ABSTRACT

A microcomputer has been used at the National Board of Medical Examiners (NBME) to execute an interaction analysis system that describes physician/patient interactions. Observation of a videotaped (or audiotaped) interview results in a two-page printout that presents a detailed analysis of that interview. Further analysis of individual interviews in comparison with similar group data is possible by use of a mainframe program that provides selected statistics for an entire group of interviews.

BACKGROUND

The importance of interpersonal skills in the health care field has long been recognized. It is only in the past several decades that there has been data to link the physician's interpersonal skills to a number of important health care outcomes. In this regard, we have defined interpersonal skills as those behaviors that deal with the task of obtaining a medical history; performing psychotherapy as it applies to primary care provided by the physicians and other specialists; and conducting patient education on a one-to-one basis. With the advent of portable audio (and later video) recording equipment, programmed simulated patients and computers with appropriate software for the analysis of large volumes of research data, the methods for teaching and evaluating IPS have become far more sophisticated. There are a number of evaluation techniques now available: conventional multiple-choice examinations; film (video) examinations; paper-and-pencil patient management problems; computerized simulations; direct observation with generic (global) rating scales; direct observation with data checklists; and direct observation with interaction analysis. This report will focus on interaction analysis which has been a major area of interest in the research conducted by the National Board of Medical Examiners (NBME) in its efforts to assess important physician skills.

METHOD

The equipment used at the NBME to analyze previously taped interactions with the ISIE system includes a microcomputer (Apple III with 128K memory; two disk drives; Sanyo monitor; Texas Instruments Omni 800 printer) a videocassette recorder/player (Sony U-Matic VO5600 3/4") connected to a standard 19" color TV set, and a timer that provides an audible click at two-second intervals. (Audiotapes are played on a standard audiocassette recorder/player).

Software was written specifically for this application. The ISIE master disk (5¼" floppy) contains a turnkey system that provides a user friendly and interactive program that allows the input to be edited whenever necessary. A storage disk (called ISIEDATA) is used in Drive 2; only identifying information and the sequence of codes is stored for each interview. Results of calculations and analysis appear on the printout but not on the ISIEDATA disk; this saves considerable disk space.

INTRODUCTION

Interaction analysis is a technique used to directly observe the interaction of two or more people; it has been used by educators as a tool to assess the classroom interactions between teachers and students.
one, and printing or not printing the matrix in addition to page one of the analysis. Identification information for the tape about to be coded is then entered; the next screen that appears represents the first interview coding page. A maximum of five coding screen pages is available; the longest interview that can be coded is one with about 55-60 minutes of actual videotape time.

The coder turns on the video (or audio) player and begins to enter codes at two-second intervals or whenever the behavior changes -- whichever comes first. If a behavior continues for more than two seconds, the timer (which clicks at two-second intervals) serves as a reminder to the coder to enter the same code number again to indicate the continuing behavior. At any point during the coding, the coder can stop and change a code if necessary or review a segment of tape to check the accuracy of the coding. In most cases an experienced coder will not stop more than two or three times while coding a twenty minute interview.

After the codes for an entire interview have been entered, the sequence of codes is sent to the storage disk. The coder enters his/her comments about the interview; these will appear on the second page of the interview below the matrix. Processing takes up to a maximum of about six minutes depending on the length of the interview. Printing (which takes about two minutes) starts as soon as processing has been completed. It is possible to code one interview after another and defer printing until a number of tapes have been coded. Training of ISIE coders begins with familiarization with the microcomputer keyboard and keypad. Complete memorization of the two-digit code numbers and definitions for each category of behavior is considered essential. Training continues with segmenting of increasingly more difficult and longer) being coded and then reviewed and discussed.

A coding manual has been developed and used to train a number of coders; it is currently being revised.

Both intra-rater and inter-rater reliability have been monitored by use of Scott's coefficient and have been found to be satisfactory.

The validity of the ISIE technique must depend primarily on the degree to which the behaviors being recorded have a causal effect on the health care outcomes achieved as the result of the patient's contact with the physician. ISIE provides a fairly reliable method for describing certain aspects of the physician/patient relationship but does have limitations: It does not determine the appropriateness of data gathering, nor does it have the ability to determine if the physician has followed leads given by the patient.

OUTPUT

The system is capable of two types of output. The first is a two-page printout, the first of which is shown in Figure 2. The other output is a list of the sequences as they were originally coded.

FUTURE PLANS

The NBME is engaged in two major activities using the ISIE data. The first of these is standard setting. In conjunction with this, the project staff is attempting to devise a classification system that will cluster patients who, though different, are sufficiently similar to allow meaningful comparison of interviewer performance.

The second activity involves development of a computerized narrative feedback system to enhance the usefulness of the ISIE results.

CONCLUSIONS

The ISIE system developed by the NBME provides a fairly reliable method of direct observation for use in assessing physician or physician trainee interpersonal skills. We are hopeful that it will be possible to define minimal standards for certain interviewing behaviors. Using computerized techniques already developed for other testing applications, a simple narrative interpretation of the interview can be devised. In at least two instances, systems based on ISIE have been used for other health care applications. Because of the minimal turnaround time, the system offers the advantage of providing feedback to the learner in a timely manner.

REFERENCES

The ISIE-81 system from input to output. Tally Counts and Interaction Quantifiers appear on Page 1 of the ISIE-81 printout (see Figure 2). The Behavioral Sequence Matrix and the Coder's Notes appear on Page 2 of the ISIE-81 printout (not shown here).

Page 1 of the ISIE-81 printout. The 29 categories of behavior are listed in the left-hand column. The right-hand column shows the Interaction Quantifiers currently used to describe the interaction that occurred in a specific interview.