Improving Vigilance for Homeland Security Personnel

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Research Questions

• Are some people better at vigilant tasks than others?
• Can improved vigilance be trained?
Focus on visual search:

- Ability to sustain attention for prolonged sessions.
- Ability to stay “on task”.
- For some DHS occupations also requires vigilance to:
  - Potentially subtle events.
  - Infrequent events.
  - With high stakes for missing events.
Are Some People Better Visual Searchers?

- Videogame players?
- Older adults?
- Bilinguals?
Prior work (including our own) suggests:

- Visual search is an attention-demanding (i.e., vigilance) task.
- There are individual differences in the ability to maintain such vigilance.
- Some people should be better visual searchers.

**GOAL:** Create an easily implemented battery of assessments that can reveal *individual differences in the ability to maintain vigilance* and perform visual search accurately and efficiently.
Research Tasks

- Experiments involve:
  - Current
    - Traditional vigilance tasks:
      - Search for target among distractors.
      - Inclusion of cues to (re)focus attention.
      - Simulated environment to add realism.
    - Tests for individual differences.
    - Top down v. bottom up processing.
  - Planned
    - Simulation training:
      - Step-by-step approach labeled FAPV long employed by RTI.
      - Variation in simulated environment ‘parameters’.
Focus is on improving vigilance under stress.
It is known that better performers demonstrate smoother gaze patterns than poorer performers when under stress.
This study is turning it around:
- Train smooth gaze patterns.
- Simulate a stressful situation.
- Determine any effect of gaze pattern on performance (and physiology).
Client meetings:
- Visit to TSA to discuss baggage screening research needs, including vigilance.
- Visit to DHS Transportation Security Lab (TSL).

Materials:
- Acquired materials from a separate RTI project.
- Reusing simulation materials from another RTI project.

Experiments underway at Duke and RTI.