

DOCUMENT RESUME

ED 217 817

HE 015 250

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 TITLE Moral Reasoning as a Criterion for Admission to Medical School:
 PUB DATE Mar 82
 NOTE 21p.; Paper presented at the Annual Meeting of the American Educational Research Association (New York, NY, March 19-23, 1982).

EDRS PRICE MF01/PC01 Plus Postage.
 DESCRIPTORS *Admission Criteria; Attitude Measures; College Admission; College Applicants; *Evaluative Thinking; Foreign Countries; Higher Education; Individual Characteristics; *Individual Development; Integrity; *Interviews; *Medical Schools; Medical Students; *Moral Values; Predictive Measurement; Predictive Validity

IDENTIFIERS Ben Gurion University (Israel); *Defining Issues Test; Tel Aviv University (Israel)

ABSTRACT

To determine whether admission interviews could differentiate commitment, 456 applicants from 2 medical schools were tested on the commitment, 456 applicants from two medical schools were tested on the Defining Issues Test, which measures the amount of principled or postconventional moral reasoning. The participating institutions were two Israeli institutions: the Sackler School of Medicine, Tel Aviv University, and the Ben-Gurion University. In the Defining Issues Test, the subjects are required to respond to a number of moral dilemmas, each followed by 12 moral issues relating to it. The issues are criteria for solving the dilemma and are designed to represent the various stages of moral development, according to Kohlberg's theory. Each subject rates all the issues in terms of their importance in solving the dilemma, and rank orders the four most important ones. No difference was found between the scores of the accepted and the rejected applicants of the school using traditional scholastic admission criteria. On the other hand, a great difference was shown in the school that admits students for their personal characteristics as assessed by interviews. However, only moderate correlation was found between the test and interview scores. It is suggested that moral reasoning is a key concept in medical professional behavior and is correlated with clinical performance. A possible use of the Defining Issues Test in the student selection process is to increase the predictive value of the admission process while decreasing its cost. Possible explanations for the difference in the response rate between admitted and rejected applicants in both institutions are offered. (SW)

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MORAL REASONING AS A CRITERION
FOR ADMISSION TO MEDICAL SCHOOL

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Subtitle: MORAL REASONING and ADMISSION

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Part of this paper will be presented in the AERA Annual Conference,
New York, March 1982.

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The search for good predictors of professional performance which can be used for student selection is ceaselessly carried on. In medical education the traditional admission criteria, which are by and large cognitive, have been repeatedly challenged. A multitude of studies pointed out that pre-medical grade-point average (GPA), old and new MCAT, entrance examinations and others, are poor predictors of clinical performance (Wingard & Williamson, 1973; Murden *et al.*, 1977). Further, there is increasing evidence that non-cognitive parameters such as interpersonal skills, social awareness and moral behavior are indeed better discriminators between good and poor physicians (Rezler, 1973; Margolis & Cook, 1974; Wagoner & Gray, 1979). Yet such non-cognitive attributes are difficult to measure quantitatively, and believed by some to be unassessable by a pencil-and-paper instrument (Werner *et al.*, 1977). Hence, those institutions which attempt to assess non-cognitive qualities of applicants have to rely on personal interviewing in spite of its questionable reliability and validity (Gordon & Lincon, 1976; Milstein *et al.*, 1980; Greer & Aronson, 1980), and its cost in time and manpower.

Challenged by the need for a valid, reliable and simple instrument to support the student selection process, the authors chose the Defining Issues Test (DIT), developed by Rest (1979) on the basis of Kohlberg's moral development theory (Kohlberg, 1976). There were several reasons for the choice of this particular test. First, moral behaviour is a key concept in any interpersonal relationships, which in turn are central to medicine. It is a closely attached concept to social sensitivity and empathy (Mead, 1934; Baier, 1973) and related to social adequacy and interpersonal effectiveness (Grief & Hogan, 1973). Others have added to the definition of morality the

care for the individual as well as for the entire society (Hogan, 1973). All this array of descriptions closely corresponds to the "principled" or post-conventional stage of moral development as suggested by Kohlberg (1976). This is the level in which moral issues are self-accepted and internalised. It has been further subdivided into the stage of "morality of contract and of democratically accepted law" (5A); of "morality of individual principles of conscience" (5b); and of universally valid ethical principles of "justice and perfectionism" (6) (Kohlberg, 1976). The behaviour in these levels, which are the ones measured by the DIT, is internally motivated, in contrast with the external motivation of compliance with social norms ("morality of conventional role-conformity") of the earlier stages. The importance of internalised morality for medicine is beyond question. True, the DIT measures judgement or developmental stage rather than actual behaviour, yet such development may be regarded as a prerequisite for the actual behaviour, and thus for care and empathy.

A second reason for focussing on the DIT is its well-established reliability and validity, shown in many studies (both intra- and trans-cultural) (Rest, 1979; Rest *et al.*, 1977). A third reason in favour of this instrument is its simplicity; it is a paper-and-pencil test, mechanically scored. Those two last arguments single out the DIT from some other innovative empathy measuring instruments (Werner *et al.*, 1977).

The research hypothesis was that the applicants admitted to an institution which selects its students for their personal virtues by personal interviews will also score higher than the rejected ones on the DIT. No such difference was expected between admitted and rejected applicants to an institution which uses the traditional pre-medical scholastic achievements

and intelligence as the main admission criteria. It was further hypothesised that the interview scores will correlate with the DIT scores to a significant degree.

BACKGROUND

Two Israeli institutions participated in the study. One is the Sackler School of Medicine, Tel Aviv University (STA), which selects its students from a pool of about 1200 applicants per year on the basis of previous scholastic achievements and performance on a psychometric test. Only applicants with a national matriculation examination average of 80 percent or better are considered. For those a combined 'performance score' is computed from the matriculation score (40 percent) and the psychometric scores (60 percent). The top 80 performers are admitted. The selection process is automatized, economical and rapid. STA exemplifies an admission policy which values intelligence, cognitive abilities and achievement orientation. Basically, it is in accord with the policy of the majority of Western medical schools.

The faculty of Health Sciences, Ben-Gurion University (BGU) has a rather complicated admission process which has been described in detail elsewhere (Antonovsky, 1976). It emphasises personal characteristics, interpersonal skills and orientation toward the community as expressed by previous behaviour, and down-plays scholastic achievements. Only B grades (80 percent) on any two of the six national matriculation examinations are required and the overall average is ignored. The top 300 or so scorers on a psychometric test out of 1200 applicants per year are interviewed at length. The top scored interviewees (about 90) are re-interviewed by another team. The personal characteristics assessed are integrity; empathy; intellectual

curiosity and flexibility; intelligence; insight; and care for, involvement with and orientation toward the community. Each of the two 45 to 60-minute interviews includes both structured and unstructured moral dilemma situations within a clinical context. The final selection of 50 students per year is based entirely upon the interview scores. BGU thus exemplifies those schools which value non-cognitive attributes, and has gone further than many institutions in challenging the predictive value of the previous scholastic achievements.

METHOD

The DIT was offered to all the BGU applicants who were qualified for interviewing, i.e., the top scorers on the psychometric test (N=319). Out of these 240 agreed to participate, and took the test immediately after the first interview. (Response rate of 75.2 percent.) The interviewers were not aware of the study, and are not familiar with the DIT. The DIT was also offered to all the 1166 STA applicants who wished to cooperate, and was taken immediately after their psychometric test. Only those who were eventually included among the top 316 scorers on the psychometric test were taken into consideration. Out of these 216 responded (response rate of 67.4 percent). Each of the two groups, BGU and STA applicants, was further subdivided into admitted and rejected. It may be noted that all the 50 students admitted to BGU were included in the study, while only 57 out of the 80 admitted to STA were considered; the remainder had a lower psychometric score which was compensated by a high matriculation examination average.

All the subjects were administered Rest's DIT. In this test the subjects were required to respond to a number of moral dilemmas, each followed by 12

moral issues relating to it. These issues are, in matter of fact, criteria for solving the dilemma. These were designed to represent the various stages of moral development according to Kohlberg's theory. Each subject had to rate all the issues in terms of their importance in solving the dilemma, and then to rank order the four most important ones. On the basis of this selection and ranking a moral judgement score (P-score) was computed, reflecting the amount of principled or post-conventional reasoning of the examinee (Kohlberg's Stages 5 & 6).

In the present study both the dilemmas and the issues were translated into Hebrew by the research team. The translation was checked by re-translation into English by an independent assistant. A number of minor changes were introduced, all of which were approved by the author of the test. For examples, the names, nationalities and occupations of some of the figures in the stories were changed in order to maintain situations which would be as familiar to the Israeli subjects as they are to the North American ones in the English version. For the same reasons the shorter form of the DIT was used, offering three dilemmas instead of six. The short form was proven to yield almost the same results as the full one, and is also recommended by the author of the test (Rest, 1979).

Each protocol was checked for internal inconsistencies and the inconsistent subjects were excluded. Further, subjects who tend to endorse meaningless yet lofty sounding items were also discarded (the procedures are detailed in the DIT manual; Rest, 1979). This exclusion resulted in a further reduction of the study population by 17.1 percent (ranging from 16.6 to 19.1 percent in the various subgroups). Thus, the final study population was 199 BGU applicants of whom 38 were eventually admitted, and 179 STA

candidates of whom 44 were admitted. It may be noted that the response rate in the two admitted subgroups was considerably higher than in the two rejected ones. Table 1 summarises the study population.

Table 1 about here

RESULTS

The P-score over the entire study population was 41.00 ± 13.8 (Table 2), which corresponds to the scores of college students elsewhere (Rest *et al.*, 1977; Rest, 1979). The subgroup admitted to BGU scored significantly higher (50.09 ± 17.0) than the other subgroups: rejected from BGU ($p < .001$); admitted to STA ($p < .005$); and rejected from STA ($p < .001$) (Table 2).

The differences were higher in stage 5 of the moral development than in stage 6 (Table 2). The analysis of variance indicates that the nominal variable of admitted to/rejected from BGU accounts for most of the explained variance. There was no effect to the intelligence, to the choice of school to apply (BGU, STA or both), and to admission to/rejection from STA.

Table 2 about here

As the presented results might have been biased by the different response rates in the various subgroups, a conservative approach was taken. Three new hypothetical subgroups were created for admitted to STA, rejected from STA and rejected from BGU, assuming that: a) all the members of the subgroups respond; b) all the 'new' subjects, who actually did not respond, scored as high as those admitted to BGU and had the same distribution; and c) none of the 'new' subjects was discarded because of inconsistencies. The results

indicate that the superiority of the subjects admitted to BGU in regard to the P-score is a true one (Table. 3).

Table 3 about here

As the interview scores are an ordinal variable rather than an interval one, the correlation between P-scores and the interview scores was studied by computing a non-parametric correlation coefficient (Kandall's tau). The results indicate quite a moderate, although significant correlation ($r = 0.19$, $p < .05$). Similarly moderate relationships between these variables emerged from contrasting the higher and the lower thirds on the P-score variable vs. high and low scorers in the interviews. Low scores were defined as 6 to 10, which practically mean "not to admit"; high scores were 1 to 3 on the same scale, which indicate a strong recommendation for acceptance. Both Kendall's taus b and c were .11 ($p < .05$). (Figure 1.)

Figure 1 about here

DISCUSSION

In trying to select students who possess the personal characteristics believed to be required of a good physician, the BGU admission process has indeed sorted out the higher morally developed applicants. These were not identified in STA, using psychometric and scholastic criteria.

Surprisingly, the pronounced difference between the admitted and the rejected BGU applicants was not accompanied by the expected high correlation between the interview and the moral reasoning scores. Several speculative explanations may account for this discrepancy. It might have been that the

moral reasoning served as a threshold parameter excluding lower developed candidates. Acceptable applicants were then ranked on different, institutional specific criteria. Alternatively, the correlation achieved might be the outcome of an intervening variable which correlates with both moral development and interview scores. Such a variable may be the socialability parameters (Rezler, 1973). Another possibility is that the reduction of the correlation stems from the lack of sufficient interrater reliability among the interviewers (Gordon & Lincoln, 1976; Milstein *et al.*, 1980; Greer & Aronson, 1980); in other words, the interviewers were able to agree on who is sufficiently morally developed, but not on his or her numerical grading. The available data cannot differentiate between these possible explanations.

A more important question is to what extent moral reasoning actually predicts clinical performance. The relation between morality and empathy, care, interpersonal relations and 'social consciousness'; all so central to medical practice, has already been mentioned above (Mead, 1934; Baier, 1965; Grief & Hogan, 1973; Hogan, 1973; Margolis & Cook, 1974; Wagoner & Gray, 1977). Recent data suggest that moral reasoning clearly correlates with clinical performance across many approaches to the data, and that high moral reasoning "virtually excludes the possibility of poor performance" (Sheehan *et al.*, 1980). Moreover, the state of development of moral reasoning in adults does not tend to change along time (Kohlberg, 1976), and actually did not change during three years of medical school (Sheehan *et al.*, 1981).

The conspicuous difference in the response rate between the admitted and the rejected applicants in both the institutions is a rather strange phenomenon. It should be remembered that at the time the test was taken, neither the applicants nor the admission committees could have known who will

eventually be admitted, which means a real 'double blind' situation. It may be assumed that the response rate reflects an attitude towards research, and thus hints upon a personality trait which had not been explored either by this study or by the admission interview. This phenomenon is worth more careful attention.

Insofar as morality is concerned, the data presented here do not suggest a self-selection of highly morally developed individuals for the medical profession. Both the entire study population and each of the subgroups scored about the same as college students elsewhere in any professional track (Rest, 1979). It might thus be erroneous to select medical students upon their cognitive abilities alone, while assuming sufficient moral development indicated by their professional choice.

The data which have been presented offer for consideration a simple, reliable and probably criterion valid instrument in selecting medical students. It may supplement the existing cognitive instruments or it may serve as either a back-up or a screening procedure in ~~assessment of interpersonal skills~~, enabling the interviews to be more directed to the institutional specific objectives. The instrument has the potential of increasing the predictive value of the admission process while decreasing its cost. A replication of this study and a longitudinal follow-up of the admitted applicants may throw additional light on the validity of this recommended procedure.

SUMMARY

To determine whether admission interviews could differentiate applicants on their personal qualities such as integrity, empathy and commitment, 456

applicants from two medical schools were tested on the Defining Issues Test (DIT) which measures the amount of principled, or post-conventional moral reasoning. No difference was found between the DIT scores of the accepted and the rejected applicants of the school where the admission criteria are the traditional scholastic ones. On the other hand, a great difference was shown in the school which admits students for their personal characteristics as assessed by interviews. Yet only moderate correlation was shown between the DIT and the interview scores. Since moral reasoning is a key concept in medical professional behavior and is correlated with clinical performance, the findings deserve special attention. A possible use of the DIT in the student selection process is discussed.

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TABLE 1
The Study Population

	Actual N	Respondents		Excluded*		Study Population	
		N	%	N	%	N	% of original
BGU applicants	319	240	75.2	41	17.1	199	62.4
admitted	50	47	94.0	9	19.1	38	76.0
rejected	269	193	71.7	32	16.6	161	59.9
STA applicants	316	216	68.4	37	17.1	179	56.6
admitted	57	53	93.0	9	17.0	44	77.2
rejected	259	163	62.9	28	17.2	135	52.1
Total	635	456	71.8	78	17.1	378	59.5

* Excluded because of internal inconsistencies.

TABLE 2

Principled moral reasoning score (P-score) in the various groups:

Means, standard deviations, and between groups t values

Group	N	P-score (Stages 5 & 6)	Stage 6	Stage 5
Entire population	378	41.00±13.8		
BGU applicants	199	41.41±14.3		
admitted	38	50.08±17.0	14.73±8.3	35.35±13.9
rejected	161	39.36±12.8	11.62±6.8	27.74±10.9
STA applicants	179	39.88±13.0		
admitted	44	39.47±12.4	13.18±9.0	26.29±10.6
rejected	135	40.02±13.2	12.67±7.4	27.35±10.8

Between groups (t values)

Admitted BGU/STA	3.25**	.81	3.35***
Admitted/rejected BGU	4.35***	2.43*	3.67***
Admitted/rejected STA	.57	.14	.80

* p < .05

** p < .01

*** p < .001

TABLE 3

Principled moral reasoning score (P-score) in the hypothetical groups*: Means, standard deviation and between groups t values

Group	real N	assumed N*	real P-score	assumed P-score
BGU applicants				
admitted	38	-	50.08±17.0	-
rejected	161	237	39.36±12.8	42.80±13.8
STA applicants				
admitted	44	48	39.47±12.4	40.35±13.5
rejected	135	231	40.02±13.2	44.17±14.5
Between Groups (t values)				
Admitted BGU/STA			3.25 ^{††}	2.82 ^{††}
Admitted/rejected BGU			4.35 ^{†††}	2.91 ^{††}
Admitted/rejected STA			-.57	-1.67

* The hypothetical groups are comprised of all the actual respondents plus all the non-responding members of the group. For the non-responding ones a P-score equal to the mean and standard deviations of the admitted to BGU was assumed.

† p < .05

†† p < .01

††† p < .001

FIGURE 1. P-scores against interview scores and the regression line.

