

CONNECTIONS**MEDICAL EDUCATION CONNECTIONS**

Beyond competence: Towards a more holistic perspective in medical education

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Horizon 2020; European Union

1 | INTRODUCTION

A competent workforce is one—if not the—central goal of all health professions education. However, no single professional can be equally competent in all areas of health care. Rather, it seems that the question of whether one is competent or not must be asked anew for each individual patient for whom one cares.¹ This phenomenon, called context specificity, implies that in addition to professional competence, adequately calibrated situational confidence is required to safely practise medicine.² We need our confidence judgements to warn us when we are practising at the limits of our competence. It is, therefore, important to understand how cognition (or competence) and meta-cognition, especially confidence, are related and how their calibration can be improved and tested. Four papers in this issue of *Medical Education* address these questions from rather different perspectives.

2 | ARTICLE SUMMARY

2.1 | Confidence as a mediator of competence

In a conceptual review of the relationship between confidence and competence in health professions education (HPE), Gottlieb and colleagues suggest that ‘confidence is a mediator of competence’.³ They base this claim on the observation that confidence determines if and how we act in a specific situation. In other words,

even after mastering a certain skill or topic, learners will not perform adequately if they lack situational confidence in their ability. Gottlieb and colleagues, therefore, conclude that it is insufficient to focus on increasing competence alone, as is currently done in HPE. Consequently, learners' competence and related confidence should be regularly assessed and learners should be supported in developing their own confidence–competence feedback loops by means of adequate learning opportunities and targeted feedback. Progress tests, which assess and feedback confidence, its calibration and its development over time, in addition to feedback on competence are a recent example of a practical implementation of that idea.⁴

2.2 | Autonomy support to facilitate learners' growth and development

In another conceptual paper,⁵ Sawatsky and colleagues argue that supervisors should gradually provide autonomy in clinical decision making to facilitate the development of (well-calibrated) confidence in their trainees. The authors conceptualise autonomy not as ‘independence from supervision’ but as a source of motivation that drives learning. They propose that supervisors should act as coaches who provide an optimal balance between challenge and support, offer feedback and set goals in collaboration with the learner. By providing a safe environment with structure and support, supervisors can enable their trainees to make meaningful clinical decisions, and take responsibility, which may ultimately help develop an adequately calibrated confidence. Recent empirical data support the concept of ‘supported

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independence' whereby trainees strive for 'borrowing comfort from [...] supervisors [...] to strike a balance between independence for the purpose of learning and support to ensure safety'.⁶

2.3 | Regulation of learning

To develop and maintain competence and autonomy, learners need to recognise gaps in their knowledge and skills and regulate their learning activities accordingly. In the third conceptual paper on the 'self' in this issue, Bransen and colleagues argue that these regulatory processes encompass not only the well-studied self but also the co-shared and socially shared regulation of learning.⁷ Co-regulated learning (CRL) describes how other persons such as supervisors or peers regulate the learning activities of the trainee, while socially shared regulated learning (SSRL) describes how learners regulate each other's learning during collaborative study. Following the authors, giving learners such collaborative learning opportunities is urgently needed to improve collaborative performance, which is required for safe health care. During collaborative learning, SSRL requires the learner to monitor not only their own but also the other group members', learning progress. Moreover, relational facets of confidence such as confidence perceived in others, distributed and shared confidence add to the meta-cognitive burden, as pointed out by Gottlieb and colleagues.³

2.4 | Why we should care

In a fourth paper, Mendelsohn alludes to the broader impact SRL and autonomy (among others) have on physicians' and trainees' well-being.⁸ As an example, a lack of control over the working environment (i.e. autonomy) may lead to burnout. We hypothesise that a repeated experience of competence–confidence miscalibration may be added to the list of factors impairing well-being among trainees. However, Rahmani previously suggested that a valley of self-doubt between initially unjustified confidence and ultimately justified confidence can be expected as a natural consequence of competence increasing over one's learning trajectory.⁹

3 | CONNECTIONS

One apparent observation that derives from overlay of the four papers summarised above, and in connection with the related literature, is the great variety of terms and concepts used in research about confidence and its relation to competence. These range from self-monitoring and self-assessment¹⁰ to confidence–competence ratio³ to the Dunning–Kruger effect,¹¹ and the terms only partially overlap in their meaning. One important distinction, in our view, is between a task-specific momentary confidence judgement resulting from a meta-cognitive monitoring process (i.e. a state) and self-confidence as a relatively stable trait.^{1,10} Also, research in the field varies in its methods and designs used, such as when assessing self-

reports¹² versus behavioural indicators^{4,13} or when comparing confidence levels across¹¹ or within individuals.^{4,12,14} This heterogeneity in terminology and methods impedes a comparison of results and theory integration and entails the danger that disparate streams of research develop in parallel without cross-fertilising each other—thus lowering the speed of deriving practical implications for better medical education.

One practical implication of this can be deduced from the work of Dunning and Kruger. More than 20 years ago, they demonstrated that the ability to adequately judge one's performance on a given task depends on one's actual performance on that task. In their words, people who are unskilled in a domain are also mostly unaware of their lack of skill.¹¹ One conclusion that has been drawn from this finding is that the way to improve the calibration of confidence to competence is to improve competence, the natural purpose and goal of medical education. Obtaining higher competence in more domains is in patients' and health professionals' best interest for obvious reasons. However, increasing competence is likely not the only solution to the problem. First, educators need to be aware that competence and confidence (and thus their relation) do not develop in parallel to one another, as highlighted by the papers contained in this issue and other related work.^{4,9,12} Second, beyond competence, additional factors (such as difficulty) influence calibration,¹² and future research may identify more factors that can then be targeted educationally. Third, the ability to inhibit or take a certain action based on a task-specific confidence judgement is a crucial component that could potentially be trained in addition to competence and confidence–competence calibration.¹⁵ However, if and how to train that ability is unknown—as is whether and how one can actually train confidence–competence calibration.³

While there is much to be discovered in all of these aspects, it is encouraging to see in the articles contained in this issue that medical education is moving from merely addressing medical competence to a more holistic perspective of education, including metacognition, autonomy, regulation of learning and well-being.

ACKNOWLEDGMENTS

We would like to thank Stefanie Hautz for helpful comments on an earlier version of the manuscript. JEK has received funding from the European Union's Horizon 2020 research and innovation program under the Marie Skłodowska-Curie grant agreement no. 894536. Open Access Funding provided by Universitat Bern.

[Correction added on 11 April after first publication: Consortium of Swiss Academic Libraries (CSAL) funding statement has been added.]

CONFLICT OF INTEREST

The authors report no competing interests.

ETHICS STATEMENT

Not applicable.

AUTHOR CONTRIBUTIONS

JEK and WEH contributed equally to the conception of the work, drafted and revised the work and provided their final approval of the

version submitted. JEK and WEH agree to be accountable for all aspects of the work.

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How to cite this article: Kämmer JE, Hautz WE. Beyond competence: Towards a more holistic perspective in medical education. *Med Educ.* 2022;56(1):4-6. doi:10.1111/medu.14692