COMPARING PSYCHOMOTOR AND VISUAL-SPATIAL ABILITIES OF FOURTH YEAR MEDICAL STUDENTS, ORTHOPAEDIC RESIDENTS AND STAFF SURGEONS

DUSTIN SCHUETT, DO
PGY-5 RESIDENT
NAVAL MEDICAL CENTER
SAN DIEGO

Disclaimer

- The views expressed in this presentation are those of the author and do not necessarily reflect the official policy or position of the Department of the Navy, Department of Defense, or the U.S. Government.
- No financial disclosures

Background

- Residency Paradox
  - More information and procedures to learn
  - Limitations on amount of time in hospital for learning
- Visual-spatial and psychomotor skills
  - Correlate with ability to learn new procedures
  - Demonstrated in General Surgery literature
- Limited orthopaedic research to date

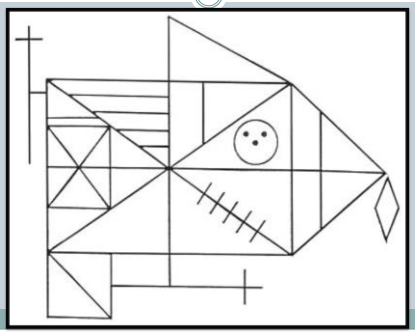
Objective

- Primary:
  - Compare two novel psychomotor tests to established visual-spatial tests
- Secondary:
  - Compare the performance of MS4's Residents and Staff
- Hypothesis:
  - Visual-spatial tests and psychomotor tests would correlate
  - Increased training=improved performance on all tests

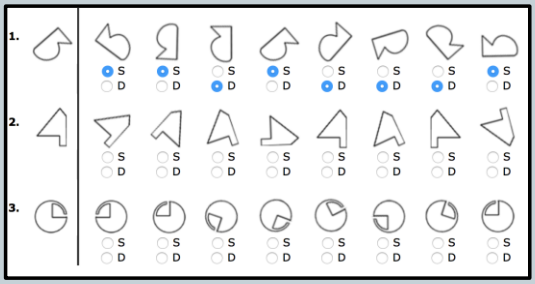
Methods

- Subjects
  - 22 fourth year medical students
  - 10 residents (2 PGY2, 3 PGY3, and 5 PGY4/5)
  - 10 staff surgeons
- Written visual-spatial tests
  - Rey Complex Figure Test (RCFT)
  - Cards Rotation Test
  - Map Planning Test

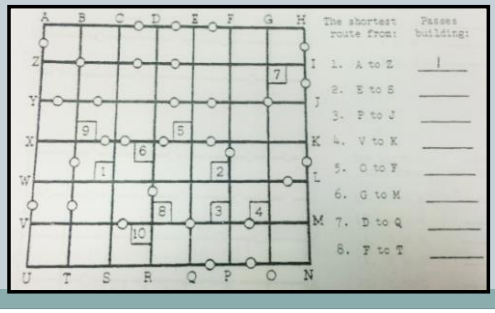
Rey Complex Figure Test



Cards Rotation Test

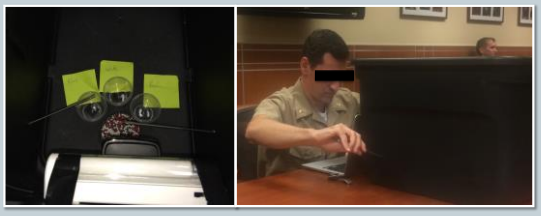


Map Planning Test



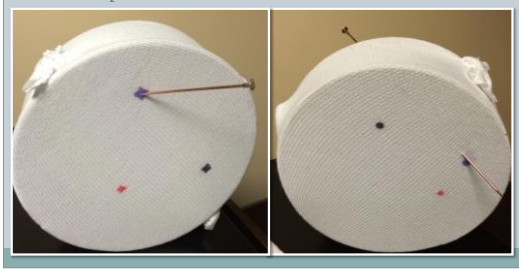
Methods

- Novel psychomotor tests
  - Arthroscopic simulator



Methods

- Novel psychomotor tests
  - Needle pass test



Results

Visual-Spatial Scores

TEST	Medical Students	Residents	Staff Surgeons
Rey Complex Figure Test	72.4 ± 9.3	75.9 ± 13.4	78.7 ± 9.8
Cards Rotation Test	159.9 ± 28.2	153.9 ±35.6	138.9 ± 23.5
Map Planning Test	27.0 ± 8.1	21.4 ± 12.7	20.8 ± 6.1

Table 1. Mean scores for visual-spatial test by level of training

Results

Psychomotor Scores

TEST	Medical Students	Residents	Staff Surgeons
Arthroscopy Simulator (Total number of beads correctly placed in 4 minutes)	37.7 ± 7.9	74.3 ±17.0	78.1 ± 23.5
Needle Pass Test (Total mean distance in mm)	34.4 ± 11.7	26.1 ±14.8	18.7 ± 8.2

Table 2. Mean scores for psychomotor test by level of training

Discussion

- Negative correlation between two novel psychomotor tests
- No correlation between visual-spatial and psychomotor tests
- Increasing level of training correlated with better psychomotor performance

Conclusions

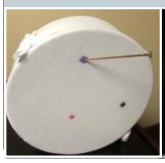
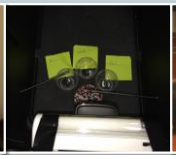
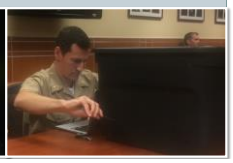
- No correlation between psychomotor and visual-spatial performance
- Psychomotor performance correlated with experience
- Further research needed

So what does it all mean….

- More training=Better manual skills
- Visual-spatial tests ≠ Manual coordination tests
- Predictive value?
- Screening tool?

ACGME Requirements

- 2013: ACGME: All residency programs MUST have a surgical-skills training curriculum
  - No specific requirements…yet
- $$$ is a big issue for residency programs
- $100 + a laptop

Thank you!

djschuettdo@gmail.com