

The Importance of Supporting Autonomy in Medical Education

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Many thoughtful leaders in medicine have asserted their belief that when physicians are more humanistic in their interactions with patients, their patients have more positive health outcomes. Consequently, many advocates have called for the practice of teaching students and residents to provide more humanistically oriented care. This article reviews research from motivational psychology, guided by self-determination theory, that suggests that when medical educators are more humanistic in their training of students, the students become more humanistic in their care of patients. Being humanistic in medical education can be achieved through support of the autonomy of students. Autonomy support means working from the students' perspectives to promote their active engagement and sense of volition with respect to learning. Research suggests that when educators are more supportive of student autonomy, students not only display a more humanistic orientation toward patients but also show greater conceptual understanding and better psychological adjustment.

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The highest ideals of medical practice require physicians not only to have excellent biomedical competence but also to deliver health care in a humanistic manner. This principle is embodied in the biopsychosocial model of medicine (1) and is reflected in the American Board of Internal Medicine's goals for clinical competence (2). It has also led to a call for the practice of teaching medical students to be more humanistic in their interactions with patients. Such advocacy raises the question of whether it is possible to teach humanistic delivery of care while maintaining or enhancing students' acquisition of biomedical competence.

Research in motivational psychology provides the basis for a preliminary answer to this question. Some of this research has been organized by the concepts and paradigms of self-determination theory (3). We use the concept of autonomy support to represent the idea of being humanistic in both medical education and medical practice. In this article, we review motivational research to evaluate the hypothesis that when medical educators are more supportive of autonomy, their medical students become

more supportive of autonomy in their treatment of patients and display greater conceptual learning and better psychological adjustment.

The Self-Determination Model

The concept of autonomy support describes an interpersonal orientation in which persons in positions of authority (such as educators or clinicians) take the perspectives of others into account, provide relevant information and opportunities for choice, and encourage others to accept more responsibility for their own behavior. This orientation involves minimizing the use of pressure so that others will be more inclined to initiate their own actions. In medical education, autonomy support involves use of an interpersonal approach to pedagogy that leaves medical students feeling more understood and more involved in an educational partnership.

Although supporting autonomy has much in common with being humanistic or "student-centered" in education (4, 5), we use the concept of autonomy support rather than those similar concepts because well-validated paradigms and measures have been developed for the scientific study of autonomy support. The behaviors that are integral to autonomy support concern providing choices about how to behave, the information necessary to make wise choices, meaningful rationales for suggested behaviors, acknowledgment of feelings about behavioral options, and encouragement to choose and to persist (6, 7). In contrast, being controlling means pressuring others to behave in particular ways while taking little account of their perspectives. By definition, controlling medical instructors pressure students to do assignments in specific ways and to accept specific points of view. It is generally assumed that these instructors also tend to be authoritarian and demanding in style and personal manner, use rewards and punishments as their primary motivational strategies, and often give feedback in critical and demeaning ways.

Self-determination theory distinguishes not only between two types of educators but also between two types of student motivation: autonomous and controlled. To act autonomously means to behave with feelings of volition, willingness, and choice. By

definition, medical students for whom learning is autonomous freely choose to read and study because they find the material interesting or important to their identity as physicians. Self-determination theory posits that when educators are more supportive of autonomy, their students become more autonomous learners. In contrast, to be controlled means to behave with the experience of pressure or demand rather than a sense of choice. Medical students who experience this kind of motivation for learning study assigned material because they feel coerced or pressured to do so by their instructors or by the feeling that they should (rather than that they want to) learn. According to self-determination theory, instructors who are more controlling promote controlled learning in their students.

The term *autonomy*, which literally means "the quality of being self-regulating," has often been used interchangeably with the term *independence*. Behaving autonomously does not, however, mean behaving independently. Rather, it means behaving of one's own volition and will, in accord with one's inner self. One need not be independent to be volitional; indeed, all medical students depend on their instructors for knowledge and guidance. The question of whether students depend on instructors is different than the question of whether students' behavior is autonomous or controlled.

Corresponding to the confusion about the concept of autonomy has been confusion about the concept of autonomy support. Supporting autonomy does not mean being distant, withholding, vague, or permissive or leaving students to fend for themselves. Instead, it requires teachers to hold meaningful dialogues with students, to listen as well as to provide factual information and advice, and to suspend judgment while soliciting the opinions and concerns of students. Autonomy-supportive instructors may hold high standards, set limits, make recommendations, and give honest feedback, just as controlling instructors may, but autonomy-supportive instructors do these things in an understanding, encouraging, nonjudgmental style rather than a harsh, demanding, critical style. Research indicates that setting limits (8) and providing feedback (7, 9) can have motivational advantages as long as it is done in an autonomy-supportive manner—that is, in a manner that provides choice, acknowledges feel-

ings, and helps students find their own answers and solutions.

Self-determination theory is not the only theory of motivation that can be applied to medical education. Locus of control theory (10) and self-efficacy theory (11) are other examples. However, self-determination theory differs from these in that it distinguishes between types of motivation (autonomous and controlled). The other theories focus only on how to motivate people without considering the type of motivation being promoted. In contrast, self-determination theory has developed a more refined focus on how to promote autonomous motivation. We argue that it is important to consider the type of motivation because research shows that autonomous and controlled motivations differ greatly in their effectiveness.

The Self-Determination Model and Education

We reviewed studies testing the hypothesis that autonomy-supportive learning climates encourage medical students to become more autonomously motivated and to feel more competent in their learning. This hypothesis further suggests that these motivational states will, in turn, lead students to become more autonomy supportive (and, therefore, more humanistic) in their patient care, to learn more (that is, to be more biomedically competent), and to display better psychological adjustment (lower anxiety, higher self-esteem, and a more positive affect). The self-determination model is presented in the Figure.

Some studies of the relation between autonomy-supportive teaching and educational outcomes were done in medical schools (University of Rochester, Wayne State University, University of Oklahoma, and Saint Louis University), although many were done in universities and secondary and elementary schools. Because the degree of convergence in the results of studies across these varied settings is high, results from settings other than medical schools are probably applicable to medical education.

In a 2-year longitudinal study of 72 second-year medical students taking an interviewing course with 18 instructors (12), the students' autonomous motivation for learning, valuing of psychosocial aspects of medical care (13), and feelings of competence in interviewing patients were assessed at the beginning and end of the course. The students also rated the extent to which their instructors were supportive of autonomy (compared with controlling) by using a learning climate questionnaire. This questionnaire assessed how much the students felt understood and accepted by their instructors and how much they

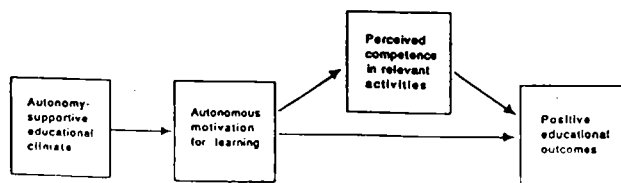


Figure. The self-determination model applied to medical education.

believed that their instructors gave them choices and encouraged them to ask questions.

Results of this study indicated that medical students who viewed their instructors as more supportive of autonomy became more autonomously motivated during the 6-month course. Although the data were analyzed with simultaneous multiple regressions, we converted relevant statistics to partial correlation coefficients to convey the effect sizes. For the relation between autonomy support on the part of the instructor and autonomous motivation on the part of the student, the corresponding correlation coefficient was a moderate 0.30 (14). Increases in the autonomous motivation of students were found to relate to the development of stronger psychosocial values and the self-perception of greater competence in interviewing. These latter two effect sizes, represented by correlation coefficients of 0.43 and 0.39, respectively, were moderately strong. Other analyses indicated that the effects of autonomy support on autonomous motivation and psychosocial values were maintained at 2 years of follow-up. The follow-up effect sizes of 0.33 and 0.35 were moderate.

About 6 months after the interviewing course ended, the students in this study counseled a simulated patient about cardiovascular risk behaviors (smoking cessation, dietary restrictions, and regular exercise) and were rated by observers on how supportive of autonomy they were in their style of care. Results showed that the autonomous motivation on the part of the students at the end of the interviewing course was significantly and moderately related to their support of autonomy in dealing with the simulated patients 6 months later ($r = 0.42$). Finally, a significant and moderate relation ($r = 0.29$) was found between the students' perception of their instructors as autonomy supportive and the instructors having had fellowship training in psychosocial medicine, which presumably taught them to behave in ways that we define as autonomy supportive.

A second study that used the same methods at a different medical school followed 91 second-year students for 6 months, during which time they took a medical interviewing course. Results of data analyses in this study replicated those of the first study (12).

In summary, humanistic delivery of health care requires attending to the psychological and social as well as biological contributors to illness and health. It means being supportive of patient autonomy, which involves acknowledging the feelings and perspectives of patients, leaving them feeling heard and understood, and providing treatment choices and relevant information (15-18). The two longitudinal studies discussed above indicated that medical instructors who had had psychosocial fellowship training were perceived as more autonomy supportive by

their students. Furthermore, the students' perceptions of instructors as autonomy supportive led the students to become more autonomously motivated over the 6-month course and, in turn, to feel more competent, place a higher value on psychosocial aspects of medicine, and be more autonomy supportive when counseling simulated patients. Thus, autonomy-supportive instruction seems to lead prospective physicians to deliver care in a more humanistic manner.

Two other studies of autonomy support in medical education (19, 20) yielded complementary results. Students' perceptions of autonomy support in third-year clerkships (measured by the Learning Climate Questionnaire) significantly predicted whether the students would choose residencies in the corresponding specialties. In their second year, students rated how likely they were to go into internal medicine and how likely they were to go into surgery (as well as other specialties); in their fourth year, they rated the autonomy supportiveness of their surgical preceptors and their internal-medicine preceptors and made their residency selections. Analyses revealed that changes from the second to the fourth year in the likelihood that students would select an internal medicine or a surgery residency were significantly predicted by student ratings of their preceptors' support of autonomy. The effect sizes, expressed by correlation coefficients of 0.27 and 0.23, were moderate. Autonomy-supportive climates in particular clerkships therefore seem to help students become more humanistic and seem to stimulate their interest in those medical specialties. These studies also showed that autonomy support on the part of instructors predicted how competent students felt in their chosen specialties.

We hypothesized that autonomy-supportive teaching, which was found to facilitate students' autonomous motivation, perceived competence, and interest, would lead not only to a more humanistic orientation but also to better adjustment (for example, lower anxiety and higher self-esteem) and enhanced learning. Several studies are consistent with these predictions, although they were not done in medical schools.

We begin by reviewing studies that show motivational and affective advantages for autonomy-supportive compared with controlling educational environments. In one study, 137 college students took a course in organic chemistry in an experimental program. Forty-two instructors taught small-group classes that supplemented the professor's standard lectures (Black AE, Deci EL. The effects of instructor autonomy support and student self-regulation on college-level learning in the natural sciences: a self-determination theory perspective. Unpublished manuscript, University of Rochester,

1997). Students who perceived their instructors as more autonomy supportive (as assessed by the Learning Climate Questionnaire) became less anxious, developed greater interest in the course material, and felt more competent than students who perceived their instructors as less autonomy supportive. The effect sizes were all moderate.

Two studies of elementary-school students showed similar results. In one study (21), teachers who made a conscious effort to reflect the feelings of their students and to encourage them to formulate their own solutions to problems had students who felt more competent in school, were more curious, and had higher self-esteem than the students of teachers who reported that they pressured students to implement specific solutions. In the other study (22), students who reported that their teachers behaved in autonomy-supportive ways were more autonomously motivated, perceived themselves to be more competent, and displayed less aggression.

These and other studies (23, 24) indicate that autonomy-supportive educational climates seem to have clear advantages in terms of prompting greater autonomous motivation and psychological adjustment (lower anxiety, greater interest in learning, and higher self-esteem). But the crucial question remains whether autonomy-supportive teaching leads students to learn as much in cognitive terms (that is, conceptual and factual knowledge) as controlling teaching. Studies of college and elementary students have addressed this question.

In the study of organic chemistry students, students who perceived their instructors as more autonomy supportive achieved better test grades than students who perceived their instructors as less autonomy supportive, even after Scholastic Aptitude Test scores and grade point averages were controlled for. Thus, for students, the motivational advantages of being taught by autonomy-supportive instructors went beyond the effects of having high academic ability.

In another study in which college students learned to solve complex problems (25), teaching sessions were tape recorded and were subsequently rated by trained observers for the degree to which teachers were autonomy supportive or controlling. Results indicated that students who were instructed by teachers who were rated as more autonomy supportive independently solved five times as many problems as those who were instructed by teachers who were rated as more controlling.

Two experiments that distinguished between conceptual understanding and rote memorization produced similar results. In one study, college students read an article on neuropsychology (26); in the other, fifth-grade students read age-appropriate texts (27). Both experiments had a controlling con-

dition in which students were pressured to learn by the expectation of a graded examination, and both had an autonomy-supportive condition that focused on the interest value of the material and the possibility of putting the learning to active use. In each study, a subsequent examination that was unexpected by the students in the autonomy-supportive condition but was given to both groups revealed that autonomy support compared with control led students to be more autonomous in their learning. This, in turn, related to better conceptual understanding (but not to better memorization). Autonomy-supportive teaching seems to promote greater depth of information processing, resulting in better comprehension and mastery of the material; however, memorization and retention of facts may be no better in autonomy-supportive than in controlling learning climates. The latter findings are particularly relevant in light of a recent study (28) showing that 49% of the 453 students from medical schools with traditional curricula reported that they "learned half or more of the material in years 1 and 2 by memorizing without understanding," whereas only 6% of the 106 students from medical schools with problem-based learning curricula said that they memorized this much material without understanding it.

In summary, these studies imply that autonomy-supportive medical education does not have disadvantages and may even have advantages in terms of students' learning and psychological well-being. Thus, autonomy-supportive learning climates seem to have an overall advantage for important medical-education outcomes, a perception that may have promoted the development of problem-based learning in many medical schools.

Various studies indicate that medical education can be highly controlling (29, 30) and that medical students do not always perform at expected levels. One study (31) revealed that second-year students cover only about 15% of the assigned textbook reading, which would have taken them more than 40 hours a week if they had done it all. These findings highlight the importance of experimenting with the promotion of autonomy-supportive rather than controlling climates in medical schools as a way of facilitating students' autonomous motivation and, in turn, improving their learning, performance, and psychological well-being.

Further Explorations

We argue that making medical education more autonomy supportive is desirable because evidence indicates that doing so leads students to become more patient-centered in their orientation to care

and promotes greater conceptual understanding and better psychological adjustment. We suggest that autonomy-supportive medical education is intrinsically valuable. Medical training occupies 7 to 9 years of the lives of persons who become physicians; thus, making that experience more autonomy supportive seems to be humane, especially given that there is no indication that this would decrease the development of biomedical competence.

Of course, the ultimate criterion for evaluating the utility of making medical education more autonomy supportive is whether the resulting increase in autonomy-supportive patient care has a positive effect on patient health outcomes. Several studies guided by self-determination theory have explored this issue. These studies focused on primary care physicians who treated chronic health problems linked to patient behaviors, such as smoking and nonadherence to therapy with prescription medications. One study (32) involved morbidly obese patients who attended a clinic staffed by physicians, nurses, nutritionists, psychologists, and exercise physiologists. Patients had different teams of providers, determined arbitrarily by the timing of their weekly visits, and rated the autonomy supportiveness of their team. Analyses of the data showed that patients who found their team more supportive of autonomy were more autonomously motivated, attended their weekly appointments more regularly, lost more weight during 6 months of low-calorie therapy, exercised more regularly, and maintained more weight loss over 23 months. In another study (33), 126 patients from a three-city region who were receiving long-term drug therapy were asked to rate the autonomy supportiveness of their primary physicians, who practiced throughout that region. Patients who felt that their physicians were more supportive of autonomy were more autonomously motivated to take their medication and displayed better compliance with their prescriptions. In a 1-year longitudinal study (34), patients with diabetes who viewed their provider teams (physician, nurse educators, and dietitians) as more supportive of autonomy showed increased autonomous motivation and decreased hemoglobin A_{1c} values over the year. Finally, 241 patients who consulted one of 24 physicians about smoking cessation rated the physicians' autonomy support (35). Results indicated that perceived autonomy support significantly predicted patients' autonomous motivation for quitting and 6-month cessation rates.

Although interpretation of these studies is complicated by the possibility that patient perceptions rather than provider behavior were the determining variable, these studies are consistent with the hypothesis that support of autonomy on the part of physicians affects patient behavior and health out-

comes. They therefore provide additional justification for using autonomy support to train medical students to deliver care in a more humanistic manner. It is important to emphasize that autonomy support is neither a specific curriculum for medical education nor a specific treatment to be used in patient care. Rather, it is an interpersonal orientation to education and care in which the student or patient is at the center. As such, it can be used in the implementation of any curriculum or treatment.

Limitations

Research on the application of self-determination theory to medical education is relatively new; thus, much of it has been conducted in our own laboratories. Some work has been done by other investigators (24), but additional work done in other laboratories will be important in confirming the generalizability of these findings. The design of medical education clearly involves complex issues. Therefore, the seeming importance of autonomy support needs to be further studied by many other researchers in diverse settings, and the results of these studies will need to be carefully integrated with various educational considerations.

The research reviewed in this article implies that medical students benefit from being given greater autonomy. However, one might question whether that is true for all students. It is worth noting that one study (12) showed that autonomy support positively affected autonomous motivation and other outcomes for participating medical students regardless of the initial motivational differences among them. This suggests that even if students do not seem to want autonomy, autonomy-supportive instruction may lead to positive educational outcomes. Nonetheless, numerous conceptual replications and extensions of this work will be necessary before we fully understand the extent to which the reviewed results can be generalized. Furthermore, much of the research we reported was done in educational settings other than medical schools or postgraduate medical training, and the work on learning and well-being must be replicated in medical education settings.

Conclusions

Although much work remains to be done, the studies reviewed here suggest that autonomy-supportive medical educators facilitate more humanistic health-care beliefs and behaviors and promote improved conceptual learning and psychological adjustment in their students. We believe that more

autonomy-supportive medical education has intrinsic value, and we suggest that the increasing adoption of problem-based learning in medical schools is motivated in part by recognition of these general principles, even though it may not be happening as an intentional response to the research evidence. Even more important, preliminary evidence suggests that the increase in autonomy-supportive patient care that results from humanistic medical education leads to better health outcomes for patients with chronic or preventable illnesses. Thus, the teaching of humanistic delivery of care seems to be a worthy and practical ideal for medical education.

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