Automation vs. Human Reliance

- Humans tend to rely on available information (human or automation) while completing complex tasks.
- Little work has examined what factors influence how humans prioritize and trust information from automation and human sources when both are available AND directly conflict.
- Lyons and Stokes (2012) found that humans rely on human sources less in high risk situations than in low risk situations.
- Concerns with Lyons & Stokes (2012): To manipulate risk, the human source’s consistency with an automated tool was manipulated – the human recommended the route that the automation deemed most dangerous (within-subject design).
- This within-subject inconsistency could affect trust and subsequent reliance.
- Limited statistical power (n=40)
- No time pressure
- Trust in automation/human source was not measured

Current Directions

- Assessing the impact of perceived expertise (for both human and automated sources) on trust
- Investigating the role of overt attention on reliance judgments
- Creating a descriptive model of human-human and human-automation reliance

Our study

Research Questions

1. How do military and civilian samples differ in how they rely on human and automated information sources?
2. Do situational factors – like risk and workload – affect military and civilian samples differently?

Decision Making Task: Participants must select a route for their military convoy from three possible options. An automated tool provides a map that contains information regarding past IED explosions and insurgent activity to illustrate one optimal route choice. The human provides information that conflicts with the map and recommends a different route.

Method

126 Undergraduate participants
- Mean age: 19 years old
- Gender: 66 males and 60 females

29 Military participants
- Mean age: 38 years old
- 28 males, 1 female
- 80% had experience leading convoys

Experiment

- Information presentation order: 3 conditions (see below)
- Self-report assessments of workload (NASA TLX) and perceived risk

Order 1

Order 2

Order 3

Route Decision

Risk

Future Directions

- Generalize results to other military and intelligence community samples
- Manipulate characteristics of the human and automated decision tool
- Experimentally manipulate situational variables
- Extend results to alternative scenarios
- Modify the level of analysis from an individual to a group level

Results

Military participants tended to rely on themselves more and automation less than undergraduate participants.

Military and undergraduate samples were significantly different in perceptions of risk and workload.