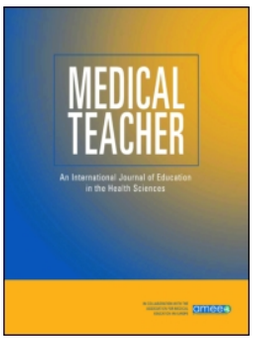

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AMEE GUIDE

Motivation in medical education*

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ABSTRACT

Motivation is a concept which has fascinated researchers for many decades. The field of medical education has become interested in motivation recently, having always assumed that medical students must be motivated because of their commitment to highly specific training, leading to a very specific profession. However, motivation is a major determinant of the quality of learning and success, the lack of which may well explain why teachers sometimes observe medical students who are discouraged, have lost interest or abandon their studies, with a feeling of powerlessness or resignation. After describing the importance of motivation for learning in medicine, this Guide will define the concept of motivation, setting it within the context of a social cognitive approach. In the second part of this Guide, recommendations are made, based upon the so-called "motivational dynamic model", which provides a multitude of various strategies with positive effects on students' motivation to learn.

Introduction

Motivation is one of those concepts that has been taken both by the general public—everyone has an opinion about motivation, often based on past events and experiences—and by the researchers from the field of psychology and education, since the end of the nineteenth century. The field of higher education became interested in motivation later on. For a long time, it was indeed assumed that students at this level *must* be motivated, particularly in highly professional areas such as health sciences. Therefore, specific studies on motivation in health science courses are rare, although they have increased in number since the turn of the twenty-first century (Kusurkar, Ten Cate, et al. 2011).

Most of these studies have demonstrated that motivation is linked to beneficial effects in terms of learning (Barker & Olson 1997; Sobral 2004; Wilson 2009; Stegers-Jager et al. 2012; Kusurkar et al. 2013). Specifically, the higher the motivation of medical students, the better their quality of learning, the learning strategies they use, their persistence and their performance. Research carried out in the field of motivation also led to the conclusion that, although teachers do not bear full responsibility for their students' motivation to learn, their responsibility is very high (Viau 2009). These results legitimate the relevance, for medical teachers, to take interest in motivation and to promote teaching and assessment strategies that enhance their students' motivation to *learn*.

Students in higher education are indeed mostly motivated to successfully *graduate*, especially in medical schools, where the selection process enhances such motivation, rather than the motivation to learn (Holland 2016). Therefore, the issues lie in motivating students to be deeply involved in their learning and to persevere in using

Practice points

- A motivated student uses more effective learning strategies, perseveres in case of difficulties or failure, and achieves a higher level of performance than a less motivated student.
- Since medical students are usually highly motivated towards graduating, the issues for teachers are to act positively with respect to the students' motivation to learn.
- The motivation to learn is higher in students who see a benefit or usefulness in the activities they are asked to carry out (perception of the value of an educational activity), and if they feel capable of completing these activities (perceived self-efficacy) and have the feeling that they can say something about how these activities proceed (perception of controllability).
- Exploring students' expectations and projects, explaining what the course material is for and making learning tasks challenging are strategies leading to positive effects on the perception of the value of an educational activity. The same effect is produced by making learning a problem-solving task and by strengthening links between theory and practice.
- Encouraging success, promoting motivating assessments, taking the group effect into account, providing well-meaning feedback and giving students the opportunity to undertake teaching duties are all strategies leading to positive effects on perceived self-efficacy.
- Letting students make significant choices is a strategy, which leads to positive effects on the perception of controllability.

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high-level taxonomic learning strategies. The aim of this Guide is to provide you, as health professional educators, with tools so that you can act positively on your students' motivation to learn, by implementing motivating teaching and assessment strategies. To achieve this goal, we must initially operationalize the concept of motivation to learn by defining it.

What is motivation?

In a very general way, Graham & Weiner (1996, p. 63) consider that "motivation is the study of why people think and behave as they do". However, there is no consensual definition of motivation, in regard to the dozens of theories that have been built around the concept. Among these, the social cognitive approach has gained considerable importance in the study of motivation, because it is considered as a highly integrative and holistic way of understanding the concept of motivation to learn (Stipek 2002). According to this approach, motivation to learn is determined by both the individual himself and by the environment. More precisely, it results from constant interaction between a student's perceptions of his learning environment, learning behavior, and environmental factors (Bandura 1997; Viau 2009).

The social cognitive approach helps to understand that motivation does not simply refer to the choice of undertaking one activity or another, but also to the direction, intensity, and persistence of a person's behavior once the choice has been made. It also highlights the fact that motivation varies according to the time, context and field within which it is studied, being neither a personality trait nor a permanent personal characteristic (Murphy & Alexander 2000; Kusurkar et al. 2012). This is why Viau (2009) prefers the term "motivational dynamic" rather than motivation.

These considerations lead us to the following definition of motivation: "[Motivation is] a phenomenon originating in the perceptions that [the student] has of himself and his environment, which lead to his choosing to carry out the educational activity proposed, persevere and engage with it, with the aim of learning from it" (Viau 2009, p.12).

To help teachers take motivation into account in their teaching and assessment strategies, and act positively on their students' motivation to learn, we will anchor our proposals on the basis of the "motivational dynamic model", which is associated with a strong instrumental value and which provides a multitude of levers for action likely to be used by a teacher for the purpose of enhancing his students' motivation to learn.

The motivational dynamic model

The motivational dynamic model associates the intrinsic sources of motivation and their outcomes in terms of learning, as shown in Figure 1 (available online as Supplemental Material). It is based on three perceptions:

- The perception of the value of an educational activity (also called "subjective task value") is defined as the student's judgment of the interest and usefulness of completing a proposed activity, based on the goals he is pursuing (Eccles et al. 1998; Viau 2009). The more value students place on the educational activities proposed, the more they persevere and focus on them in depth (Pintrich & De Groot 1990; Pintrich & Schrauben 1992).
- Perceived self-efficacy (sometimes called "perception of competence") is the student's judgment of his ability to adequately succeed with the proposed educational activity (Viau 2009). The more a student claims to have a high level of perceived self-efficacy, the more he sets high objectives, choses activities that challenge him, regulates his efforts, perseveres, manages his stress and anxiety, and consequently, achieves high levels of performance (Galand & Vanlede 2004).
- Perception of controllability (also called "perceived control") is defined as the degree of control a student believes he has over the progress of an activity (Viau 2009). A student is said to have a high level of perception of controllability if he feels he has something to say about how the proposed educational activity will be carried out. Students with a high level of perception of controllability are more committed and persevere longer in their learning (Ryan & Deci 2000).

According to the motivational dynamic model, a "motivated student" finds the proposed educational activities *useful* or *interesting* (perception of the value of an educational activity), feels *capable* of completing the activities to his own satisfaction (perceived self-efficacy) and has the impression of being *responsible* for the progress of his learning exercises (perception of controllability). We shall now look at the strategies that will allow you to act positively on these three perceptions, i.e. on your students' motivation to learn.

How can you act positively on your students' motivation to learn?

As a teacher, you may already be familiar with many of the strategies discussed below and summarized in Table 1 (available online as Supplemental Material), because these are teaching strategies intended to act positively on the quality of learning. The motivational dynamic model will help you to better understand why these strategies also have positive effects on medical students' motivation to learn. Of course, these proposals must be classified according to your teaching environment, in the knowledge that some of the proposed strategies are easier to implement in certain contexts (e.g. one-to-one exchanges in the clinical setting) more than in others (e.g. lectures given to several hundred students).

Enhance the perception of the value of the activity

Several strategies can be used to enhance this perception.

Explore students' expectations and projects

Students give more value to a given activity if it is in line with their own objectives, expectations and projects (Lens & Decruyenaere 1991; Pelaccia et al. 2008). It is therefore important to explore and help students define these (Kusurkar, Croiset, et al. 2011). To achieve this goal, you

may start the training session with a round table. You may also hold individual or focus group interviews to question participants or give them a written questionnaire. In the context of lectures, you could, for instance ask participants the question "What do you expect from this course" and give them enough time to formulate and write down their answer, before speaking about it (McKeachie & Svinicki 2013). In so far as this is possible, it will be important to associate learning objectives with the students' expectations and projects, by setting up links. Otherwise, it is useful to explain to the students why their expectations cannot be met within the context of the given learning sequence.

Explain the purpose of the material taught

Taking the time to explain the benefit and usefulness of the course material, particularly by defining the learning objectives, helps students to give value to a given activity (Hopstock 2007; Viau 2009). This is all the more important as students often have difficulties in identifying the value of a course, particularly for lectures, especially those related to biomedical subjects (Barker & Olson 1997; Ten Cate et al. 2011; McKeachie & Svinicki 2013). The learning objectives should ideally be connected to the students' future professional activity, e.g. by emphasizing the application of a subject discussed in an anatomy, physiology or embryology lecture, to medical practice (Kusurkar, Croiset, et al. 2011). Concerning biomedical sciences, there is also a motivational benefit in incorporating them in a so-called "clinically oriented" approach and early promotion of contact with patients (Ten Cate et al. 2011), in a context of what Dent and Harden (2001) call "vertical integration".

Promote activities that challenge students

Many teachers wrongly believe that starting a teaching session with easily achievable objectives may enhance their students' motivation to learn further (Viau 2009). Objectives that are too easy to achieve quickly lead to boredom with the activity (Paris & Turner 1994); on the other hand, objectives that are too complex can lead to the activity being abandoned. To associate learning objectives with a positive impact on the perception of the value of the activity, these activities should therefore be associated with a kind of challenge, i.e. they should not be too easy or too hard to carry out (Viau 2009; Kusurkar, Croiset, et al. 2011).

Make learning a problem-solving task

The difficulties experienced by students in linking the content of first-year courses to the practice of medicine lead to a decrease of their motivation (Barker & Olson 1997). The fact of turning a topic into problem solving – such as in the PBL approach – give students the opportunity to draw links between biomedical sciences and clinical disciplines by understanding or even solving problems based on their future professional activity. This improves their perception of the value of the activity (Pedersen 2003), provided that the problem is linked to a certain degree of authenticity, i.e. students must consider that it resembles problems they will have to solve in practicing their future profession (Viau 2009). The problem could be in the form of an anecdote, iconographic resources or a clinical vignette describing, at the beginning of the course, the case of a patient. This search for authenticity should also concern the assessment activities which will be appreciated by the students other than as a source of penalization, because they will be aware that the learning exercises they have done have been useful in solving the problems linked to their future professional life (Viau 2009).

Strengthen the links between theory and practice

Several studies tend to show the influence on the perception of the value of the activity of links, which a health student during initial or on-going training can make between theory and practice (Hopstock 2007; Pelaccia et al. 2009). These links are easier to establish for students with prior knowledge of the clinical activity corresponding to the material being taught (Wigfield & Eccles 2000; Pelaccia et al. 2009). Therefore, making connections between clinical rotations and university courses is potentially interesting with respect to motivation (Cottin et al. 2002). However, it is important to consider that many students will not manage to make this connection on their own. Therefore, teachers are also responsible for devoting time, during their lectures, to explain the links between the material being taught and its use in the clinical setting. The strategies described in the previous paragraphs should help you achieve this objective.

Enhance perceived self-efficacy

A certain number of strategies discussed in order to act positively on the perception of the value of the activity also have a positive impact on perceived self-efficacy. This is notably the case with turning a learning task into a problem, and learning tasks linked to a certain degree of authenticity (Pedersen 2003; Stegers-Jager et al. 2012). Other strategies are described below.

Promote success and motivating assessments, and support failure

Successes enhance perceived self-efficacy, whereas failures reduce it (Bandura 1997; Holland 2016). In higher education, success and failure are usually judged by students according to the marks they receive during class tests and degree examinations. It is therefore important not to be content with penalizing learning by giving poor marks, but first to emphasize the learning that has taken place, and then help them to recognize where they are going wrong. This support notably includes the importance of clarifying and explaining the assessment criteria you will use to the students (Viau 2009). It is also a good idea to link the mark to comments as soon as possible (Viau 2009) and reassure the student about his ability to succeed, as soon as this is realistic. Finally, it is important to value other dimensions of the learning achieved, e.g. learning strategies used by the student, progress made and persistence (Mann 1999; Viau 2009; Kusurkar, Croiset, et al. 2011; Stegers-Jager et al. 2012).

Take into account the consequences of vicarious experience

According to Bandura (1997), observing someone take action and succeed or fail in the task he is carrying out is

likely to influence the motivation of observers. This "Vicarious experience" is based on inferences made by the observers on the basis of social comparisons, which are the source of a type of self-diagnosis with respect to one's own abilities (Bandura 1997). Knowing this, faculty should try to manage the consequences as soon as they consider that a learning experience could produce negative effects in this way. In this context, the role of feedback—provided both to the person involved in the situation and to the observers—is decisive.

Provide well-meaning feedback

Well-meaning feedback is not restricted to simply providing a final mark. Oral persuasion is indeed one of the levers likely to build a student's perceived self-efficacy (Bandura 1997). To make such feedback motivating, it is important to include the positive elements of a student's presentation while, of course, remaining realistic about the performance (Bandura, 1997). This will often require a conscious effort, because spontaneously, teachers often tend to focus exclusively on errors committed by students. Motivating feedback should also be constructive and not threatening, i.e. it must target learning questions and focus on how to help the student during the next stages of his training, and not on the person himself (Van de Ridder et al. 2008; Kusurkar, Croiset, et al. 2011). This will sometimes mean not judging the student but the context in which the action was carried out by the student, which will standardize certain failures, such as when they appear early in the course, with respect to complex activities (ten Cate et al. 2011). The words used are also important to avoid a negative impact on a student's perceived self-efficacy. For example, prefer the term "points for improvement" rather than "errors" (Kusurkar, Croiset, et al. 2011).

Allow students to undertake teaching duties

Allowing students to undertake teaching duties on certain occasions can also act positively on their perceived self-efficacy. This is notably possible within the context of Problem-Based Learning (PBL), when students have the opportunity of explaining the knowledge they have acquired to their colleagues (Ten Cate et al. 2011). This is also the case when having lower year students tutored by more advanced students (Ten Cate et al. 2011).

Enhance the perception of controllability

The main strategy used to act positively on your students' perception of controllability is to give them the opportunity to make choices. However, not all choices are motivating (Flowerday et al. 2004). Motivating choices are those that appear to be relevant, interesting or important for the learners—i.e. that provide an opportunity for self-realization—while being compatible with the students' abilities and providing them with supervision which will reassure them and promote significant learning (Katz & Assor 2007). The curriculum for health science students is punctuated with many opportunities for making choices. For example, these students often have to choose their clinical rotation from a list or optional modules. In the context of PBL, the students' perception of controllability may also be enhanced by defining their own learning objectives, choosing the tasks to be carried out by the group to solve the problem set, and selecting the sources of information they will consult in this context (Pedersen 2003; Ten Cate et al. 2011). The choices may also concern types of assessment, e.g. by choosing the methods and times of assessment (Reeve et al. 2003; Ten Cate et al. 2011).

Conclusion

Motivation is a major determinant for learning. Teachers in medicine sometimes neglect to take this into account. This Guide provides teachers with a certain number of strategies likely to be used during training in order to act positively on medical students' motivation to learn. These strategies can be transposed to other academic environments for health science teaching, other educational environments and, more generally, other types of human activities.

Although several of the strategies explained in this Guide are based on general teaching strategies, it is clear that motivation alone cannot represent a self-sufficient means of enhancing learning and success. Application of these strategies should therefore be combined with other approaches, methods, techniques and tools based more broadly on active teaching methods, inherited from cognitivist and constructivist learning theories.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the article.

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