Cognitive Basis for Expert and Superior Performance in Law Enforcement

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Keywords: Expertise; Verbal Reports; Representative Tasks.

Introduction
Our aim was to objectively capture experts’ superior performance on a complex representative task and examine the cognitive factors responsible for that superiority. We hypothesized that experts would aid their performance via the use of dynamic representations consistent with long term working memory theory (Ericsson & Kintsch, 1995).

Methods
Participants
Fourteen expert (e.g., S.W.A.T.-trained) and 14 rookie (academy trainees) law enforcement officers participated in this experiment.

Materials and Apparatus
A simulated task environment (STE) was developed specifically to assess participant performance on tasks representative of law enforcement. Participants interfaced with the STE via a modified blank firing F-92 Beretta handgun. LabVIEW and external video cameras were used to record participants’ response, shot accuracy and latency.

Procedure
After a familiarization period and verbal report training, participants undertook 20 randomly presented test trials. Participants responded from a first-person perspective to semi-interactive, video simulations that included scenarios such as a domestic dispute, larceny, and hostage situation. Nine of the trials were “no-shoot” trials (i.e., lethal force was not required) and 11 were “shoot” trials. A trial ended when participants shot their weapon to avoid providing additional feedback. Participants were asked to talk aloud during each trial and give a retrospective verbal report (Ericsson & Simon, 1980) immediately after 10 of the trials (3 no shoot, 7 shoot).

Results & Conclusions
Stepwise discriminant function analyses were used to identify the most predictive shoot trials. One significant variate was observed ($X^2 = 25.30, df = 3, sig = .000$). The standardized canonical coefficients indicated that three scenarios, Blow Up (.684), School Hostage (.559), and Convenience Store (.572), contributed similarly to the skill model. The significant variate accounted for 64% of the variance in skill.

References