

# **International Symposium on Aviation Psychology (ISAP 2023)**

Rochester, New York, USA  
31 May - 3 June 2023

ISBN: 979-8-3313-0346-4

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2023) by Wright State University – Conferences & Events  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact Wright State University – Conferences & Events  
at the address below.

Wright State University – Conferences & Events  
3640 Colonel Glenn Highway  
Dayton, Ohio 45435  
USA

Phone: (937) 775-1000

<http://www.wright.edu>

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

Airport Personnel Perceptions of Airport Environmental Programs ..... <i>Navya Nikhita Agasam, Deborah S. Carstens</i>	1
Development and Validation of a Virtual UAM Transportation System ..... <i>Stacey M. Ahuja, Thomas Z. Strybel, Kim-Phuong L. Vu, Panadda Marayong, Praveen Shankar, Vernol Battiste</i>	7
Applying Human-Centered Design to AI-Enabled Pilot Scheduling..... <i>Amy L. Alexander, Audrey Haque, Michael Snyder, Rachael Kusiak, Brice Okubo, Kathie Chung, Eric Robinson</i>	13
Stereoscopic Depth Cues for Enhancing Pilot Interpretation of the Artificial Horizon ..... <i>Dale-Allen Arrundell, Annemarie Landman, Olaf Stroosma, M. M. van Paassen, Eric Groen, Max Mulder</i>	19
Exploring Informal Learning Structures in Airline Operations ..... <i>Barth Baron, Dorrit Billman, Randall J. Mumaw</i>	25
Analyses of the Boeing 737MAX Accidents: Formal Models and Psychological Perspectives..... <i>Immanuel Barshi, Asaf Degani, Robert Mauro, Randal J. Mumaw</i>	31
Extracting Lessons of Resilience Using Machine Mining of the ASRS Database ..... <i>Immanuel Barshi, Bryan Matthews, Jolene Feldman</i>	37
A Competency Framework for Aviation Psychologists and Human Factors Specialists in Aviation..... <i>Sonja Biede, Federic Detaille, OptiHum, Tina Narotra, Katarina Petrovic, Hermann Rathje, Alessandra Rea, Michaela Schwarz, Anna Vereker</i>	43
Survey Assessment and Initial Data: Flight Context and Pilot Techniques in Everyday Flights ..... <i>Dorrit Billman, Alan Hobbs, Lucas Cusano, Nóra Szládovics</i>	49
Efficacy of Using Virtual Reality to Support the Training of the Emerging Pilot Workforce ..... <i>James G. Birdsong, Kurt L. Reesman, JoEllen M. Sefton, Matthew W. Miller</i>	55
Usability Shortcomings in Department of Defense Funded Systems ..... <i>Jerry Burpee</i>	61
Creating Usable Research for the Design and Evaluation of Flight Deck Systems and Human Interfaces ..... <i>Divya C. Chandra</i>	67
International Students Sense of Belongingness and Motivation on Academic and Flight Performance..... <i>Sophie M. A. Chanoux, Andrew R. Dattel</i>	73
How Aviation Students Used an Escape Room to Assess SA From a Collaborative and Individual Approach ..... <i>Andrew R. Dattel, Hui Wang, Corey Spitz, Miles Moyer, Kyhan Gulsen</i>	79
Preventing Scenario Recognition in Human-in-the-Loop Air Traffic Control Research..... <i>Gijs de Rooij, Clark Borst, M. M. van Paassen, Max Mulder</i>	85

NASA Human Factors Red Light/Green Light Analysis: Overview and Spacshiptwo RI/GI Case Study.....	91
<i>Tracy Dillinger, Isabel Hernandez</i>	
Comparison of Delegation Methods for Task-Based UAV Guidance.....	97
<i>Marius Dudek, Axel Schulte</i>	
Development of a Concept for Analyzing Moral Decision-Making in High Presence Virtual Environments.....	103
<i>Sissy Friedrich, Axel Schulte</i>	
Pilot's Perspectives on Urban Air Mobility Safety Challenges and Potential Solutions.....	109
<i>Rania Wageh Ghatas, Saeideh E. Samani, Victoria L. Dulchinos, Richard H. Mogford</i>	
Can You Hear Me? Simultaneous Masking Between the Stars Air Traffic Control Alarms .....	115
<i>Corey Hall, Elliot Biltekoff, Matthew L. Bolton</i>	
Defining Needs for Enhanced Weather Products for UAS and GA Stakeholders: A Qualitative Study.....	121
<i>Scout Hernandez, Nicoletta Fala</i>	
A Natural Language Processing Model for Analyzing Aviation Safety Event Reports: A Subset of Results .....	127
<i>R. Jordan Hinson, Edward Bynum, Amelia Kinsella, Katherine Berry, Michael Sawyer</i>	
Learning About Routine Successful Pilot Techniques Using a Cued Retrospective Think-Aloud Task .....	133
<i>Jon Holbrook, Chad Stephens, Lawrence J. Prinzel, Sepehr Bastami, Daniel Kiggins</i>	
Flight Deck Procedures for a New Generation of Pilots.....	139
<i>Erik-Jan A.M. Huijbrechts, M. M. van Paassen</i>	
A Non-Technical Skills Training Concept from the Initial Flight Training Stage to Airline Operation .....	145
<i>Hiroshi Ikeba, Hiroka Tsuda, Kohei Funabiki</i>	
Improving General Aviation Safety Through Human Factors Research.....	151
<i>Ian Johnson, Mary E. Johnson, Brandon J. Pitts, Shantanu Gupta, Beth Blickensderfer, John Kleber, Cassandra Domingo, Robert Thomas, Thomas Guinn, Lori Brown, Debbie Carstens, Tianhua Li, Michael E. Splitt, M. Harwin, Barrett Caldwell, Mel Futrell</i>	
Get the Job Done or Safety Above All? How Training Background Affects Safety in Helicopter Pilots.....	157
<i>Anna Kaminska, Amy Irwin, Devin Ray, Rhona Flin</i>	
UAS Voice Communications Intelligibility Testing .....	163
<i>Alex Konkel</i>	
Development of a Prototype Vertiport Human Automation Teaming Toolbox for Urban Air Mobility.....	169
<i>Paul Krois, Joseph Block, Paul Cobb, Gano Chatterji, Cherie Kurian, Peng Wei, Shulu Chen</i>	
Concept of a Goal and Plan Recognition System for Adaptive Pilot Assistance in Helicopter Operations .....	175
<i>Dominik Kunzel, Axel Schulte</i>	

Acquiring Manual Flying Skills in a Virtual Reality Flight Simulator .....	181
<i>Wiestse D. Ledegang, Erik van der Burg, Ivo V. Stuldreher, Mark M. J. Houben, Eric L. Groen, Danny van der Horst, Erik A. M. Starmans, Guido Almekinders</i>	
Development of a Test Scenario to Assess Kinetosis Risk in Military Flight Training .....	188
<i>Simone Vera Lohlein, Mara Kaufeld, Andreas Seefried, Axel Schulte</i>	
Experimental Evaluation of Cloud-Based Synchronous Multi-Pilot Multiuav Mission Plan Generation in a MUM-T Environment .....	194
<i>Siegfried Maier, Axel Schulte</i>	
Interview of Pilot's Inflight Loss of Control Experiences .....	200
<i>Neelakshi Majumdar, Karen Marais</i>	
A Multi-Method Approach to Work Design for Crew in Future Remotely Piloted Aircraft Operations .....	206
<i>Kayler Marshall, Penelope Sanderson, Andrew Neal</i>	
Initial Testing of the Uncrewed Aerial System Pilot Kit (UASP-Kit) in Operational Settings.....	212
<i>Lynne Martin, Lauren Roberts, Joey Mercer, Yasmin Arbab, Charles Walter, William McCarty, Charles Sheehe, David Fuller</i>	
The Viability of See-and-Avoid for Urban Air Mobility Operations .....	218
<i>Richard Mogford, Walter Johnson</i>	
What Can We Learn from Resilient Pilot Behaviors? The Case of Energy Management While Flying a Star .....	224
<i>Randall J. Mumaw, Dorrit Billman, Barth Baron</i>	
Evaluating Envisioned Air Mobility Architectures Using Computational Simulations of Work.....	230
<i>Abhinay Paladugu, Alicia Fernandes, Stuart Wilson, Thomas J. Davis, Jarrod Lichty, Martijn Ijtsma</i>	
A Comparison of Virtual Reality and High-Fidelity Flight Training Devices for AB Initio Pilot Training .....	236
<i>Naomi Paul, Brad Moncion, Shi Cao</i>	
Fatigue and Recovery in Pilots and Air Traffic Controllers: A Military Case Study .....	242
<i>Pedro Piedade</i>	
Easy as ABC: A Mnemonic Procedure for Managing Startle and Surprise .....	248
<i>Matteo Piras, Annemarie Landman, M. M. van Paassen, Olaf Stroosma, Eric Groen</i>	
LVC, What Is It Good For? Trade-Offs in Training Value of Live Virtual Constructive Air Combat Training in Large Force Exercises.....	254
<i>Robert Ramberg, Henrik Artman, Rogier Woltjer, Sanna Aronsson, Mikael Mitchell</i>	
Utilizing Fram and Digital Materiel Management to Evaluate System Resilience and Inform Design Decisions .....	260
<i>Hannah Rennich, Michael E. Miller, John M. McGuirl</i>	
Concept of a Cognitive Agent Supporting Collaboration in Human Teams .....	266
<i>Wolfgang Sachsenhauser, Axel Schulte</i>	
Personality Factors and Education Outcome in Swedish Military Pilot Education.....	272
<i>Malcolm Sehlstrom, Markus Nystrom, Jessica Korning Ljungberg, Anna-Sara Claeson</i>	

Effective Integration of Human Factors Engineering Into FAA System Development Acquisition Programs.....	277
<i>Philip J. Smith</i>	
The Weak Signals of Cyber Discerning and Learning That Which Is Meant to Be Imperceptible, Illusory, and to Inveigle.....	283
<i>Elena St Amour, Phat Ngo, Tameah Young, James Ness</i>	
Psychophysiological Research Methods to Assess Airline Flight Crew Resilient Performance in High-Fidelity Flight Simulation Scenarios.....	289
<i>Chad L. Stephens, Tyler D. Fettrow, Lawrence J. Prinzel, Jon B. Holbrook, Kathryn M. Ballard</i>	
Research and Technology Challenges for Human Data Analysts in Future Safety Management Systems.....	295
<i>Chad L. Stephens, Lawrence J. Prinzel, Kyle K. Ellis, Michael J. Vincent, Samantha I. Infeld, Nikunj C. Oza, Misty D. Davies, Robert W. Mah, Paul A. Krois, Janes Ackerson</i>	
Interface Design for Collaboration with Semi-Autonomous Agents From an Airborne Aircraft .....	301
<i>John A. Steveneson, John McGuirl, Michael E. Miller</i>	
Examining the Relationship Between Workload and Resilient Performance in Airline Flight Crews .....	307
<i>Michael Stewart, Kathryn M. Ballard, Chad L. Stephens, Lawrence J. Prinzel, Jon B. Holbrook, Tyler D. Fettrow, Daniel J. Kiggins</i>	
Resilient Strategies in Commercial Aviation .....	313
<i>Michael Stewart, Bryan Matthews</i>	
Measuring the Lookout Behavior of Student Pilots in a Virtual Reality Flight Simulator .....	319
<i>Ivo V. Stuldreher, Erik van der Burg, Wietse D. Ledegang, Mark M. J. Houben, Eric L. Groen, Danny van der Horst, Erik A. M. Starmans, Guido Almekinders</i>	
Pilot's Eye Behavior and Electrodermal Activity During Flight.....	325
<i>Gajapriya Tamilselvan, Stephen M. Belt</i>	
Concept of an Automated Activity Determination in the Temporal Domain for Adaptive Pilot Assistance.....	331
<i>Karl Tschurtschenthaler, Axel Schulte</i>	
Reconstruction of Crew's Behaviours Using Cockpit Images and the Suggestion of the Deviation from Standard Procedure.....	337
<i>Kenji Usami, Hiroka Tsuda, Kohei Funabiki</i>	
On the Appropriate Participant Expertise for Display Evaluation Studies .....	343
<i>M. M. van Paassen, Clark Borst, Max Mulder, Gijs de Rooij, Ferdinand Dijkstra, Adam Balint Tisza</i>	
Challenges and Opportunities of Learning Aviation English by Chinese Pilots.....	349
<i>Chi Hang Wong, Ion Juvina, Meredith Pitts, Steve Chung, Jennifer Roberts, Andrew H. Schneider</i>	
Development and Psychometric Evaluation of US Air Force Aptitude Composites for Aircrew Training .....	355
<i>Montana R. Woolley, Thomas R. Carretta</i>	

**Author Index**