

Time Utilization, Adjustment, and Performance of First-Year Medical Students

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Summary

Time utilization, the quality and efficient use of time, is distinguished from time allocation, the quantity of time allotted to medical learning. The interrelations of time utilization, student academic performance during their first term of medical training, and five questions relating to their self-perceived adjustment to the demands of a typically rigorous medical curriculum were assessed. Results indicated significant relations ($p < .05$) of performance with four of the five coping measures, with the fifth approaching significance. The relations of time with performance and students' perceptions of their class rank also approached significance. The use of the medical school adjustment questionnaire in early diagnosis of students with adjustment problems to provide them with more timely counseling and support is discussed. A program emphasizing better study skills development, improved time management, and the use of advanced organizers is suggested for students coping less effectively with the demands of their medical education.

Introduction

It has been estimated that during the basic sciences portion of the medical curriculum, students must assimilate approximately 24 new facts or concepts per hour (Anderson & Graham, 1980). While one may take issue with the manner in which this ratio was determined, the assertion that information overload is among the more pressing problems in medical education can hardly be denied, given the ever-increasing expansion of medical knowledge and technology. It is therefore not entirely unanticipated that students may experience difficulty in coping effectively with the demands of a rigorous medical curriculum. This adjustment process may be all the more difficult given that medical students must concomitantly cope with problems similar to their non-medical cohorts, that is, the developmental adjustments associated with late adolescence and early adulthood, as well as their own individual intrapsychic conflicts (Adsett, 1968).

The purpose of this study was to explore the relations among first-year medical students' initial medical school performance and self-perceptions of their management of their time, as well as their adjustment to what Anderson and Graham (1980) term information overload. Over the years, several educators have explored the effect of time on medical education. Fisher and Cotsonas (1965) reported that students' medical school grade-point average was not significantly related to the amount of time

devoted to learning, neither formally in class nor in unscheduled study. This was attributed to the fact that weaker students reported trying even harder (that is, allocated more time) than the brighter ones. Jesse and Simon (1971) found that there was no decrease in the allocation of time to learning with a pass/fail grading system, which shifted students away from an external and toward an internal frame of reference in which they assumed more responsibility for their own learning. In another study first-year medical students who allotted more time to learning in relation to their cohorts believed they ranked significantly higher in their class and belonged more and functioned better in their medical program (Wolf, Ulman, Saltzman & Savickas, 1980). These previous studies used measures of the quantitative allocation of time. Both Fisher and Cotsonas (1965) and Wolf *et al.* (1980) noted the need for the study of the effects of the qualitative use of time, such as efficiency and productivity. While no significant relations between time and performance in medical school have been found in the past, this may have been an artifact of measurement considerations, that is, using only a quantitative measure of the allocation of time and not a qualitative measure of the utilization of time. It should be noted that allocation and utilization of time have been confounded in the past (e.g. Jesse & Simon, 1971), and that the aforementioned distinction offers a needed clarification between the quantitative (allocation) and qualitative (utilization) aspects of time. One individual may accomplish more in one hour than another does in one day. Thus a focus on only the quantitative aspect of time may be misleading from an educational perspective.

The most frequently reported sources of medical student stress have been found to be related to academic aspects of medical training, as well as doubts concerning scholastic ability, such as fear of final examinations, fear of inability to absorb all course materials, fear of getting bad grades, and the number of study hours needed to keep up with assigned material (Boyle & Coombs, 1971; Coburn & Jovaisas, 1975). Not surprisingly, medical students reporting more stress have been found to perform less well academically (Gottheil *et al.*, 1969) and to rank themselves lower in their class (Wolf *et al.*, 1980). Thus it is anticipated that students who believe themselves to be adjusting better to their medical training in relation to their cohorts will report more efficient use of their time, as well as perform better academically.

Method

Participants in the study were 75 first-year medical students at the Northeastern Ohio Universities College of Medicine, a consortium of eleven hospitals, three universities, and a basic sciences campus emphasizing family practice. Because participation was voluntary and complete data were not available for all students, information for 46 to 56 students was used for analysis.

The relations among three general measures were explored: a) students' grade point average (GPA) for their first term in medical school and their responses to b) a utilization of time questionnaire and c) a coping questionnaire. Their GPA was a composite index of their average performance in neurobiology, behavioral science, microscopic anatomy, molecular pathology, gross anatomy and embryology, and fundamental concepts of cell and tissue biology. Each course was weighted equally in determining GPA.

The time utilization subscale of the Temporal Experience Questionnaire (Wessman, 1973) was used to measure students' perceptions of efficient scheduling versus procrastination and inefficiency in their use of time. This scale is comprised of 20 statements rated on a 7-point likert scale anchored by "not at all" and "perfectly" at the two extremes. Students were asked to indicate how well each of the statements describes them. Possible scores range from 0 to 120, with a higher score indicative of more efficient use of time. This scale was constructed by including the 10 most positively loaded items and the 10 most negatively loaded items for the time utilization factor obtained from a Thurston complete centroid factor analysis (Wessman, 1973).

This factor loaded items indicating efficient or inefficient utilization of time, with respect to planning, scheduling, and organizing. The positive pole of "Efficient scheduling" indicated a high degree of organization and planning of time; particularly with respect to work allotment, with adherence to schedules and deadlines. The items indicate efficiency and punctuality. They convey a sense of time as structured, ordered, and organized.

The negative pole of "Procrastination and inefficiency" represents disorganization and ineffectiveness in the utilization of time, with procrastination and lateness as chronic problems. The items convey a sense of personal time as unstructured, unordered, and disorganized. (p. 110)

College students on the positive pole of this scale were found to show a consistent set of personality characteristics including attentiveness to detail, conscientiousness, persistence, orderliness, discipline, confidence and high levels of energy. Individuals toward the negative pole exhibited the contrasting characteristics of carelessness, lack of discipline and confidence, anxiety, guilt, and timidity (Wessman, 1973).

A medical school adjustment questionnaire (Wolf et al., 1980) was used to provide behavioral referents for five aspects of coping with the demands and pressures of medical school. Students were asked to select one of four ordinally ranked response options that best describes their opinion concerning each of the statements. These questions relate to their perceived internal and external adjustment. For example, their estimates of their class rank and functioning in relation to their peers are aspects of their external adjustment, based upon a social comparison with their medical cohorts. These questions reflect their own sense of competence, self-evaluation, and appraisal. On the other hand, their feelings of belonging in the program, commitment to completing the program and becoming an M.D., and the stress they are now experiencing in comparison to other periods in their lives all relate to their internal adjustment to medical school. Students experiencing more belonging and commitment and less stress could be expected to concentrate more on what they are doing and less on how they are doing, thereby focusing more of their energy into meeting the requirements of their medical school environment. Both the time utilization and the medical school adjustment questionnaires were administered during the beginning of their second term after students had received feedback on their first term performance.

Results

The average GPA for the 53 students this information was available for was 2.80, with a standard deviation of 0.46. The average score on the time utilization scale was 88.07 with a standard deviation of 12.47. Thus, students on the average indicated more efficient scheduling than more procrastination and inefficiency, as might be expected of individuals successfully admitted to medical school.

Frequencies and percentages for the medical school adjustment questionnaire are summarized in Table 1. Several observations are worthy of noting. Given the fact that students are not informed of their class rank, the fact that their rankings as a group are higher than realistically possible is certainly understandable. In fact, their optimistic ratings would seem to facilitate coping, whereas low self-evaluations could be debilitating. Most students believed they belonged and functioned well in the program, and all but three students expressed at least "much" commitment to completing their program and becoming an M.D. Not surprisingly, about two-thirds of the students reported experiencing "more than usual" or "extreme" stress compared to other times in their lives. Finally, most students reported rather modestly, and perhaps realistically, that they were performing about the same as their peers.

Table 1. Frequencies and Percentages of Medical School Adjustment Responses for First-Year Medical Students

1. I estimate my current class rank to be:			
	<u>Frequency</u>	<u>Percent</u>	
A. upper 25%	13	24.1	
B. upper half	25	46.3	
C. third quadrant	11	20.4	
D. bottom 25%	5	9.3	
2. The extent to which I feel that I belong and function well in this program is:			
	<u>Frequency</u>	<u>Percent</u>	
A. completely	12	21.8	
B. much	28	50.9	
C. somewhat	15	27.3	
D. not at all	0	0	
3. The extent to which I am committed to completing this program and becoming an M.D. is:			
	<u>Frequency</u>	<u>Percent</u>	
A. completely	43	76.8	
B. much	10	17.9	
C. somewhat	3	5.4	
D. not at all	0	0	
4. Compared to other times in my life, the stress/pressure I am now experiencing is:			
	<u>Frequency</u>	<u>Percent</u>	
A. extreme	8	14.5	
B. more than usual	30	54.5	
C. about the same	16	29.1	
D. less than usual	1	1.8	
5. Considering the pressure of any professional program of studies, I am functioning:			
	<u>Frequency</u>	<u>Percent</u>	
A. better than my peers	1	1.9	
B. somewhat better than my peers	17	32.7	
C. about the same as my peers	28	53.8	
D. less well than my peers	6	11.5	

Intercorrelations among all the measures are reported in Table 2. Students who performed better in relation to their cohorts as measured by their GPA ranked themselves significantly higher in their class ($r = .73$; $df = 44$; $p < .01$), believed they belonged and functioned well in the program significantly more ($r = .42$; $df = 44$; $p < .01$), believed they functioned significantly better than their peers ($r = .39$; $df = 42$; $p < .01$), and indicated experiencing significantly less stress ($r = -.32$; $df = 43$; $p < .05$). They also tended to report using their time more efficiently

($r = .25$; $df = 44$; $p < .10$), as well as be more committed to completing their program and becoming an M.D. ($r = .25$; $df = 44$; $p < .10$), although these last two relationships are not particularly strong.

Table 2. Intercorrelations of Time Utilization, Adjustment, and Performance of First-Year Medical Students

	GPA	TIME	RANK	BELONG	COMMIT	STRESS
TIME	.25					
RANK	.73**	.26				
BELONGING	.42**	.13	.58**			
COMMITMENT	.25	.19	.17	.28*		
STRESS	-.32*	.01	-.20	-.15	.10	
FUNCTIONING	.39**	.11	.28*	.18	.37**	.23

* $p < .05$

** $p < .01$

Other than its relation with GPA, the time utilization measure related most to perceptions of class rank ($r = .26$; $df = 52$; $p < .06$). Its relations with the other adjustment questions were very low, indicating little if any shared variance. Students believing they ranked higher, as well as those expressing greater commitment, also thought they belonged more and functioned better in the program ($r = .28$ to $.58$; $p < .05$).

Discussion

As hypothesized, all the measured aspects of medical school adjustment except commitment were significantly related to first-year medical students' academic performance. Clearly, constructive coping with the information overload of a rigorous curriculum facilitates performance. Given the fact that 20 to 30 percent of the student body at representative medical schools come to the attention of staff psychiatrists (Boyle & Coombs, 1971), the importance of early identification of students having adjustment difficulties may allow for timely intervention and counseling. Strayhorn (1980) reported that minority medical students attributed increased stress to uncertainty about what course material was important, faculty and classmates making them feel unimportant, and the lack of role models who understood their needs. Because virtually all medical students have been successful throughout their lives, or they would not likely have been admitted to medical school, many face adversity for the first time in

their lives. Most are woefully ill-prepared to cope with anything but outright success. Nor in most instances do they have a support system to help them through their rougher moments, although some medical schools are attempting to provide such support (e.g., Weston & Paterson, 1980).

Because over 94 percent of the students indicated a relatively high degree of commitment, there was not much variability to correlate with the other measures. In light of this, the positive correlation of commitment with GPA, while accounting for only 6 percent of the variance, is more meaningful. In short, the relations between GPA and the medical school adjustment questions do offer support for the validity and usefulness of the latter. However, follow-up studies of the predictive validity of these questions with information concerning later problems, leaves of absence, academic difficulties, et cetera would enhance their potential use as diagnostic tools.

In light of the superior academic background of most entering medical students, it is interesting to note the low positive relations of efficient use of time with higher grades and perceptions of class rank. Because of the overwhelming amount of material to be absorbed, Strayhorn's (1980) finding of the importance of student uncertainty concerning what course material is most important takes on even greater importance. Gottheil et al. (1969) reported that there was no significant difference between medical school dropouts and those who remain and graduate on such measures as the Medical College Admission Test (MCAT). Because virtually all medical students are capable of grasping the course material, they suggested that personality and motivational differences may distinguish successful from unsuccessful medical students. The results of the present study and those of Strayhorn (1980) suggest a third explanation - that more effective study skills (i.e., efficient management and use of time by focusing on more important material) and not superior intelligence or personality may account for more successful medical school performance. Medical schools with on-going or projected student support programs might well explore the possibility of providing training in study skills, time management, and organization of assigned materials into outlines using advanced organizers. Focusing on broad concepts and big ideas first provides an organizational structure on which to hang more specific facts and details, thereby enhancing the likelihood of the latter being remembered.

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