An Implicit Bias in Error Management?

To the Editor:

We read with interest the article by Cuschieri,1 which describes human errors in surgery as “random unintended events”2 that need to be accounted for not only when they are fatal but also when they are hidden as “near-misses” or “no harm” events. There is much to be learned from errors that go unnoticed, but we wonder whether they can always be described as random or unintended.

Biological psychologists argue that evolution has engineered humans with implicit safety mechanisms that operate by managing errors systematically beneath consciousness. Error management theory (EMT)3 proposes that when survival-threatening (fatal) errors are possible, people consciously tailor their actions to errors with the least costly outcome. For instance, a mother who loses her child may prematurely raise the alarm (a false-positive error), rather than wait passively for the child to return (a false-negative error); the cost of waiting is potentially far higher than the inconvenient, but ultimately less costly, strategy of prematurely raising the alarm.

Importantly, EMT suggests that when the costs of a false-negative error are greatest, systematic biases to commit false-positive errors emerge, and vice versa. Females, for example, display commitment skepticism when choosing a partner, thus showing a bias for false-negative errors in which they underestimate a male’s interest; presumably, the exclusion of overly sensitive disease-avoidance behavior is a costly signal of unattractiveness.4 Compared to males, females are able to consistently display systematic biases for the least costly errors.5,6 Although previously we have argued that it is disadvantageous to make the implicit automated motor components of technical skills conscious (explicitly),7–10 it may nevertheless be advantageous to raise the awareness of the surgeon in the context of error management. In this respect, Way and colleagues4 argue that the bias to sometimes disregard information that disconfirms a decision in surgery may “respond to educational efforts that spell out and explain the significance of the specific disconfirmatory finding.”5(p467)

In laparoscopic cholecystectomy, surgeons are often explicitly advised to obtain cholangiograms as a precautionary measure.4 Although this prolongs a procedure, it is a trivial inconvenience compared with the costs associated with an error that results in a bile duct injury. A cognitively more efficient method of “spelling out” rules that help surgeons to commit the least costly errors may be to devise fast and frugal heuristics (eg, “measure twice, cut once”[p160]) specifically for procedures in which it is unclear whether a false-positive error or a false-negative error will result in the least costly behavior. Fast and frugal heuristics12 are simple rules of thumb that can be called to mind rapidly and effortlessly, use only the information immediately available in the environment, and yet can be implemented to make correct decisions when time and cognitive resources are limited, as is often the case in the operating theater.

EMT suggests that human errors are not always random and unintended, so the theory warrants consideration when evaluating the underlying cause of errors in modern surgery. A greater understanding of unrecognized error biases in surgery may inform training curricula and impact the quality of surgical health care.

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