

PSYCHOLOGICAL EVALUATION OF PILOTS IN THE CONTEXT OF AIRLINES' PILOT APTITUDE TESTING - Psychologists' View -

EASA Aircrew Medical Fitness Workshop

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Knowledge for Tomorrow



Recommendation of EASA's Task Force

- # 2 All airline pilots should undergo psychological evaluation as part of training or before entering service.
- The airline shall verify that a **satisfactory evaluation** has been carried out
 - The **psychological part of the initial and recurrent aeromedical assessment** and
 - the related **training for aero-medical examiners** should be strengthened
 - Psychological evaluation shall be done with aviation psychological expertise. A formal **recognition of aviation psychologists** could be explored

Source:

Task Force on Measures Following the Accident of Germanwings Flight 9525 Final Report. EASA, July 2015.



Current Regulation for Pilot Medical Certificates - Psychological Requirements -

- Part-MED, Subpart B: *REQUIREMENTS FOR PILOT MEDICAL CERTIFICATES*
- **MED.B.060 Psychology**
- (a) Applicants shall have no established psychological deficiencies, which are likely to interfere with the safe exercise of the privileges of the applicable licence(s).
- (b) A psychological evaluation may be required as part of, or complementary to, a specialist psychiatric or neurological examination



Current Regulation for Class 1 Medical Certificates

- Psychological Requirements -

- **AMC1 MED.B.060 Psychology**
- (a) Where there is suspicion or established evidence that an applicant has a **psychological disorder**, the applicant should be referred for psychological opinion and advice.
- (b) Established evidence should be verifiable information from an identifiable source which evokes doubts concerning the mental fitness or personality of a particular individual. Sources for this information can be **accidents or proficiency checks, delinquency** or knowledge relevant to the safe exercise of the privileges of the applicable licence.
- (c) The psychological evaluation may include a collection of **biographical data, the administration of aptitude as well as personality tests and psychological interview**.
- (d) The **psychologist should submit a written report** to the AME, AeMC or licensing authority as appropriate, detailing his/her opinion and recommendation.





European Association for Aviation Psychology (EAAP)

- Over 400 members actively involved in aviation psychology accross more than 50 European and non-European countries
- Since almost 20 years EAAP has an accreditation process for HF Specialists and Aviation Psychologists, listed in an international register.
- Contributions to the harmonisation of national standards for psychological requirements for ECAC/JAA in the 90s („CPT-Working Group“)
- 2008/2009 comments on the NPA 2008-17c in collaboration with the EHFAG and other European organisations to bring more detail about the psychological requirements for Class 1 and Class 2 medical certificates for pilots into the regulation



Psychological Evaluation: Job Requirements

Information
processing

Communication

Motor skills

Procedure
adherence

System
management



Psychological Evaluation: Validity

„A qualified selection procedure can reduce the number of problem pilots' in flight operations by about 80%“

Source:

Safety pilot of a major European airline based on an analysis of worldwide aviation accidents and incidents



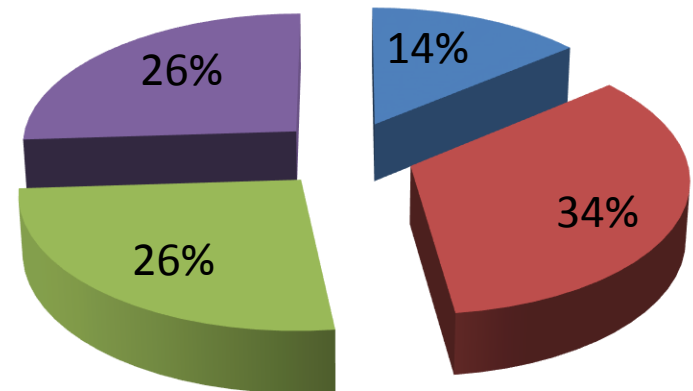
Psychological Evaluation: Validity

- Problem pilots in pilot training or flight operations

Pilots or flight students with

- Failed check ride
- Unsafe behaviors
- Incident
- Accident
- Other issues

- Lack of knowledge
- Lack of flying skills
- Lack of crew coordination
- Other behavioral issues

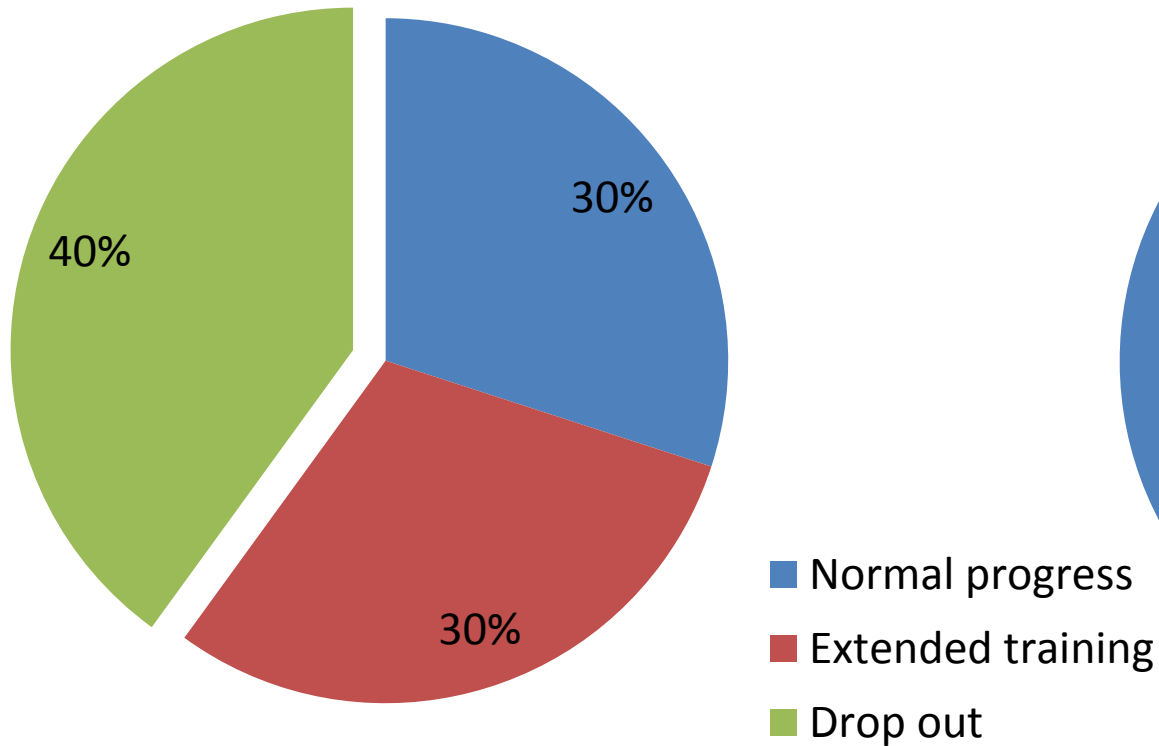


Source: European charter airline

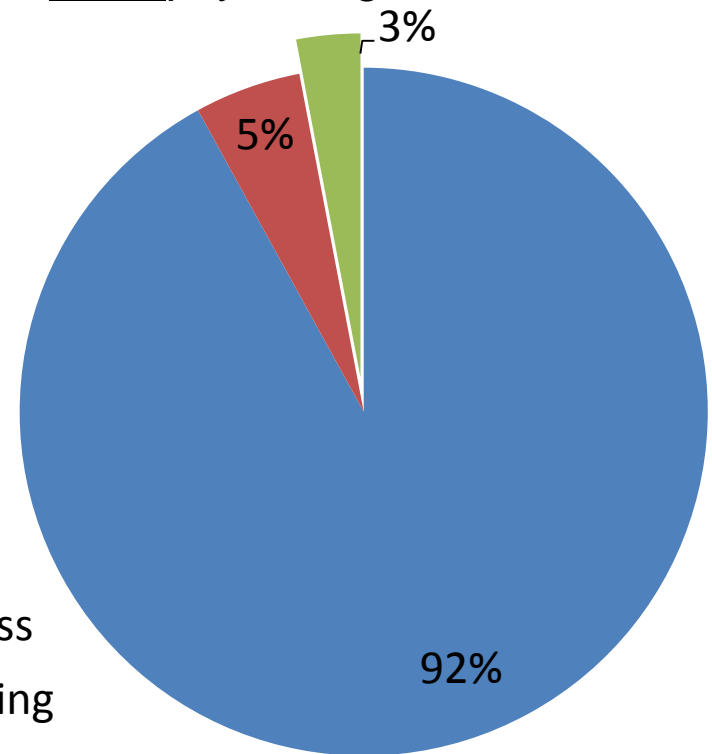


Performance During Type Rating

Without psychological selection



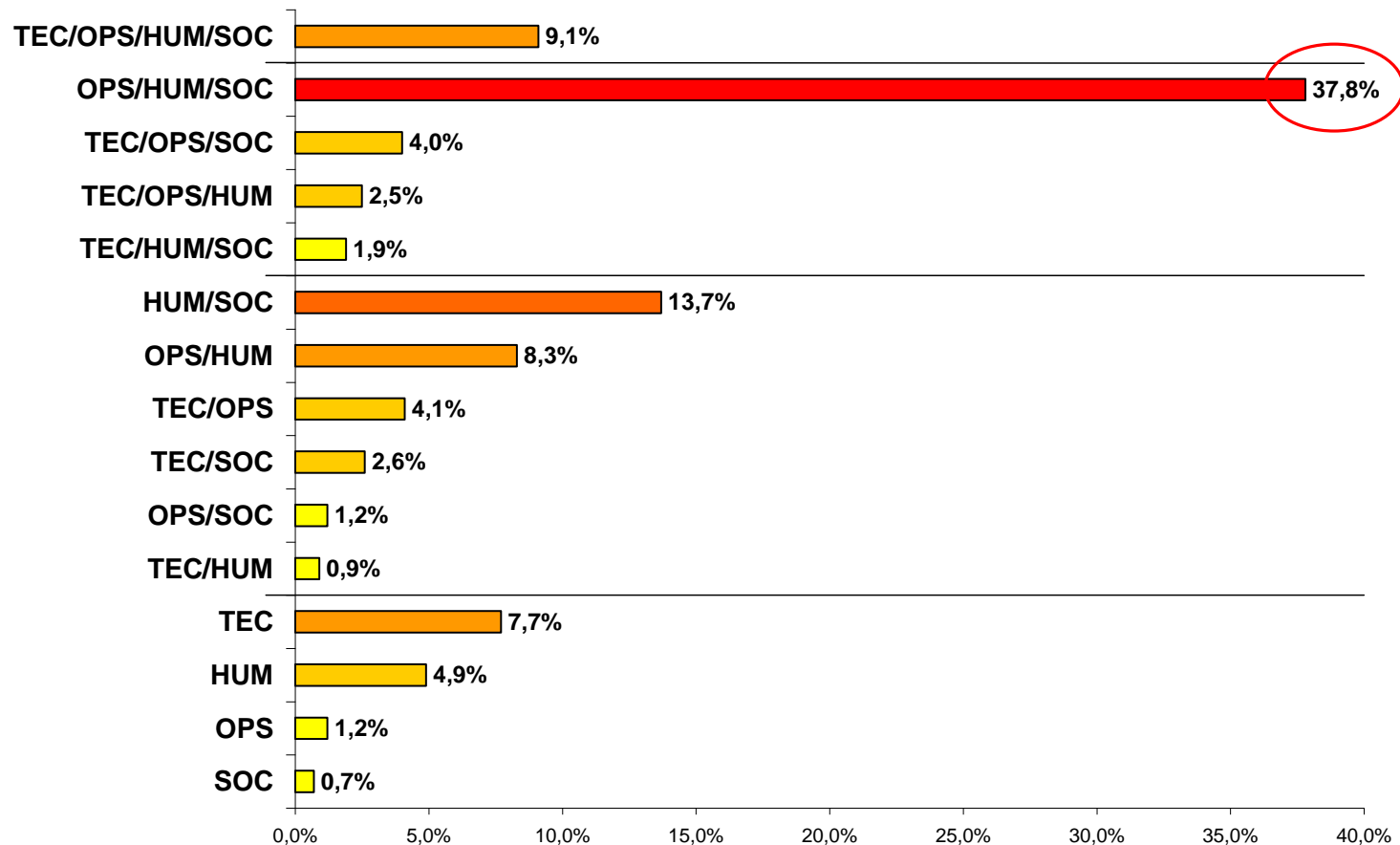
With psychological selection



Source: European airline



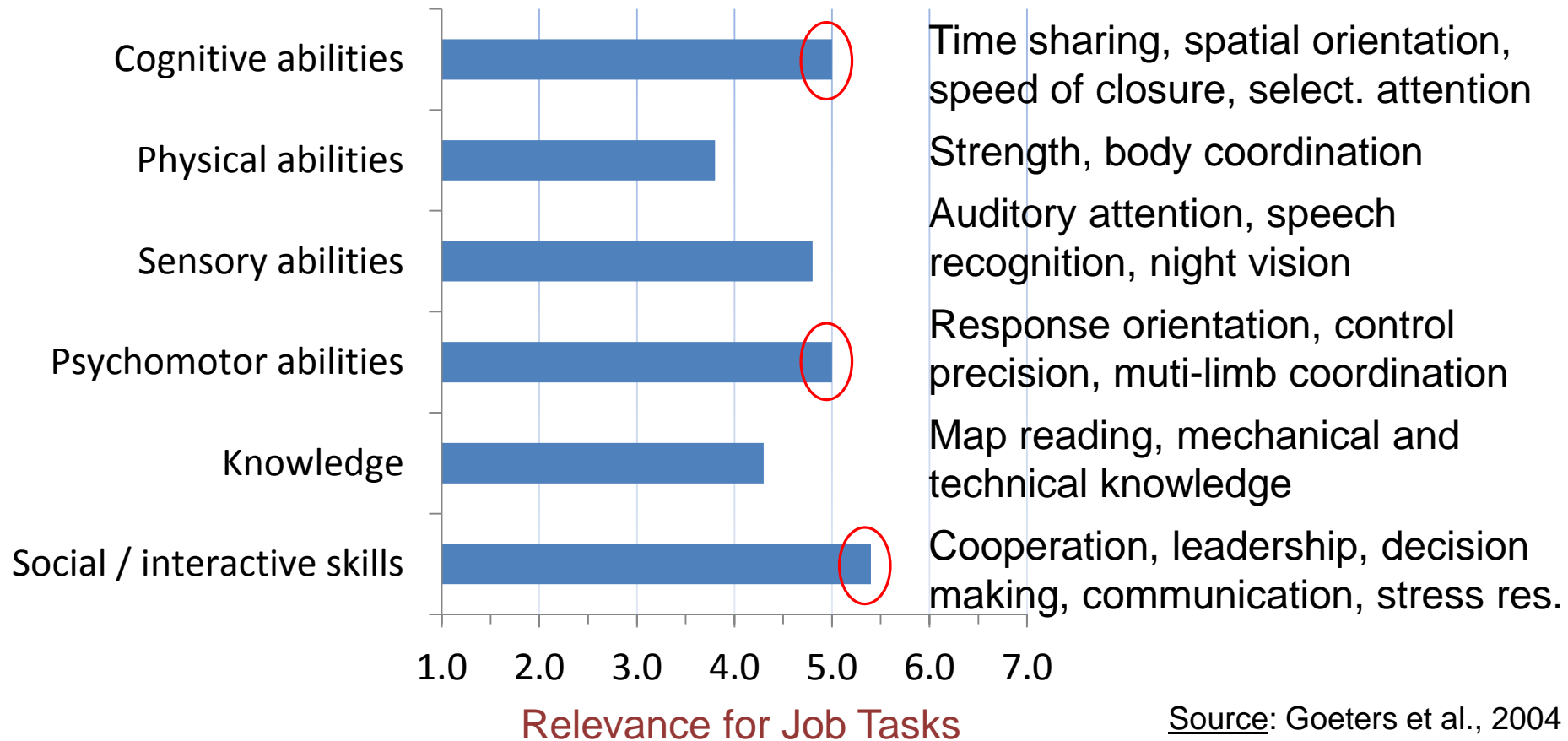
Reasons for Safety-related Events



Source: 1997 safety events reported by 2070 airline pilots. Kemmler, 2009



Analysis of Job Requirements for Airline Pilots



Best Practices for Psychological Evaluation (IATA)

2nd Edition

- SURVEY
 - Based on a survey to study present industry selection practices 327 civil aviation organizations across the globe were invited to participate
 - A total of 66 institutions contributed to the survey
- LEGAL SITUATION
 - „....be of good moral character...“, „....a fit and proper person...“
 - New regulation for pre-selection requirement of MPL applicants frequently under development
- INITIAL FINDINGS
 - Ab-initio selection systems have the highest degree of sophistication
 - Fewer and less methodically qualified selection systems are in place for first officers, and those selection systems existing for captains display the lowest levels of system maturity and robustness



Dimensions of Pilot Aptitude Testing (IATA)

2nd Edition

- **Basic Mental Abilities** (e.g. reasoning, spatial abilities, memory, serial learning, information processing)
- **Operational Competencies** (e.g. psychomotor abilities, strategic competencies)
- **Social Competencies** (e.g. communication, cooperation, leadership, assertiveness)
- **Personality** (e.g. self-discipline, attitude, stress management, self organization, level of aspiration)
- **Professional Competencies** (e.g. regulations, procedures, technical knowledge, TEM countermeasures)



IATA Matrix – Pilot Aptitude Testing

2nd Edition

“A complete test battery consists of at least the following components, which are arranged in the given order:” (IATA, 2012, p 30)

- Screening (formal requirements)
- Tests of basic mental abilities
- Tests of operational competencies
- Tests of social competencies
- Half-standardized interviews to capture relevant personality traits





Guidance Material and Best Practices
for Pilot Aptitude Testing
(Effective March 2012)

IATA Recommendations

2nd Edition

- **Selection team:** mixed and diverse composition of experts with operational background
- **Quality assurance:** psychometric criteria, fairness, job requirements
- **Feedback** and re-application



Conclusions

- Initial psychological evaluation to be carried out by **accredited aviation psychologists** in addition to the medical examination before the training begins
- The psychological requirements shall be specified in an **Acceptable Means of Compliance** by the authority
- The evaluation shall include indicators from **job relevant factors** of human performance (e.g. motivation, personality, abilities, social competencies)
- All methods in use should comply with **agreed psychometric standards** (e.g. as defined by APA 2014, ISO 10667, DIN 33430, IATA 2012)
- A **psychological re-evaluation** could be indicated by significant doubts about a person's reliability (e.g. crime, traffic violations, performance problems). For a routine re-evaluation no added value can be seen.
- A re-evaluation should primarily serve the purpose to identify **support and other suitable intervention measures**



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