INFORMATION MANAGEMENT OF A STRUCTURED ADMISSIONS INTERVIEW PROCESS
IN A MEDICAL COLLEGE WITH AN APPLE II SYSTEM

Robert O’Reilly, Steve Fedorko, and Nigel Nicholson

Department of Medical Education, Texas College of Osteopathic Medicine
Camp Bowie at Montgomery, Fort Worth, Texas 76107

Abstract

This paper describes a structured interview process for medical school admissions supported by an Apple II computer system which provides feedback to interviewers and the College admissions committee. Presented are the rationale for the system, the preliminary results of analysis of some of the interview data, and a brief description of the computer program and output. The present data show that the structured interview yields very high interrater reliability coefficients, is acceptable to the medical school faculty, and results in quantitative data useful in the admission process. The system continues in development at this time, a second year of data will be shortly available, and further refinements are being made to the computer program to enhance its utilization and exportability.

Rationale

Though skepticism about their value abounds, interviews are apparently regarded as inherently acceptable as a method of selection in medical schools. Well over 90 percent of medical schools use them [1], and the technique is apparently second in importance as a factor in selection—after academic background [2]. The interview process also requires considerable expenditure of faculty and staff time, consuming many hours of intense contact, spread over half or more of the academic year.

Though of obvious importance in the selection of medical students, there is surprisingly little data available on the admissions interview. Outside of the field of medical education there are more than 300 studies on the interview [3], while in medical education, there is barely more than a handful [1, 4, 5]. The few studies in medical education that have related interview scores to performance criteria in medical school have yielded either negative results or very low validity coefficients [5], or have shown that interviews are substantially subject to rater biases [4]. The one descriptive study that is available [2] generally provides information on how interviews are administered in medical schools and concludes that the interview as a process in selection remains largely unevaluated and vaguely defined.

In spite of the limitations of the data on the interview, a reasonable attitude on the issue is that the technique has something to offer over and above other selection criteria now in use in medical schools. Grade point average and MCAT scores, for example, provide some reasonable degree of prediction of success during the initial year of medical school [6]. What the interview is supposed to do is provide a qualitatively different type of information which would predict other types of performance such as interpersonal skills, clinical skills, personal responsibility for health, and the ability to work in people-centered environments. These non-academic criteria, which are to a large degree personal-social attributes, character traits, value orientations, and so on, are especially important where the school has a particular goals statement to fulfill.

A further problem with the admissions interview is that it generates, at best, crude measurement criteria, provides no feedback to interviewers on the adequacy of their performance, and, in general, accumulates little or no data on the adequacy of the interview process as a data collection system. Furthermore, admissions committees have little or no idea of the workings of the interview system either as a whole or in the case of a specific interview. Most or all of these problems can be resolved by creating an interview in the format of an objective, self-correcting measurement and data collection system, providing the system with self-correcting feedback loops, and developing a support technology for assembling and reporting on the workings of the system to its principal users.

Interview System

Following leads from the available literature on performance appraisals, an admissions interview process that met the foregoing specifications was designed, implemented, and assessed over the past two years. Applicants
were interviewed by two interviewers, usually a basic science and clinical faculty team. The interview system uses a series of behaviorally anchored rating scales (BARS) organized into categories and numerous behavioral items that describe the interviewee's potential performance. A great deal of research has been done on the BARS showing the format is reliable and valid and, with appropriate training of raters, is relatively unaffected by personal bias [7]. The rating items are used to note and score the interviewee's performance in the process of the interview in accord with an algorithm. The format of the observational system has essentially the same structure as a test consisting of factors and correlated response items and, for that reason, can be subjected to the types of item analysis and factor validation procedures typically used with achievement and ability tests. In addition, the stimuli presented to the interviewee are standardized, in the form of sets of questions and problems and dilemmas which follow a prescribed schema. Altogether, the system closely controls or standardizes the interviewer's performance in order to present a comparable stimulus to each interviewee.

With the format for the interview selected one of the primary problems that remained concerned the issue of the content or the specific problems that could be presented to applicants. In part, this was decided by the need to present problems or questions that would elicit interest and attitude toward (1) osteopathic medicine as a profession (Osteopathic Potential), and (2) the focus of the college on prevention and health promotion (TCOM Goal Orientation). Additionally, problem-solving potential was included as most medical educators, it seems, recognize this as an important attribute in any medical student. As a profession we are not exclusively interesting in technique or the ability to accumulate a lot of knowledge but, rather, in the applicant's ability to think and solve medical problems. Another area, which seems to be universally recognized as important in an applicant, is interpersonal competence, particularly, the ability to influence people to improve their health. Argyris and a number of colleagues [8], who have done extensive work in this area, provide us with a model for deriving suitable problems. The last problem area selected concerned ethical behavior (Ethical Reasoning) and here we were able to draw on research which suggested that moral reasoning was a powerful predictor of clinical performance [9]. This completed the interview instrument used in 1981-82.

After reviewing feedback from interviewers and analyzing available data regarding selection efficacy, the content for academic year 1982-83 was modified in the following ways. TCOM Goal Orientation was changed to Wellness Orientation and expanded to include applicants' philosophical and behavioral commitments to personal health promotion. Problem-Solving as a formal dimension was discontinued, with the problem-solving issues and performance criteria then pervasively incorporated into both Interpersonal Competence and Ethical Reasoning components. Two novel dimensions were added: (1) Applicant as a Person - designed as the lead-in process for starting the interview as well as a friendly conversation with applicants regarding their relevant life experiences, education, goal orientation, and so on; (2) Applicant's Ability to Function within the Interview - designed to alert the interviewer to certain behavioral expressions (i.e., appearance, gestures, emotional tone, mannerisms, etc.) occurring over the course of the interview as a totality which support inferences about applicants being warm and personable, authentic, well-prepared, constructive, expressive, enthusiastic, confident, etc.

**Computerization**

The entire content and structure of the system can be maintained in a computer for convenient change, update, and production of forms and stimulus materials but, for the present, only the analytical component is computerized.

**Hardware**

The present program, RATERS, is written for an Apple II+. The requirements are: 48K of memory, one monitor, one disk drive, one printer. All must be Apple compatible.

**Software**

The program is written in Applesoft BASIC and is fairly small (23 sectors). It is designed to compute, store, and report the discrepancies between two raters. A full report of individual rater discrepancy is generated, including means and standard deviations of both raters' scores and of the differences between those scores. Figure 1 shows a sample of the types of data returned by the computer system to interviewers and the admissions committee. This report allows each interviewer to compare his ratings with those of his co-rater and gives an overall estimate of the percentage of agreement among a particular pair of raters. Summaries of rating data over many raters are also provided and other reports are under consideration, including cumulative rankings of applicants by interview performance, analysis of predictive variables and discriminators (e.g., rater biases, time of day, room, day of week, etc.) and analyses of validity indices.

**Operations**

RATERS is designed to be user-friendly enough to allow its use by clerical staff. The program is contained on one disk (MASTERDISK) and further disks are used for data (DATADISK). Although the program is small enough that the MASTERDISK could hold some data it is best to place a write-prohibit seal over the notch of the MASTERDISK and use it only for loading the
program (especially if the system is being used by clerical staff). The operator will ensure the system is turned off and:

1. Place MASTERDISK in disk-drive.
2. Turn power on (system will boot and a Menu will appear on the monitor).
3. Select function by pressing appropriate keyboard letter (RATER allows data to be input (via keyboard) or reports output via monitor or printer).
4. Remove MASTERDISK. Place DATADISK in drive unit.
5. If input of data is selected, RATERS will prompt operator to input each individual item of information. For example "CANDIDATE'S NAME..." and so on. As the operator finishes each candidate's report, the monitor will ask MORE DATA (1) or END (2). Pressing the appropriate number will restart the input function or end the run. At end, simply remove the disk and power off.

6. To output data, either on a monitor or printer, select the appropriate letter and RATERS will ask "CANDIDATE'S NAME?" Response must be in the same format as it was originally input (i.e., John S. Smith must be typed as such and not J. S. Smith). If the print function was selected, load paper in printer (TCOM uses letter-head stationery) and type RUN. System will print report on that candidate and return to "CANDIDATE'S NAME?" At end, simply remove disk and power off.

Data Protection

RATERS is designed to be as user-friendly as possible, so no attempt to increase knowledge the user requires to get on to the system was made. It is assumed that data protection will be provided by maintenance of the files in a secure area. However, a logon feature is available which would require the operator to type a preselected password before being able to select a Menu function.

Training System

In a further effort to standardize the system, a training program was assembled and applied to teach interviewers how to rate and how to control rater bias. Using a manual and a series of simulation interviews on videotape, interviewers were trained for about five hours, or until they attained some reasonable level of agreement with each other. A test of rater bias tendencies was also administered to create awareness of interviewer bias. The training system was organized in anticipation of its ultimate presentation in an individualized format using videotapes and the microcomputer.

Evaluation of the System

Several types of data have been gathered in the interview system to date, including calculation of inter-rater reliabilities, formative evaluation data on interviewer satisfaction, analysis of scale independence, and an analysis of the contribution of the interview score to the selection-rejection decision. The results of these analyses, too lengthy to fully report on here, have been consistently supportive of expectations regarding the operation of the system. The system has been generally accepted by the faculty, the various scales are functionally independent, and the interview score appears to contribute meaningfully to the selection-rejection decision. Very acceptable inter-rater reliabilities, with a median of .87 (n = 194 interviews), have been consistently observed for the system. Figure 2 illustrates the distribution of these interviews by the percentage of interviewer agreement along the six rating dimensions used in the 1982-1983 structured admissions interview.
The interview system we have been building toward is capable of being fully supported by a combination of computer and video modalities, including such important functions as the production of interviewer software, training, and the analysis and reporting of interview data. Now that the system has shown itself to yield reliable and useful data, further development in this direction is indicated. The significance of this work lies in what it demonstrates can be accomplished to bring order and technical support to an area which has previously been in disarray and yielded soft data of doubtful validity for an important decision-making function in medical school. Such development will provide opportunity for further analysis and improvement of reliability, validity, and effectiveness of admissions interview process.

References


