Teams Under Stress

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Agenda

- My background
- Studying teams under stress
- Ontario Mine Rescue research project
- Preliminary results
Fundamental Question

Why do only some teams excel under dynamic, stressful conditions?

- MS, U. of Colorado at Denver
- PhD, U. of Texas at Austin
- 20+ years of studying teams under stress...
Simulations

- Realistic
- Consequential
- Crisis events
- Performance measures
Data Collection

- Record real teams during simulated crisis events
- Slice recordings into 10-second intervals
- Code presence of key behaviors per interval
- Use statistical models to see what high performers do differently from low performers, and when
Medical Trauma Teams

- 48 trauma teams at Children’s National Medical Center, Washington, D.C.

- All teams knew the right protocols; high performers consistently involve everyone in complex decision making.

Airline Flight Crews

- Analysis two-person crews in simulator
- First 15 minutes of interaction predicted entire flight performance
- All teams do a briefing; high performers *set the tone* with positive, reciprocal communication.

Nuclear Power Plant Crews

- Two plants in the US
- All working under same rules, training, regulations
- All teams know to get on the same page; high performers also remember to turn the page and update their mental models.

NEADS

- Northeastern Air Defense Sector
- 9/11 transcripts from audio recordings
- 99 minutes after learning of first hijack
- How did the team make sense of the situation?

Transitions in Understanding

- **Training exercise**: “I’ve never seen so much real world stuff happen during an exercise.”

- **Protocol hijack**: “Ok, he said threat to the cockpit!”

- **Coordinated attack**: “We need to talk to the FAA. We need to tell them that this stuff is gonna keep on going. We need to take those fighters, put ‘em over Manhattan... at least we got some kind of play.”
Managing Teams Under Stress

Set the tone early

Constant reciprocal interaction

Get on the same page, but remember to turn it
Ontario Mine Rescue

- Grant from Social Science & Humanities Research Council of Canada (SSHRC)
- Three-year study (2012-2014) of mine rescue teams during competition simulations
- Dr. Mary Waller and Dr. Seth Kaplan (George Mason U.)
- Sponsored by Ontario Mine Rescue and Workplace Safety North
Mine rescue teams encounter a wide variety of non-routine events -- first aid, rescue, equipment use, fire fighting -- under extreme conditions.

Mine rescue teams must quickly vacillate between situation assessment and choosing/applying protocols -- multiple times.

What patterns of interaction separate excellent from good mine rescue teams?
Data Collection

- Individual Performance
- Consent Forms
- Behavioral Coding
- Scenario Script
- Competition Audio
- Expert Performance Ratings

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Preliminary Results

- Based on data collected at 2012 OMR Provincial Competition

- Excellent performing teams seem to:
  - engage in **full-team briefing** communication more often, and more quickly
  - "push" more information (implicit coordination)
  - exhibit **shorter, less complex** interaction patterns during **protocol application**
  - exhibit **longer, more complex** interaction patterns during **situation assessment**
Next Steps

- Complete data collection for 2013 and 2014
- Code and analyze data from all 33 teams (21 provincial, 12 district)
- Include specific analyses for captain, vice-captain, briefing officer interactions
- Present and publish final results
- Design next OMR study!
Educating & Training

Managing Team Dynamics

Crisis Management

Training & Consulting
Thanks!

Questions?

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