Zvyšovanie bezpečnosti a kvality v civilnom letectve 2016

Vedecka konferencia

The challenge of Professional Pilot Selection – PERSONALITY PROFILING OF PILOTS AS A MANDATORY REQUIREMENT

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The accident rate for public transport flights has declined steadily since 1973.
Increased Complexity

- The complexity of this system will increase with the predicted growth in air traffic volumes (4.7% to 5.0% per year) (Airbus 2015; Boeing 2015a),

  - At the current accident rate this equals:
    - several major incidents or accidents per week by 2030 (ACROSS 2013, p. 35),

- Is this acceptable to you?
Who is the Weakest Link?

- The perceived weakest link is:
  - The pilots,

- Often quoted 70% of accidents resulting from human error (Amalberti 2001, p. 110)
Pilot Selection - The Right Stuff!

• A well designed selection process will:
  ▫ Enhance safety
  ▫ Meet Regulatory requirements
  ▫ Reduce costs
  ▫ Get the right pilot for your operational requirement
Established selection processes?

- **Knowledge**
  - Identify what you want to measure (cognitive, type or other)
  - SME
  - Validate (Test the measure)

- **Skills**
  - Psychomotor or simulator
  - The measure? (competence on type or ability to learn)
  - Standardise the raters

- **Abilities** (mechanical, timesharing, SA)
  - Cognitive?
  - Psychomotor or simulator?
  - Competency based interview?
KSAs-The Tip of the Iceberg

- KSAs are relatively visible, easy to identify and manage.

Other characteristics:

- Behavioural
- More difficult to identify and manage
Are these Other Characteristics Really Important?
Are these Other Characteristics Really Important?

- Personality and social competence identified by IATA as an essential component in pilot selection (IATA, 2012).
  - “Analyses of accidents and incidents as well as safety investigations within airlines have shown many instances where operational safety was compromised due to authoritarian behaviour, lack of assertiveness erisk taking” (Burger, Neb & Hoermann, 2003; Thomas, 2012)
  - “Social competence played a greater role in the frequency, risk, and successful management of safety-related incidents than operational or technical issues”.
- These skills are not guaranteed by holding ATPL, OR increased number of flying hours OR by seniority (Kemmler & Neb 2001).
Is This a New Concept?

- Air Florida Flight 90-Potomac River January 1982

- “The extent to which pre-accident personality factors were involved leads to the assumption that pre-existing psychological adjustment factors were central in the maladaptive interaction of the two crew men” (Butcher, 2002).
Measure of Other Characteristics

- Interviews - commonly used by airlines
  - Structured, unstructured or competency based?

- Personality assessment has been widely implemented by various military organisations.
  - The influence of personality as measured by the Five Factor Model (FFM) and crew performance for military pilots is well researched and validated (Grice & Katz 2006; Carretta 2011; Chappelle et al. 2014).
So why is Personality Not Used more by Airlines?

- The problem is that current selection tools have a data set that does not accurately reflect airline needs (Nergård et al. 2011).
  - Leading to either a high fail rate in selection (airline reports are up to 75%)
  - Lack of confidence in the tests
  - Often results in constant change in test types or selection companies etc.
Norms - A Reminder 68% with 1 SD
Personality of Pilots

• Different from the general adult population

• Aviation regulators and the latest requirement for a ‘comprehensive pre-employment screening’: But with no guidance on how!

• Validated direct link between facets of the FFM and pilot performance (Military), No Civilian data!
“The psychological evaluation at the selection stage may include an evaluation of the personality of the candidates. The aim of these tests is to identify applicants who are balanced and do not show any signs of behavioural instability, and to exclude applicants whose personality factors elevate the risk of later behavioural problems”.

- This requirement will challenge airlines & all Approved Training Organisations (ATOs)!
  - Does the regulator have expertise?
Finding the ‘Right Stuff’ - The Solution

- You need a NORM set.

- New updated profile that will be unique to airline needs and in comparison to a global pilot profile linked to line flying performance.

- Secondly, for ATOs, a profile in comparison for MPL, and Frozen ATPLs, linked to performance.
Performance based Professional Pilot Profile

- (Captains, First Officers, Instructors and Management Pilots)

- You would select them based on their performance as follows:
  
  - In initial & type rating training (no extra or minimum extra training),
  - LPC/OPC to company standard or better,
  - Line checks company standard or better,
  - FOQA/FDM events-no significant debriefs"
Benefits of Personality Profile

• Enhanced safety in all selections

• Get the right person for the company

• Identifies those with development potential

• Cost benefits:
  • Reduced training failure
  • Reduced extra training
  • Reduced turn over (right fit to Organisational Culture)
Early Preliminary Results

- European pilot sample
- N= 350 (performance based profile)
- N= 30 (problem pilots)
Norms- A Reminder 68% with 1 SD
Comparison of the UK Adult norm and the Performance Based Professional Pilot EU norm set
**NEO-PI-R Facets: Pilots v UK Gen Norm**

- Depression: Lower than in adult norm set
- Assertiveness: Higher than in adult norm set
- Compliance and Competence both higher than the Gen Pop
- Deliberation: Higher than in adult norm set

**Facets**:
- N1 Anxiety
- N2 Angry-Hostility
- N3 Depression
- N4 Self-Consciousness
- N5 Impulsiveness
- N6 Vulnerability
- E1 Warmth
- E2 Gregariousness
- E3 Assertiveness
- E4 Activity
- E5 Excitement-Seeking
- E6 Positive Emotions
- O1 Openness to Fantasy
- O2 Openness to Aesthetics
- O3 Openness to Feelings
- O4 Openness to Actions
- O5 Openness to Ideas
- O6 Openness to Values
- A1 Trust
- A2 Straightforwardness
- A3 Altruism
- A4 Compliance
- A5 Modesty
- A6 Tender-Mindedness
- C1 Competence
- C2 Order
- C3 Dutifulness
- C4 Achievement Striving
- C5 Self-Discipline
- C6 Deliberation
A Real Life Use

Use in:
Selection (Direct Entry-Type Rated)

Command Upgrade
If you like to participate in our research project

Performance based Professional Pilot Personality Profile

• Please contact us on

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What is next for psychometrics in aviation.

- **EASA** - European Aviation Safety Agency
- Germanwings task force recommendations,
- Enhance safety & meet the EASA regulatory requirements.
Thank you
References

- North CS, Cloninger CR. Personality and major depression among directly exposed survivors of the Oklahoma City bombing. Depression Research and Treatment 2012.