

Core Aviation Psychology



Human Factors: Personality and safety in commercial rotary- wing pilots

Paul Dickens
Core Aviation Psychology

Who am I?

- * Clinical psychologist and one of 7 accredited aviation psychologists in UK
- * Worked in aviation for 22 years
- * Aircrew assessment and support, CRM, CISM
- * Manufacturers including Airbus, Leonardo, Safran, BAE Systems, Eurofighter
- * Operators including CHC Helicopter, Jet2, Eastern, Titan Airways, RAF, Airtanker, DHL



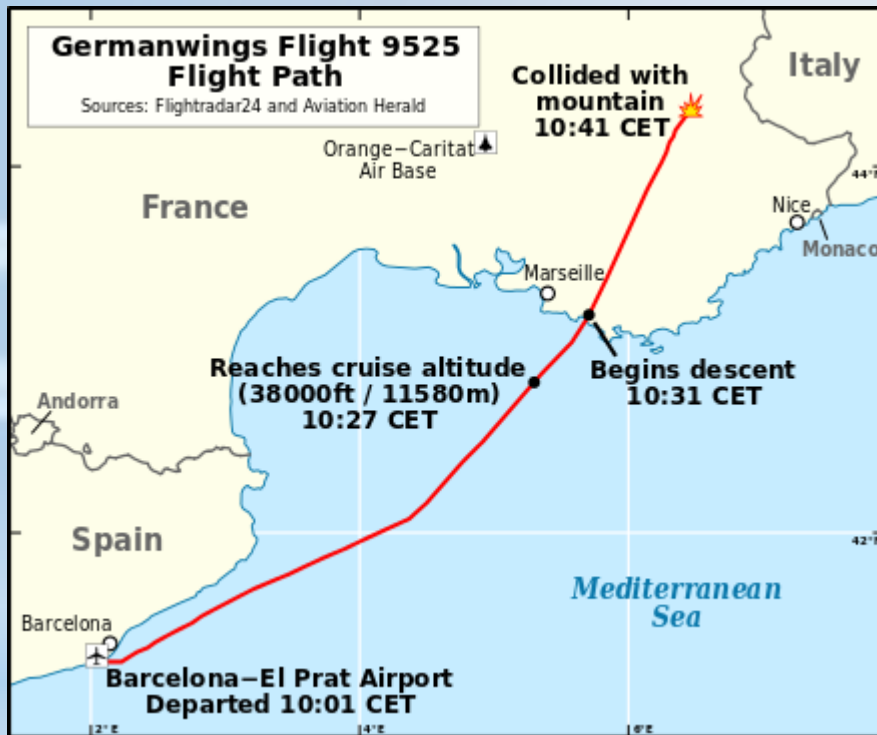
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Chartered and Registered Clinical Psychologist
Accredited Aviation Psychologist

What are you going to hear?

- * About why this topic is important
- * About the BIG 5 model of personality
- * About the personality profile of rotary-wing pilots
- * About what this means for ensuring safe operations



Germanwings Flight 9525 24/03/2015



A320-211 Barcelona – Düsseldorf

144 plus 6 crew died



“For pilots’ psychological assessment by operators, a new recommendation stipulates that a flight crew should have undergone a psychological assessment before commencing line flying”

(EASA Opinion No 14/2016 2.3)

What's this Big 5 thingummy?

- * **Meta-analysis shows the presence of 5 underlying personality factors in most psychometric measures**

(see for example McCrae, R.R. & John, O.P. (1992) An introduction to the 5-Factor model and its applications. *Journal of Personality*, 60, 175 – 215)

- * **The “Big 5” shown to be valuable in describing human behaviour and characteristics – especially in the workplace**

(e.g. Barrick, M.R. & Mount, M.K. (1991) The Big 5 personality dimensions and job performance: A meta-analysis. *Personnel Psychology*, 44, 1 – 26)

The BIG 5

Factor	Facets
Extraversion	Warmth, gregariousness, assertiveness, activity, excitement seeking, positivity
Agreeableness	Trust, straightforwardness, altruism, compliance, modesty, tender-mindedness
Conscientiousness	Competence, order, self-discipline, dutifulness, deliberation, achievement striving
Neuroticism	Anxiety, angry hostility, depression, self-consciousness, impulsiveness, vulnerability
Openness	Fantasy, aesthetics, ideas, open-mindedness, creativity



Personality and pilots

- ❖ Lots of research on Big 5 personality factors in pilots – but often undifferentiated between fixed and rotary wing
- ❖ USAF studies show some differences between platform types
- ❖ Sharon Clarke's work on Big 5 personality factors linked to involvement in safety-related incidents – unsafe operators tend to show low A and low C



Personality and pilots

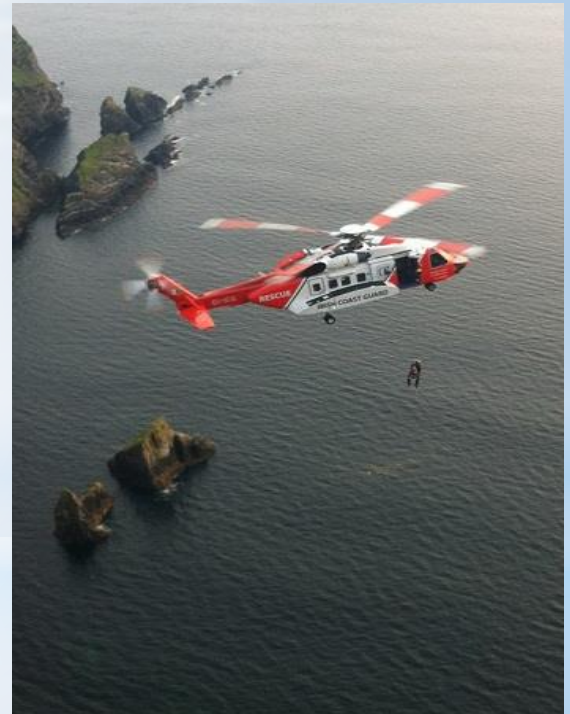
NEO-PI with 75 experienced US Army rotary wing pilots

Factor	US Army Total	US Army C&U
Extraversion	Average	Average
Agreeableness	Average	Average
Conscientiousness	Average	High
Neuroticism	Low	Low
Openness	Low	Low

Grice & Katz (2006) Personality profiles of experienced US Army aviators across mission platforms Technical Report 1185: US Army Research Institute



- ❖ Thorough psychological assessment of all new hires – “anyone that touches an aircraft” – since 2012
- ❖ Covers all North Sea operations and UK and Eire SAR
- ❖ Big 5 Inventory part of the assessment process
- ❖ Includes permanent and contract staff



The Big 5 Inventory

- * 44 item direct measure of Big 5 factors
- * Robust psychometric properties – high reliability, clear factor structure, strong correlations with other Big 5 measures (esp. NEO PI-R) and high face validity

John, O.P., Naumann, I.P. & Soto, C.J. (2008) Paradigm shift to the integrative Big Five trait taxonomy: History, measurement and conceptual issues. In O.P John, R.W. Robins & L.A. Pervin (eds.) *Handbook of Personality: Theory and research*. (3rd. Ed., pp. 114 – 158. New York NY: Guilford)

The sample

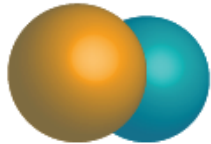
- * 226 pilots with ATPL(H)/CPL(H) licence
- * Average 4550 hours experience (210 – 14700 range)
- * Training – 127 civil, 99 military
- * 213 utility, 13 SAR/HEMS
- * 216 male (96%), 10 female (4%)
- * Age range 21 – 63: Average = 39.8 years
- * Assessed between 2012 and 2017
- * All assessed pre-hire

● Helicopter Pilots

● General Population

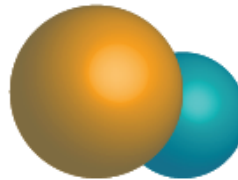
Extraversion

Significantly Higher



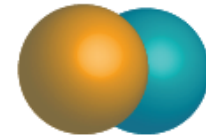
Agreeableness

Significantly Higher



Openness

About the Same



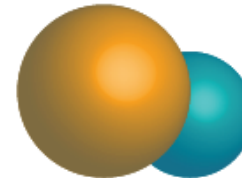
Neuroticism

Significantly Lower



Conscientiousness

Significantly Higher



So?

- ❖ Rotary-wing pilots in the sample were significantly more conscientious and agreeable, and significantly less anxious, than the general population
- ❖ They are more likely to be meticulous, procedure-driven and organised
- ❖ They are more likely to work effectively in a team
- ❖ They are likely to be resilient and calm under pressure
- ❖ They show the personality characteristics of safe workers

Implications for pilot psychological assessment

- ❖ Personality assessment of pilots can ensure they have safety-related personality traits
- ❖ Need to research predictive validity – relationship between assessment data and job performance
- ❖ Operators' implementation of the forthcoming regulations on psychological assessment of pilots should reflect the evidence-base that Big 5 personality factors can differentiate desirable personality characteristics

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Questions?

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**All
HELICOPTER
PILOTS
Must Be
Accompanied
By An Adult.**

