

Perceptions and emotions about learning and assessment: why should we care?

Monrad, Seetha
Corresponding Author- seetha@umich.edu

University of Michigan Medical School - Internal Medicine, Learning Health Sciences
Ann Arbor, Michigan
United States

Lifelong learning is fundamental to being a physician, not only for patient care and physician professional development, but also for use by educational programs and accrediting bodies responsible for ensuring competence for practice. From medical student to resident to practicing clinician, the expectations for what to learn and how learning is assessed change substantially, in part due to shifting stakeholder expectations. For practicing physicians, Maintenance of Professional Competence (MPC) programs serve as a primary source of voluntary or mandated professional education, as well as proof of professional competence to external stakeholders such as regulatory and accreditation bodies. But whether these resource intensive programs, and more specifically their associated programs of assessment, promote and/or demonstrate lifelong learning is unclear, and warrants deeper study.

To that end, Wiese and colleagues performed a scoping review exploring doctors' attitudes towards MPC programs, including motivation for participation, preferences for different modalities, and impressions of impact on learning and practice¹. They discovered that physicians acknowledged the importance of MPC in theory but noted many barriers to effective engagement, including bureaucratic and burdensome processes. Physicians were not convinced that participation in MPC programs resulted in improved patient care. The authors also noted that "several sources of evidence reported significant anger, frustration, and negativity" across multiple specialties and scopes of practice.

Medical education has long viewed individuals' perceptions of their own knowledge and learning with a significant degree of skepticism, and indeed in their discussion the authors noted that the perception of lack of meaningful impact "must be interpreted in the light that learners are not always the best judges of what has been learned". A review of a number of different literatures relevant to the construct of self-assessment supports such caution in interpretation, concluding that individuals have no unique insight into their own abilities relative to outside

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the Version of Record. Please cite this article as doi: [10.1111/medu.14739](https://doi.org/10.1111/medu.14739)

observers, and that the skill of self-assessment varies by context and perspective.² Kirkpatrick's program evaluation model, one of the most commonly used to evaluate outcomes in medical education, situates learner satisfaction/reactions as the lowest level of evidence compared to external measures of learning and behavior change.³

Nonetheless, learner's perceptions remain an important metric used to evaluate educators and educational programs. Academic committees routinely use learner assessments as part of teaching portfolios for promotion and tenure. Accrediting bodies (such as the LCME and ACGME in the United States) place heavy weighting on learner responses to surveys and interviews in making accreditation-related determinations. And some learner perceptions have no comparable external measure or counterbalance with which to triangulate. Further, the learner is the only source of data on how a particular educational experience makes them feel, whether they find it interesting, exciting, frustrating, infuriating. That is, only the learner can (self) assess how they experience their education emotionally – for example, whether it triggers “anger, frustration, and negativity”.

Awareness and monitoring of emotional states is essential and necessary for institutions to support the mental health and well-being of learners, but what is its relevance in relation to learning? In other words, is there a rationale for gathering learners' emotional responses to their education as part of program evaluation? Wiese et al. noted the theoretical basis for a relationship between negative emotions and experiences with motivation and engagement with learning. Further, there is evidence that emotional state can influence how learners perceive and process information; positive emotions may promote transfer of knowledge to new tasks, facilitate flexible thinking and promote problem solving. However, events associated with negative emotions are easier to retrieve from memory. And emotion-inducing feedback can have variable effects on motivation and performance.⁴ Thus, learners' emotional experiences with education can influence actual learning and, as such, associated data should be a part of evaluation of the effectiveness of an educational program.

Assessment triggers some of the strongest and often most negative emotions associated with medical education and MPCs typically include a wide range of time and resource intensive assessments. Much discussion and research about assessment centers around the potential positive relationship between assessment and learning: promoting learning, evaluating what learning has occurred, communicating the goals of learning, and promoting accountability for learning. But how emotion mediates the relationship between assessment and learning in the various phases and contexts of medical education, and whether emotions impact performance on assessments that have high stakes outcomes associated with them, are important areas for further study.⁵⁻⁶ Fortunately, the field has increasingly acknowledged that assessment is never just about test content or format, but rather a complex interaction of people, social structures, tasks and technologies (exemplified in MPCs).⁷ Lineberry has proposed two important dimensions to all

assessments: their ability to measure learning outcomes and processes (assessment of learning [AOL]) and their ability to impact learning outcomes and processes (assessment affecting learning [AAL]). AAL acknowledges that assessment can impact learning beyond (and often differently than) the ways intended by the assessment designers. Through these lenses the variety of ways emotion can be triggered by, and create impact within, a system of assessment, becomes much clearer, with each means warranting distinct attention.

Validity evidence frameworks are commonly used to evaluate programs of assessment⁸⁻⁹. Within this realm, consequential validity, once viewed as “the most controversial” aspect of validity evidence, has received greater attention in recent years, both in the literature and in real life. Consequential validity evidence seeks to address the question “Does the activity of measuring and the subsequent interpretation and application of scores achieve our desired results with few negative side effects?”⁹ In this regard, strong negative perceptions and emotions have recently informed substantial changes to many high stakes assessment programs in the United States (such as temporary suspension of components of the American Board of Internal Medicine’s MPC program; conversion of the United States Medical Licensing Examination (USMLE) Step 1 from scored to pass/fail; elimination of the clinical skills portion of USMLE Step 2; and intense national discussions about tiered grading systems in undergraduate medical education¹¹). These examples demonstrate how findings similar to the ones described by Wiese et al. influenced the modification of educational programs, not just the assessments themselves.

In sum, while a wealth of research supports caution in interpreting learners’ assessments of their own learning, learners are the only judges of their own emotional states and, therefore, possess data relevant to continuing education and assessment that cannot be gathered from external sources. High stakes and/or complex educational programs are rich in and enriched by emotion-generating processes and interactions that can impact learning, assessment, and decisions arising therefrom. As such, reviews such as Wiese et al., that synthesize data on emotions and perceptions regarding MPC, offer important leads for strengthening program evaluation. Now, an even richer understanding of the multidirectional interplay between learning, assessment and associated emotions is needed, given ongoing changes to educational programs in the United States and elsewhere.

Funding – Not applicable

Acknowledgments -Nil

Ethical Approval -Not required

Conflict of Interest -None

References

1. Weise, A, Galvin, E, Korotchikova, I, Bennett D. Doctors' attitudes to maintenance of professional competence: a scoping review. *Medical education*. In Press
2. Eva, K. W. & Regehr, G. (2005). Self-assessment in the health professions: a reformulation and research agenda. *Academic medicine*, 80(10), S46-S54.
3. Allen, L. M., Hay, M., & Palermo, C. (2022). Evaluation in health professions education—Is measuring outcomes enough? *Medical Education*, 56:127–136.
4. McConnell, M. M., & Eva, K. W. (2012). The role of emotion in the learning and transfer of clinical skills and knowledge. *Academic medicine: journal of the Association of American Medical Colleges*, 87(10), 1316–1322.
5. Monrad, S. U., Wolff, M., Kurtz, J., Deiorio, N. M., Sabo, R., Stringer, J. K., & Santen, S. A. (2021). What is the association between student well-being and high-stakes examination scores?. *Medical education*, 55(7), 872–877.
<https://doi.org/10.1111/medu.14460>
6. Mills, L. M., Boscardin, C., Joyce, E. A., Ten Cate, O., & O'Sullivan, P. S. (2021). Emotion in remediation: a scoping review of the medical education literature. *Medical Education*, 55(12), 1350-1362.
7. Yudkowsky, R., Park, Y.S., & Downing, S.M. (Eds.). (2019). *Assessment in Health Professions Education* (2nd ed.). Routledge. <https://doi.org/10.4324/9781315166902>
8. Downing S. M. (2003). Validity: on meaningful interpretation of assessment data. *Medical education*, 37(9), 830–837. <https://doi.org/10.1046/j.1365-2923.2003.01594.x>
9. Cook, D. A., Brydges, R., Ginsburg, S., & Hatala, R. (2015). A contemporary approach to validity arguments: a practical guide to Kane's framework. *Medical education*, 49(6), 560-575.
10. Cook, D. A., & Lineberry, M. (2016). Consequences Validity Evidence: Evaluating the Impact of Educational Assessments. *Academic medicine: journal of the Association of American Medical Colleges*, 91(6), 785–795.
<https://doi.org/10.1097/ACM.000000000000011>

11. Bullock, J. L., Lai, C. J., Lockspeiser, T., O'Sullivan, P. S., Aronowitz, P., Dellmore, D., ... & Hauer, K. E. (2019). In pursuit of honors: A multi-institutional study of students' perceptions of clerkship evaluation and grading. *Academic Medicine*, *94*(11S), S48-S56.