# Cognitive Aspects of Diagnostics, Not Just Errors

**Dear Editor,**

The article on "Cognitive Aspects of Diagnostic Errors"[1] published in Annals Volume 42 No. 1 did an excellent job linking the decision-making processes of doctors with findings in cognitive psychology about heuristics and biases as written extensively by Kahneman and his team.

Much research has since been done in the field of human factors which looked at the decision-making processes of highly-skilled professionals, such as pilots, fire-fighters, and military commanders. Notably, the concept of "Naturalistic Decision-making", researched extensively by Gary Klein,[2] has allowed us to understand why experts are able to make effective decisions despite being under stress and time pressure. In essence, experts possess a wealth of knowledge and past experiences, allowing them to intuitively recognise the perceived situation and decision-making scenario that is unfolding before them. This quick access to past data facilitates their decision-making, which may not be the best, but most certainly good enough to resolve the problem swiftly.

While Klein valued the diagnostic capabilities of experts, Kahneman cautioned the reliance of quick-and-easy "rules-of-thumb" which resulted in many diagnostic errors. One would think that both camps would be at loggerheads with each other. Interestingly enough, both gurus met to discuss their perspectives on decision-making and subsequently published their discussion via an article titled, "Conditions for Intuitive Expertise: A Failure to Disagree".[3] Amongst other nuggets of information, the authors illustrated a range of environment and highlighted portions within this range in which algorithmic (i.e. computer-based) diagnostics outperform manual decision-making: when valid cues are hard to detect and situational patterns are irregular (in which algorithms would make more consistent judgements rather than becoming affected by biases); and when valid cues are easy to detect and there is a distinct situational pattern (in which algorithms do not suffer from occasional attention lapses).

It would thus be interesting to see how varying types of clinical diagnostics would map out across this decision-making spectrum, allowing us to understand in what context would expert doctors truly shine, and conversely the scenarios in which, perhaps alluding to the future of healthcare, computers may make their mark in human diagnostics.

REFERENCES

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