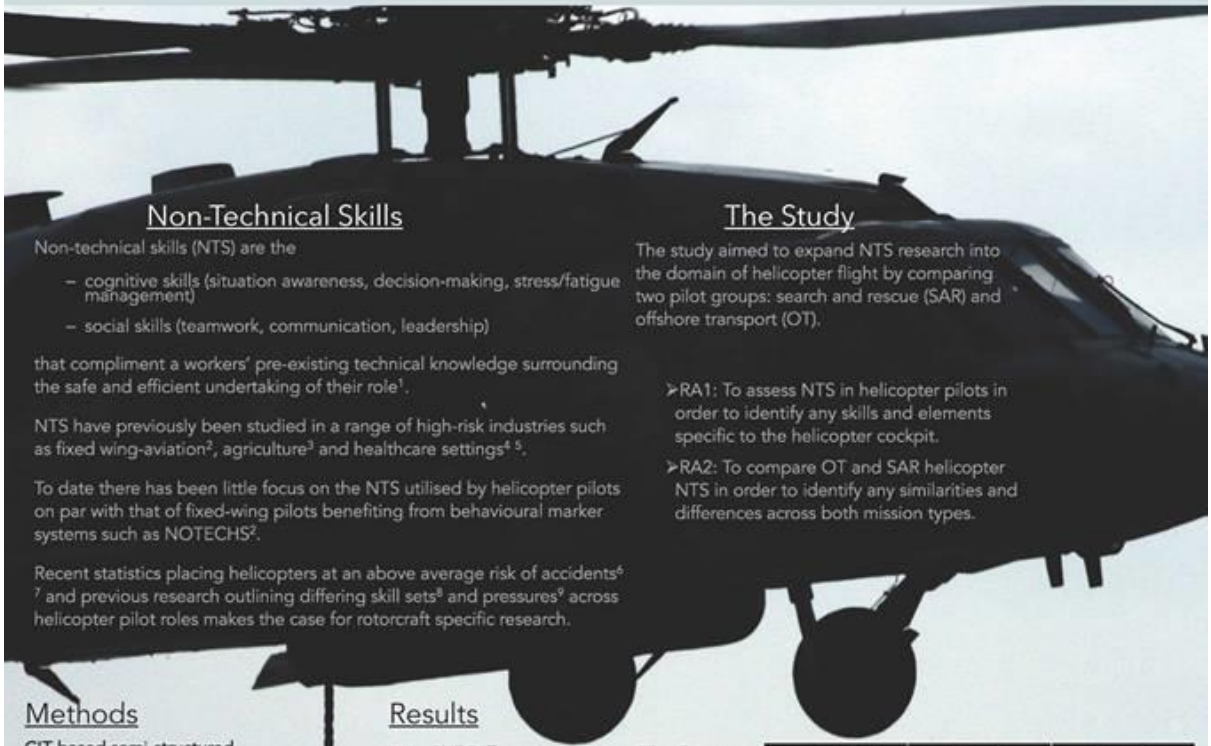
An Exploratory Interview Study to Compare Non-Technical Skills Across Helicopter Pilots

Oliver Hamlet
r01oh17@abdn.ac.uk

Dr Amy Irwin
a.irwin@abdn.ac.uk

UNIVERSITY OF ABERDEEN

E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL



Non-Technical Skills

Non-technical skills (NTS) are the

- cognitive skills (situation awareness, decision-making, stress/fatigue management)
- social skills (teamwork, communication, leadership)

that compliment a workers' pre-existing technical knowledge surrounding the safe and efficient undertaking of their role[1].

NTS have previously been studied in a range of high-risk industries such as fixed wing-aviation[2], agriculture[3] and healthcare settings[4 5].

To date there has been little focus on the NTS utilised by helicopter pilots on par with that of fixed-wing pilots benefiting from behavioural marker systems such as NOTECHS[2].

Recent statistics placing helicopters at an above average risk of accidents[6 7] and previous research outlining differing skill sets[8] and pressures[9] across helicopter pilot roles makes the case for rotorcraft specific research.

The Study

The study aimed to expand NTS research into the domain of helicopter flight by comparing two pilot groups: search and rescue (SAR) and offshore transport (OT).

- RA1: To assess NTS in helicopter pilots in order to identify any skills and elements specific to the helicopter cockpit.
- RA2: To compare OT and SAR helicopter NTS in order to identify any similarities and differences across both mission types.

Methods

CIT based semi-structured interviews

- n = 24 (16 x OT pilots, 12 x SAR pilots)
  - Incremental increases until data saturation was achieved
  - Audio recorded
- General information regarding job role, typical actions during stages of flight, description of critical incident and NTS based questions

Analysis

- Interview data was iteratively coded to produce behavioral checklists (with NTS and behavioral sub-elements) for both pilot groups
- Checklists used by second rater for independent coding
- Kappa analyses indicated substantial agreement between raters (OT k=.87, SAR k=.94)

Results

Main Skill Differences Between Pilot Groups

Situation Awareness
- Focused around different factors (mission parameters, mission risks)

Task Management
- Utilised at different stages of flight: pre-flight for OT, often on route for SAR

Teamwork and Leadership
- Same basic sub-elements
- Training teamwork-based for SAR, leadership based for OT

Decision Making
- Same basic sub-elements
- Differing risk thresholds influencing decisions

Communication
- Same basic-elements but content of communications varied

Cognitive Readiness
- NTS category of 'cognitive readiness' included for SAR pilots
- Encompasses a range of behaviours relating to quick response to dynamic emergency scenarios
- Generally not displayed by OT pilots

Non Technical Skill	Number of times coded for SAR	Number of times coded for OT
Situation Awareness	328	312
Task Management	198	301
Communication	133	154
Teamwork	131	183
Decision Making	131	121
Leadership	60	78
Cognitive Readiness	86	N/A

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