fiore, 2004), it is critical to understand how team cognition occurs under LDEM conditions, how it shifts over time, and how to implement countermeasures to improve it. Fiore and colleagues developed the macrocognition in teams model (MITM) to integrate the more general literature on team cognition with a particular focus on complex real world collaborative cognition (Fiore et al., 2010a; Fiore et al., 2010b). Building off of this theory, the Principal Investigator (PI) recently examined this in the context of LDEM and detailed a set of team cognitive processes and team cognitive knowledge to explicate the form of team cognition that needed to be understood for LDEM (Fiore et al., 2015). In this proposal we describe a multidisciplinary approach designed to refine and validate the MITM in the context of LDEM and use this as the theoretical foundation to develop and validate training protocols that lead to resilient team cognitive processes. In doing so, we take a multi-pronged approach combining analysis of archival documents and qualitative coding of crew communication in analog environments with new ground-based and analog studies. Our goal is to: (1) provide a richer understanding of team cognition and its relation to team performance in space crews and the larger multi-team system and (2) use this understanding to refine and validate training to mitigate decrements in team cognition.</p> <p>DeChurch, L., Hiller, N., Murase, T., Doty, D., & Salas, E. (2010). Leadership across levels Levels of leaders and their levels of impact. <i>Leadership Quarterly</i>, 21(6), 1069-1085.</p> <p>Salas, E. E., & Fiore, S. M. (Eds.) (2004). <i>Team cognition: Understanding the factors that drive process and performance</i>. Washington, DC: American Psychological Association.</p> <p>Fiore, S. M., Rosen, M. A., Smith-Jentsch, K. A., Salas, E., Letsky, M. & Warner, N. (2010a). Toward an understanding of macrocognition in teams: Predicting processes in complex collaborative contexts. <i>Human Factors</i>, 52(2), 203-224.</p> <p>Fiore, S. M., Smith-Jentsch, K. A., Salas, E., Warner, N., & Letsky, M. (2010b). Toward an understanding of macrocognition in teams: Developing and defining complex collaborative processes and products. <i>Theoretical Issues in Ergonomic Science</i>, 11(4), 250-271.</p> <p>Fiore, S. M., Wilshire, T. J., Sanz, E. J., & Pajank, M. E. (2015). Critical team cognitive processes for long- duration exploration missions. NASA/TM-2015-218583.</p> |
| Rationale for HRP Directed Research: | |
| Research Impact/Earth Benefits: | |
| Task Progress: | New project for FY2016. |
| Bibliography Type: | Description: (Last Updated: 01/12/2021) |