Balancing Reflection and Validity in Health Profession Students' Self-Assessment

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Abstract. Students and practitioners in self-regulating health professions are expected to engage in reflective, valid self-assessment activities. However, self-assessment processes can be flawed. People may have a limited understanding of the critical thinking needed to reflect on their performance and they may over-estimate or under-estimate their abilities. This article highlights educational approaches that can help students achieve a balance of reflecting critically and developing more accurate self-assessments. Considerations involved in defining self-assessment are identified. Explanations of how integrating reflection requires critical thinking; information from both internal and external sources; and incidental learning are provided. Suggestions for addressing validity by recognizing that inaccuracies exist; knowing that people's history with academic success can impact their self-assessments; and creating links to affective outcomes are offered. Emphasis is placed on viewing self-assessment as a formative learning activity that is introduced early and consistently in health education programs.

Keywords: health profession students' self-assessment; reflection in self-assessment; validity in self-assessment

Introduction

Self-assessment, a necessary skill for lifelong learning, requires people to identify standards to apply to their work, and then to make judgements about the extent to which they have met these standards (Boud, 1991; 1995). For practitioners in self-regulating health professions, self-assessment activities are an integral aspect of both their pre-service programs and their ongoing in-service professional development (Eva & Regehr, 2005). Novice practitioners enter their profession with a stronger ability to assess and develop the competencies they need when they have become familiar with assessing their own progress during their education (Boud, & Falchikov, 2006; Kajander-Unkuri, Meretoja, Katajisto, Saarikoski, Salminen et al., 2013; Linn, Arostegui & Zeppa, 1975; Passi & Southgate, 2016). Supporting learners towards developing

their capacity to self-assess has been identified as the 'missing link' needed to ensure that future health professionals are truly reflective, self-regulating practitioners (Redwood, Winning & Townsend, 2010).

However, the self-assessment process can be flawed (Melrose, Park & Perry, 2015). For the most part, people overrate themselves and assess their progress as above average (Davis, Mazmanian, Fordis, Van Harrison, Thorpe, et al., 2006; Dunning, Heath & Suls, 2004; Mort & Hansen, 2010; Pisklakov, Rimal & McGuirt, 2014). They often identify areas of weakness inaccurately (Regehr & Eva, 2006). People can overestimate their performance and misjudge the skills they believe they have mastered (Baxter & Norman, 2011; Galbraith, Hawkins & Holmboe, 2008). Students who are least able to self-assess accurately often also demonstrate limited abilities in other areas of study (Austin & Gregory, 2007; Colthart et al., 2008).

The phenomenon of less able people over-assessing their ability and more able people underestimating themselves is known as the Dunning-Kruger effect (Ehrlinger, Johnson, Banner, Dunning & Kruger, 2008; Kruger & Dunning, 1999). Consequently, the validity of self-assessment as an accurate measurement of student learning has been questioned (Falchikov & Boud, 1989; Gordon, 1991; Lundquist, Shogbon, Momary & Rogers, 2013; Ward, Gruppen & Regehr, 2002).

Balancing the merit of reflection in self-assessment with questions about the validity of health profession students' self-assessment is not straightforward. Existing research has focused on evaluation studies and most of this work has been directed to physicians' learning. However, health professionals from a variety of different settings are expected to engage in self-assessment in their learning and in their practice. Increasing understanding of self-assessment among all members of health care teams can make an important difference in helping learners grow into self-regulated professionals. Geared to a multidisciplinary audience, this article provides an overview of how self-assessment can be defined, how reflection can be integrated into the process and how issues of validity can be addressed.

Toward a Definition of Self-Assessment

Assessment provides information about how people are progressing in relation to objectives, goals and outcomes. In health professions programs, assessments usually include standardized measurement tools as well as inferences about what individuals *do* in relation to what they *know* (Melrose, Park & Perry, 2015). In clinical practice settings, specific times at both mid-term (formative) and end of course (summative) are designated for discussing student progress. Self, peer and educator assessment may be included in these discussions. Formative evaluations are diagnostic, ongoing and focused on both what students are currently doing well and areas where they need to improve in future. A final grade is seldom included in formative evaluations as the goal of the activity is to improve student performance (Melrose, Park & Perry, 2015).

Self-assessment, particularly when integrated into formative evaluations, can be construed as a learning activity and not merely a grading activity. When viewed as a learning activity, self-assessment invites students to actively participate in and reflect on their own learning (Boud & Falchikov, 1989). It helps students recognize desired goals, gather evidence about their present position and come to an understanding about ways they can close the gap between the two (Black & William, 1998).

Instead of simply relying on teachers to evaluate their progress, opportunities for self-assessment encourage students to think critically about the quality of their studies (Andrade & Valtcheva, 2009). Self-assessment assists students to create links among tasks they are presently engaged in, outcomes expected by their profession, outcomes they expect for themselves and future tasks they will engage in (Bourke, 2016). In essence, self-assessment can be conceptualized as a formative, educational, developmental, self-monitoring activity that draws upon both internal and external data, standards, and resources to inform and judge one's performance (Sargeant 2008).

Integrating Reflection
Reflection has a dynamic relationship with self-assessment. As Mann (2010) so eloquently stated: "To be effective at self-assessment requires skills in critical reflection; to be effective in reflection, self-assessment skills are required" (p.311). However, the purposes and goals of reflection are different from those of self-assessment. Reflection is a process of personal self-understanding that can lead to significant discoveries and insights, while self-assessment involves using predetermined performance criteria to determine insights, strengths and needed improvements (Desjarlais & Smith, 2011).

Reflective processes are often retrospective; they do not necessarily involve others or externally imposed performance criteria; and they may not include expectations of improvement. It is important to acknowledge that self-assessment skills are not limited to engaging in reflective activities. However, reflection, particularly critical reflection, plays a foundational role in health profession students' self-assessment.

Critical Reflection Reflection that can be considered critical and therefore of most use in self-assessment goes beyond simply looking back on experiences. Theorists have extended our understanding of the complex reasoning that is involved. Advocating for the use of reflection as an active and deliberate problem-solving process, John Dewey (1933) believed reflection should include recalling an event and then questioning why things happened as they did. Donald Schön (1983), theorized that reflective practice includes both 'reflection-in-action' (intuitively drawing on previous experiences to resolve situations while they are occurring) and 'reflection-on-action' (thinking about an event that has taken place and considering what could be changed in future). Steven Brookfield (1995; 1988) asserted that reflective practice also requires people to become aware of and question their assumptions and their ways of interpreting

information. Jack Mezirow (1998) explained how critical reflection requires people to examine the way they perceive events and then transform their thinking in order to find new ways of making meaning. In nursing, Christopher Johns (2017) proposed a structured model calling for practitioners to reflect on experiences by both "looking in" to examine their thoughts and emotions and "looking out" to understand external factors influencing the situation.

The complexities of thinking critically and engaging in reflective practice may seem overwhelming to health profession students, particularly those at a beginning stage of their program. One approach that can help students strengthen their self-refection skills and to grow as reflective practitioners is to introduce reflective activities early (Falchikov & Boud, 1989; Kanthan & Senger, 2011; Mann, Gordon & MacLeod, 2009).

Tools such as reflective journals can provide opportunities for developing reflective practice skills (Constantinou & Kuys, 2013; Koh, Wong & Lee, 2014; Lew & Schmidt, 2011). While reflective journals are usually written products, Tulgar (2017) notes how reflections can also be captured through Smartphone audio or video self-recordings. Similarly, students can use social media applications to create reflective journals (Dabbagh & Kitsantas, 2012). In clinical practice settings, educators can intentionally invite students to begin any discussion of their performance with self-reflection and self-analysis (Melrose, Park & Perry, 2015). When students are consistently required to engage in critical reflection throughout their programs, the process becomes increasingly familiar.

Extending students' critical reflection skills to strengthen their self-assessment skills involves building in opportunities to cast students' own thinking against predetermined outcomes. When students are performing new clinical tasks, it is not unexpected that their capacity to self-assess is also less accurate. However, later in their programs, self-assessment accuracy improves (Blanch-Hartigan, 2011; Fitzgerald, White & Gruppen, 2003). Therefore, just as providing supplemental opportunities to practice clinical skills can be helpful, providing opportunities to practice self-assessment can also be helpful. The climate within these practice opportunities should be supportive and non-punitive (Asadoorian & Batty, 2005).

Integrating information from external sources Self-assessment skills also involve integrating information from external sources. For health profession students, the educators who evaluate them (faculty, instructors, tutors, mentors, preceptors and practitioners) are key external sources. Given the power and influence these educators have over students' progress in their chosen profession, feedback from educators is a critical element that undergirds the self-assessment process. Explicit, formative feedback lets students know how their educators perceive their performance. In turn, these perceptions can clarify criteria expected for good performance; they can stimulate learners to identify strengths and weaknesses; and they can help learners focus their efforts productively (Sitzmann, Ely, Brown & Bauer, 2010). Self-assessment that does

not integrate educator feedback is incomplete (Motycka, Rose, Ried & Brazeau, 2010).

In many instances, feedback can be difficult to 'hear,' and can leave students feeling distressed; doubtful about their abilities; unmotivated; and reluctant to persevere with their studies (Mann, 2010). Students may view even the most well intended educator comments as a potential intolerance for their mistakes and an indication that they lack knowledge, leaving them reluctant to seek out and act on feedback (Mann, 2010).

Efforts to ameliorate these difficulties can include regular meeting times; educators sharing their anecdotal notes or ongoing records of student progress; and providing specific time-limited strategies for task improvement (Melrose, Park & Perry, 2015). Further, opportunities where students routinely exchange assessment feedback with their peers can help make the process less intimidating. Feedback exchanges, where students apply the same assessment criteria as educators, can be organized as pair-share and small group activities. When feasible, these sessions could involve students in decisions about the assessment criteria being used; the origin and relevance of the assessment criteria; and practice priorities that may impact the criteria.

Incidental learning Affirming learning that students have achieved which does not relate to predetermined goals is a valuable but often neglected aspect of reflection. Incidental learning, also called surprise, unexpected or unintended learning, is learning that occurs as a by-product of doing something else (Marsick & Watkins, 1990; 2001). Incidental learning can emerge from observing others; from discussions with people in the environment; as a consequence of making mistakes; and from being required to adapt to or accept situations (Kerka, 2000). Creating space for students to share and celebrate incidental learning within their self-assessments can highlight accomplishments that may otherwise go unnoticed. To draw out incidental learning, educators can pose questions such as "What surprised you when …?" or "Talk about what happened that you didn't expect when …" (Melrose, Park & Perry, 2015).

In sum, integrating reflection into self-assessment can begin by simply reflecting and seeking to gain new personal insights. Developing the skill further can include critical reflection, which involves thinking deeply about ways of solving problems that are occurring or have occurred. Critical reflection requires people to change their thinking and consider new ideas. When the process of reflection becomes especially valuable to self-assessment is when these internal processes are coupled with the integration of information from external sources. For health profession students, feedback from educators and peers is a primary external source. A balance of internal, external and incidental information is needed when students seek to assess their performance in relation to the standards, criteria and competencies required by their profession. In the next section, common concerns related to the validity of students' self-assessments are discussed.

Addressing Validity

As previously mentioned, the Dunning-Kruger effect (Dunning & Kruger, 1999) where less able people over-state their ability and more able people under-state their ability, has influenced people's views about the validity of self-assessment. Questions are often posed about whether self-assessment activities provide accurate, dependable and truthful representations of students' abilities.

Recognize that inaccuracies exist It is important to recognize that inaccuracies in students' self-assessments exist in many health professions. Research evidence indicates that students' self-assessments frequently differ from educator assessments. Comparing classroom test scores, Brown and Harris (2013) found only weakly positive correlations between educator ratings and students' self-assessed ratings; between actual test scores and self-estimates of performance; and between educator and student judgments when the same rubric was used. In simulated emergency situations, Baxter and Norman (2011) found nursing students' self-assessments were significantly inaccurate in comparison with educators' observations of their performance. Similarly, in peer simulation situations, Sanderson, Kearney Kissell and Salisbury (2016) found dental hygiene students' self-assessments were also significantly inaccurate in comparison to those of their educators. Measuring communication skills, Gude, Finset, Anvik, Bærheim, Fasmer et al. (2017) also reported a lack of concordance between medical students' own and their educators' assessment.

Clearly, consistently achieving congruence between student and educator assessment may not always be possible. In these instances, conceptualizing student self-assessment as a formative developmental learning activity can be helpful. Approaches such as video and verbal feedback have been found to enhance the accuracy of students' self-assessments (Colthart et al., 2008; Hulsman & van der Vloodt, 2015; Volino & Das, 2014). Providing easy online access to self-administered tests with answers has the potential to provide students with accurate information about their level of knowledge (Miller, 2008). Reviewing a collection of work, such as a portfolio, capstone project or reflection summary, rather than just single instances of student performance can provide a wider view of how students are meeting competencies (Gadbury-Amyot, Woldt & Siruta-Austin, 2015). Implementing self-assessment activities in contexts where the emphasis is on mastery goals (achieving competence in practice) rather than performance goals (achieving immediate competence completing a task) can also contribute to more accurate self-assessment (Butler, 2011).

Know the impact of a history with academic success Students accepted into health profession programs often have a strong history of academic success. If students are used to performing well in learning situations and have consistently received positive feedback, they are likely to feel confident in their abilities. In turn, they may have a view of themselves as above average. When asked to self-assess, their thinking may be based on potential or ideal performance more than their actual performance (Evans, McKenna & Oliver, 2001).

From this perspective, the lack of congruence between student and educator assessments can be viewed as an opportunity to support students' positive self-concept and self-worth. Rather than emphasizing inaccuracy, educators can prompt students to identify steps they have taken in the past to achieve success, and then encourage them to apply these steps to their present learning situation.

On the other hand, students who do not have a strong history of academic success may be unaware of inaccuracies in their self-assessment or they may be reluctant to disclose them. If students perceive their learning environment as overwhelming, they may not know where to begin identifying what they do not know. In health care environments, where professionals are accountable to the public for providing safe competent patient care, students may not feel that it is acceptable to admit weakness. In these instances, once again, rather than emphasizing inaccuracy, educators can highlight the links between accurate practitioner self-assessment (which includes admitting to not knowing and then seeking out needed information) and patient safety (Sujata, Oliveras & Edson, 2001).

Create links to affective outcomes A further consideration influencing the validity of self-assessment is the distinction between cognitive and affective learning outcomes. Cognitive learning outcomes are more factually based, may relate to a particular course of study, and are associated with external sources such an exam grade or educator rating (Sitzmann, Ely, Brown & Bauer, 2010). Affective learning outcomes are related to internal sources, extend beyond a specific course or learning event and they include feeling satisfied, motivated, able to carry out tasks and willing to apply and use knowledge gained (Sitzmann et.al.). A meta-analysis of evaluation studies revealed that construct validity of self-assessment was strongly correlated with affective outcomes (particularly satisfaction and motivation) and only weakly correlated with cognitive outcomes (Sitzmann et. al.). Given this correlation, self-assessment activities linked to affective outcomes have a greater chance of yielding a more accurate measurement result.

Practitioners from different disciplines and practice areas all need self-assessment skills that help develop their thinking beyond the boundaries of a single course or learning event (He & Canty, 2013; Mann, 2010). Therefore, when addressing validity in self-assessment, connections between self-assessment activities and the nature of the outcomes being measured is an important consideration. Knowing the inherent difficulty in quantifying success with affective achievements, addressing validity in self-assessment must be grounded in a commitment to designing activities that are suitable for measuring broad outcomes, mastery goals and critically reflective thinking.

Conclusion

Self-regulating health professionals must be able to assess what they know; what they don't know in relation to what they are expected to know; and what they need to learn in order to provide safe competent care. Self-assessment is a learned skill and one that can be best developed through early, consistent and supportive activities during pre-service educational programs. Conceptualizing self-assessment as a formative learning activity offers a perspective where students and educators focus on improving performance rather than simply grading competencies.

A balance of reflection that taps into critical thinking and accurate representations of students' abilities is needed for self-assessment to be viewed as valid. Achieving this balance between reflection and validity is complex. In order to integrate reflection into their self-assessments, students must think critically and find new ways to solve problems and find meaning. They must analyze their performance in relation to pre-determined outcomes. They must also extend their own thinking to include feedback received from educators, peers and other external sources. Further, they must take incidental or surprise learning into account. Journals, either written or audio/video recorded are useful tools for developing reflective thinking. Inviting students to self-assess at the beginning of educator-student conversations; in pair-share discussions; and in small group conferences can provide valuable practice opportunities.

The validity of student self-assessment is often questioned because students' views of their abilities can be very different from those of their educators. Less able students over-estimate their ability and more able students underestimate their ability. Questions about validity can begin to be addressed by first recognizing that inaccuracies exist. Providing video feedback; self-administered online tests with answers; and reviewing a collection of work instead of a single instance can help students' self-assess more accurately.

A history of either success or limited academic success impacts congruence between student and educator assessments. Reminding students of how they achieved success in the past provides useful guidance. Emphasizing how disclosing areas of weakness can lead to increased patient safety offers meaningful rationale for moving forward.

Finally, stronger validity can be achieved when links are created between self-assessment activities and broad affective outcomes related to feeling satisfied with knowledge that has been gained and feeling motivated to apply and use that knowledge. Continuing to find ways to balance reflection and validity in self-assessment is both a challenge and an opportunity for students and educators in the health professions.

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