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“Developing tomorrow’s leaders with today’s warfighter research”

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WERC Research

WARFIGHTER SUPPORT

TECHNOLOGY TRANSFER

FACULTY DEVELOPMENT

CADET EDUCATION

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Mission

- Facilitate faculty and cadet research in the Behavioral Sciences through collaborative efforts to enhance warfighter effectiveness

Priorities

1. Enable the warfighter
2. Facilitate faculty & cadet research
3. Establish & maintain a world-class Beh Sci research facility
4. Be the AF’s model for efficient, effective, affordable warfighter research
AY14/15 In Review

- 8 Staff
- 39 Faculty/researchers
- 262 Students
- 5 Dedicated research labs
- Hosted 8 Brown Bags
- Dr. Endsley Visit
- Dr. Zacharias Visit
- AFOSR Trust & Influence Program Review
- Internal WERC Program Review
- $707k Budget
- 40+ Publications/presentations
- Sponsored 20+ research TDYs

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Collaborations
Applied topics in Beh Sci:
Human Factors Eng, Leadership, Eng Psych, Cognitive Neuroscience, Human Systems Integration
MQ-9/X Interface Design  
(PI: LtCol McClernon, Dr. Vic Finomore)

- Collaborating with AFLCMC, General Atomics, MQ-9/X SPO
- Investigating data entry for advanced systems
- Met with CET at General Atomics
- Conducted testing on MQ9/X Block 50 GCS
- Laboratory study to test data entry method
Research Themes

Foundations of psychology and/or basic research: Neuroscience, Sensation & Perception, Cognition, Learning, Personality
Collaborating with AFRL (Dr. Wayne Chappelle), Creech AFB, Cannon AFB, German Air Force

Investigating the impact of RPA combat operations on co-located family members

Methods developed (on-line and phone interviews)

IRB pending
Research Themes

Social thinking/research within DoD operations/issues:
Sociology, Social Psychology, Anthropology

Socio-Cultural
RPA Field Simulation
(PI: Dr. Wil Scott, Dr. Karen DeAngelis)

- Collaborating with SOCOM, AFA UAV Center
- Behavioral Sciences & Leadership Capstone research project
- Field teams enact challenging legal/ethical dilemmas in irregular warfare setting (Afghanistan)
- Action recorded by RQ-11 Ravens flying overhead
- Video transmitted to AOC team who must make mission-compatible shoot/no-shoot decisions in real-time

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Research Themes

Social thinking/research within DoD operations/issues:
Sociology, Social Psychology, Anthropology

Applied topics in Beh Sci:
Human Factors Eng, Leadership, Eng Psych, Cognitive Neuroscience, Human Systems Integration

Foundations of psychology and/or basic research:
Neuroscience, Sensation & Perception, Cognition, Learning, Personality
Questions?
## Research Objectives:

RPA assignments generate stress because of the nature of the work, the “deployment-in-place,” characteristic, and, at Creech AFB, lack of on-base services; study is designed to …

- assess how RPA family members are doing
- provide recommendations for improving programs/support services

## Technical Approach:

- Spouses/partners of those in RPA crews/units may access anonymously an Air Force maintained Survey Monkey site to fill out a quantitative questionnaire
- Those who wish may sign up for a follow-up telephone interview

## Key Findings:

None yet, survey/interviews commence 17 August 2015

## Benefits to wider academic or DoD community:

- Potential to improve how RPA assignments are conceptualized and distributed with an eye toward improving moral and family/relationship satisfaction
- Potential to tailor available programs/support services to improve duty performance and family well-being
RPA Field Simulations
(Scott, DeAngelis, & Kajdasz)

Research Objectives:

• To devise “dilemma training” scenarios to acquaint cadets with legal/ethical issues involving RPAs in irregular warfare settings

• To create initial assessments for evaluating the fidelity and effectiveness of “dilemma training” scenarios

• To generate recommendations for conducting mission-effective “dilemma training” scenarios that may be of use in the operational Air Force

Technical Approach:

• PI, Co-PI, and senior cadets prepared scenarios/ROEs enacted in the field and recorded by RQ-11 Ravens, with video-feed transmitted to an AOC team for challenging “shoot-no shoot” decisions

• Video-recordings of activities “on the ground” and in the AOC are in process of being synchronized for use in further studies

Key Findings:

• AOC team had difficulty translating classroom solutions into quick, legal/ethical decisions in real-time

• Visual/auditory cues affected decision-making

• Recommendations include need for:
  - staging scenarios more effectively, perhaps use of “drama coach” for rehearsing future scenarios
  - gimbal-mounts for Raven’s cameras to improve video-feeds to offset weather conditions

Benefits to wider academic or DoD community:

• PI, Co-PI prepared position paper/research report to explain theoretical thinking and practical steps for RPA Field Simulations

• Paper/research report circulated among colleagues who study RPA issues in military sociology, military psychology

• Human performance team in operational Air Force has expressed interest in such simulations for improving training of RPA operators
Command & Control Digital Checklist  
(McClernon & Finomore)

**Research Objectives:**
- Current NORAD/NORTHCOM Command & Control operations are conducting using a spiral bound paper checklist
- Determine the feasibility of conducting crisis-response C² activities with the aid of a digital checklist

**Key Findings:**
- Cadet command center digital checklist was (1) more efficient, and (2) resulted in few error compared to traditional paper checklists

**Technical Approach:**
- Phase 1: Empirically test/compare paper vs. digital checklists for cadet command center checklist
- Phase 2: Develop NORAD/NORTHCOM digital checklist to replace existing paper checklists
- Phase 3: Test/compare new digital checklist to legacy checklist

**Benefits to wider academic or DoD community:**
- Introduce modern computer-based systems for current military operations and crisis response to improve performance and efficiency
- Test similar digital tools for other military contexts (e.g., aviation, dismounted, nuclear, etc.)

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Data Entry Methods in Unmanned Aerial Vehicle Operations
(McClernon & Finomore)

Research Objectives:
• Proposed UAV Ground Control Stations (GCSs) incorporate touch-screen displays for data entry
• Test feasibility of touch-screen displays for UAS operations

Key Findings:
• When comparing keyboard, number pad, and touchscreen input devices, the touchscreen resulted in less efficient data entry, poorer accuracy, and lower performance on the primary MATB task.

Technical Approach:
• Test data entry performance while flying a military flight screening multi-task simulation (MATB)
• Then test similar task in an operationally-relevant GCS

Benefits to wider academic or DoD community:
• Anecdotal evidence reveals that the RPA community is resistant to using touchscreen displays for data entry
• Empirical evidence now suggests primary task and data entry performance also suffers from touchscreen displays
• Need to test in an operational GCS with a flying task

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