

Grace under pressure: Researchers analyze the effects of stress on decision-making ability

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A novice law-enforcement officer participates in a simulation designed to test reactions in various life-threatening situations at FSU's Human Performance Laboratory. Credit: Photo courtesy of FSU Human Performance Laboratory

A nursing student assigned to check a heart patient's vital statistics enters the patient's room. Suddenly, the patient stops breathing and exhibits an erratic heartbeat. What steps must the nursing student take to ensure that the patient doesn't die before a better-trained medical professional can arrive?

Fortunately, in this instance the emergency was merely a simulation. The

"patient" - a blinking, breathing and fairly lifelike mannequin named "Stan" - spends his days (and nights) in a hospital bed located in the Human Performance Laboratory at Florida State University's Learning Systems Institute. Stan's job - and that of researchers who comprise the lab's Expert Performance Research Team - is to determine how stress affects the decision-making ability of people who work in professions in which a split-second judgment can spell the difference between life and death for themselves or others.

"By measuring the performance of people with varying levels of expertise, we are able to develop a better sense of how a person with a high level of expertise is able to excel under stressful conditions that might paralyze a novice," said David W. Eccles, an FSU assistant professor and research-team member who serves on the faculty of both the Learning Systems Institute and the College of Education. "Over time, this will help us to develop new training protocols that better prepare people to make critical decisions while under duress."

The medical simulation room is just one of several state-of-the-art apparatuses used to gauge performance levels in various professions at the Human Performance Lab. In an adjacent room, a theater-size movie screen is used to assess the reactions of law-enforcement professionals as they are exposed to scenarios that may or may not require them to draw and fire their (simulated) weapons. Other research involves testing the reactions of athletes as they react to situations that they are likely to encounter in game situations.

Putting both experts and novices through critical scenarios such as these, laboratory researchers don't just observe the differences in subjects' performance. They also take measurements from participants that include reaction time, eye and body movements, and heart rate, perspiration and blood-pressure changes. In addition, researchers use interviewing techniques they have developed to understand the

differences in subjects' minds.

"We're looking at how people think and how that thinking affects how they perform," said Paul Ward, an FSU assistant professor and research-team member who serves on the faculty of both the Learning Systems Institute and the FSU department of psychology.

The Human Performance Laboratory (www.lsi.fsu.edu/cepr/) was established at FSU in 2004 through congressional funds administered by the Office of Naval Research. The Navy's interest in human-performance research lay in its potential to identify those cognitive mechanisms that influence skilled performance among Navy personnel, especially in combat situations.

"The innovative studies currently under way in the Human Performance Laboratory and the study of situation awareness during periods of stress are excellent examples of the benefits associated with multidisciplinary research efforts for which the Learning Systems Institute is known worldwide," said institute Director Laura Hassler Lang. "In addition to Dr. Eccles and Dr. Ward, K. Anders Ericsson, FSU's Conradi Eminent Scholar and a professor in the department of psychology, played a key role in developing the lab's research agenda, and others, including Jim Whyte of the College of Nursing, collaborated to extend the lab's capabilities.

"We are very excited about the potential applications of this work to other research areas," Lang said, "and have submitted proposals to extend our work to the study of other domains, including education and personal finance."

Source: By Barry Ray, Florida State University

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