Letter to the Editor

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The 'curse of knowledge': when medical expertise can sometimes be a liability

https://doi.org/10.1515/dx-2024-0064
Received April 8, 2024; accepted April 9, 2024;
published online April 29, 2024

Keywords: diagnosis; errors; cognitive

Medical expertise is associated with excellent patient care and good clinical decision making. While this generally remains true, there is an increasing body of evidence to suggest that in some cases medical expertise can be a liability, with errors more likely to occur in medical experts than in junior staff. Increased awareness of this 'curse of knowledge' may result in better patient safety.

To the Editor,

Good clinical decision-making is key to patient care and patient safety [1]. Medical experts, whether they be doctors, nurses, or other healthcare professionals, build up knowledge and experience over the years, and this usually leads to good clinical decisions and other areas of care being of a high standard. Along with building up knowledge comes the formation of abstract concepts and schematic representation of facts and ideas. The benefits of such 'schemas' are that they result in faster processing of information and thus faster response in problem-solving settings. All of this is good, and generally leads to efficient decision-making processes. However, schemas are by their nature likely to result in associations being generated as a result of the processing of information. The stronger and more substantive the schema, the more likely that an increasing number of associations will be generated from a stimulus or set of stimuli. This may then result in more diverse and rarer associations being generated. This flip side of a well-established knowledge schema can then lead to certain forms of cognitive errors being more likely to occur, and several studies have found this to be the case.

In a study where expert clinicians were compared with undergraduate students, three clinical vignettes of patients with psychological disorders were presented for retention [2]. The three vignettes were a 'simple case', a 'complex-coherent case' which had a plausible set of symptoms, and what was termed a 'complex-incoherent case', where there was an unlikely set of symptoms. Whilst, after a short delay, experts correctly recalled more details from the vignettes than nonexperts, they also produced more recall of symptoms that had not been presented in the vignettes, what psychologists call 'false positive responses' or 'false alarms'. In addition, while nonexperts produced similar numbers of such false alarms to the three types of clinical vignette, the experts produced fewest false alarms in the case of the complex-coherent vignettes, and the most false alarms to the complex-incoherent vignettes. It was as if the latter type of vignette was forcing the schematic knowledge of the experts to generate more associations.

A similar form of 'schema error' was found in a study that compared those undergoing training in diagnostic decision making relating to anxiety disorders, compared to those who were not receiving such training [3]. Those undergoing training, when presented with clinical vignettes of anxiety that they had to remember, but where two common diagnostic features ('restlessness', 'uncontrollable worry') were missing from the vignette, were more likely than their untrained counterparts to falsely recall that these features were present in the clinical vignettes.

A further study [4] compared experienced clinicians and clinical trainees in their recognition memory for true and false items derived from clinical vignettes they had been asked to remember. These vignettes contained contrasting features – traumatic v non-traumatic event, mild or intense reactions of patients, and subsequent behaviours that were either mild or severe. Researchers found that expert clinicians had more difficulty in distinguishing true from false items than the clinical trainees, and number of years' experience in the experts was in fact negatively correlated with accuracy of recognition – more experienced experts were more likely to make such errors.

More generally, paradoxes in the performance of experts have been well documented by researchers [5, 6], and individuals with superior autobiographical memory have been found to be just as likely as others to make false

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memory errors [7]. In addition, the 'curse of knowledge' has been linked with being highly specialised and having limitations in integrating and communicating with others, and with understanding their perspective [8–10]. It would appear that judgement and memory errors in experts may be due to a variety of reasons – the vast, somewhat entrenched schema that has built up over the years that I have referred to above, with such knowledge being a double-edged sword [11]; the fact that such experts with many years of experience will have seen many rare symptoms and diagnoses which are then more likely than in their junior counterparts to be activated in clinical decision settings; the fact that they may suffer from a lack of inhibition in their judgements, since experienced clinicians tend to be older, and ageing is associated with decreased frontal lobe functioning in domains such as inhibition; and the fact that experts may sometimes be more overconfident, and have a greater willingness to break rules, which then results in them being more likely to offer erroneous responses [12]. Greater awareness of the fallibility associated with medical expertise may result in fewer clinical errors being made, and patient safety will of course be the key beneficiary.

In conclusion, we value and benefit from senior clinicians who have many years of experience behind them. In most cases, they are best placed to make accurate diagnoses, but we need to be cognizant of the fact that immense knowledge can on occasion have its downside. Acknowledgement of this may lead to fewer errors in patient care.

Research ethics: Not applicable.
Informed consent: Not applicable.
Author contributions: The author has accepted responsibility for the entire content of this manuscript and approved its submission.
Competing interests: The author states no conflict of interest.
Research funding: None declared.
Data availability: Not applicable.

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