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Emergency response could be faster, better, and more confident with 'option awareness' approach

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In a paper on decision making, human factors/ergonomics (HF/E) researchers found that choosing the best available emergency response could be improved by showing decision makers a depiction of the emergency decision space that allows them to compare their options visually. The researchers have developed the theory of option awareness (how people perceive and understand the desirability of available options), which can increase decision-making speed as well as accuracy, and confidence.

In the *Journal of Cognitive Engineering and Decision Making* article, "Supporting Complex Decision Making Through Option Awareness," researchers Mark S. Pfaff, Gary L. Klein, Jill L. Drury, Sung Pil Moon, Yikun Liu, and Steven O. Entezari, explain that they developed the notion of option awareness to complement situation awareness, which has been the customary focus for aiding decision making by psychologists and HF/E experts. "In complex situations, it is possible to know what is going on right now ? that is, have situation awareness ? and still make bad decisions as to what to do next," explains Pfaff.

In one of the four studies reported in the paper, participants were presented with 40 computer-simulated emergency scenarios (fire, riot, burglary, etc.) and asked to choose the correct number of police or fire trucks to dispatch to the emergency. One group was shown only information describing the emergency situation (representing situation

awareness), and the other group was additionally shown how each number of emergency vehicles to be dispatched affected likely outcomes (representing option awareness). Participants were timed and asked about their confidence in their choices.

The "options" group sent the correct number of emergency vehicles 67% of the time, whereas the group without options sent the correct number only 42% of the time, significantly underestimating the number of vehicles required. Even though the options group had more information to take in, the speed of decisions was generally the same between the groups. Moreover, the options group reported being much more confident in their decisions.

"We have just scratched the surface of option awareness," Pfaff continues. "Future studies with more complex and realistic tasks are forthcoming. We are now designing for expert decision makers in emergency medical services and state-level pandemic responses."

Provided by Human Factors and Ergonomics Society

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