Enhancing the Human Factor in Security Screening

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Overview

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› Determinants of Screener Performance
› Image Interpretation Competency
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Introduction: CASRA

› Aim is increase of security and facilitation at airports and other environments involving people and security
› Located in Zurich, Switzerland
› Founded in 2008
› Emerged from the Visual Cognition Research Group (VICOREG) at the University of Zurich (founded in 1999)
› About 35 employees (mainly psychologists, computer scientists, and engineers)
Sociotechnical Approach

- **Organization**
- **Human**
- **Technology**

Results

Systematic Threat Assessment

Countermeasures

- **Human**
  - Training, assessment

- **Technology**
  - Technological advances

- **Organization**
  - Work design, checkpoint design
Determinants of Screener Performance

Enablers (processes and tools)

- Selection tests (abilities and aptitudes)
- CBT (visual knowledge)
- TIP (attention and motivation)
- Practical tests (correct action)

Results

- Detection performance
  - Certification test results
  - TIP results
  - Covert and overt test results

Image Interpretation Competency

- Image-based factors
- Knowledge-based factors

Stimulus representation

Encoding

Matching (Similarity)

Decision

Visual memory representation

Response

Response bias

Systematic Threat Assessment

› Goal: Increasing threat detection performance by combining intelligence with competence of security officers

› Funding: Swiss Federal Office of Civil Aviation (FOCA), since 2013

› Scope: All Swiss airports and security screening providers

› Collaborations: Swiss airports, police authorities, federal competence centers and screening providers
Identification of threat scenario

Procurement or production of threat object

Countermeasures

CASRA Threat Report

Implementation in CBT & TIP

eLearning module
Technological Progress
Technological Progress (Continued)

Level of Automation

Level of Automation (Continued)

Work Design

Influence of organizational factors on detection, throughput, passenger satisfaction, and absenteeism

- External working conditions (e.g. noise)
- Work-privacy conflict, shift work
- Monotonous tasks
- Fear of failure

- Social interactions
- Clear roles
- Leadership
- Recovery, breaks

Results
- Detection
- Throughput
- Passenger satisfaction
- Absenteeism

Take Home Message

› Select personnel using reliable, valid, and standardized tests.
› Continuously train them on current and emerging threats.
› Measure performance regularly with appropriate feedback.
› Use a sociotechnical approach by optimizing human, technological, and organizational factors and their interactions.
Thank you for your attention