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The New Information Technologies and Psychiatry
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172 Letter
Self-deception is an inherent danger in the practice of psychiatry. Most psychiatric theories are empirically based, most of our patient contact occurs behind closed doors (and therefore is only indirectly peer reviewed), and the criteria by which psychiatrists measure their work are highly subjective. As a result, it is deceptively easy to bypass new learning while maintaining at least adequate professional functioning on the basis of old knowledge. The resulting mediocrity may go unnoticed by the professional and can be rather easily concealed from others.

Therefore, a major goal of psychiatric education must be to foster a professional value structure that emphasizes the need for continuing education throughout a psychiatrist's career and continued evaluation of knowledge and clinical skills. To accomplish this, evaluation must accompany every educational activity in the residency training program. It must start in the earliest days of the residency, continue after graduation, and not end until retirement. To achieve these goals requires far more than evaluation of resident performance and professional development. It requires constant role modeling by teachers, supervisors, and administrators in the training programs.

In the United States, all psychiatric residency training programs must be accredited by the Residency Review Committee for Psychiatry (RRC) of the Accreditation Council for Graduate Medical Education (ACGME). This committee is appointed by three sponsoring organizations: the American Psychiatric Association, the American Board of Psychiatry and Neurology, and the American Medical Association. Accreditation decisions are based on compliance with the "Essentials of Accredited Residencies" (requirements that apply to all specialties) as well as with the "Special Requirements for Residency Training in Psychiatry." The special requirements include very stringent provisions for the evaluation of psychiatric training programs, teachers, and residents. The programs must have clear educational objectives, and they must constantly evaluate whether these objectives are being achieved.

The RRC requirements for the evaluation of residents address both residents' acquisition of knowledge and their development of clinical skills. Under the requirements, residents are regularly and frequently evaluated by all those who participate in their education, and they in turn evaluate the programs' teachers, supervisors, and teaching activities. It is not sufficient merely to undertake
these evaluations; the results must be communicated and used in ways that will facilitate the educational program and each resident's learning.

This issue of Academic Psychiatry contains several articles relevant to the evaluation process. The paper by Dr. Werner and his associates, "An Automated Approach to a Residency Log," discusses an innovative approach to the requirement that residents maintain a log of their cases. This requirement is designed to ensure that the program is meeting its objectives with regard to training breadth and patient mix (age, sex, sociocultural background, diagnosis, and treatment modality). The Psychiatry Resident-in-Training Examination (PRITE), sponsored by the American College of Psychiatrists, is the most common way for programs to meet the RRC requirement that cognitive knowledge be examined annually in postgraduate years II through IV. If one is to instill the value of lifelong self-evaluation, it is important that such self-assessment examinations be well regarded, as discussed in this issue by Drs. Matthews and Ticknor.

The paper by Drs. Shea and Rancurello reports on faculty and resident response to an innovative mock board exam. Clinical examinations similar to those conducted by the American Board of Psychiatry and Neurology, or mock boards, are commonly used to satisfy the requirement that clinical skills be examined formally at least twice during four years of residency training. This assessment provides residents with feedback on the development of their clinical skills and provides faculty with a measure of how well they are educating in this area. Finally, Dr. Fauman's lead article alerts us to the facilitating role computers and other information technologies can play in the evaluation of both training and practice.

An important key to the future of psychiatry will be psychiatrists' success in accomplishing the tasks of evaluation, for they relate not only to how well psychiatric educators are preparing the next generation, but also to how accurately that generation will monitor its accomplishments and effectiveness.
Special Article

The New Information Technologies and Psychiatry

Michael A. Fauman, Ph.D., M.D.

The author reviews the history and technology of the microcomputer and discusses the various classes of software that are presently available. Three major categories of software are described: numeric data processing, text processing, and communications. The application of this software to psychiatric education and practice is briefly discussed. A short curriculum on computers for psychiatric residents is outlined, and a brief bibliography of the recent relevant literature on computer applications to medicine and psychiatry is presented. Predictions are made about the future direction of computer technology and its application to psychiatry.

During the past four decades a revolution has occurred in information processing technology—a revolution comparable to the introduction of movable type and mass printing in the 15th century. These changes, which might collectively be called the “new information technologies,” are a direct result of the development of the computer and, more specifically, of two recent major changes in the computer industry: the miniaturization of computer circuitry and the availability of increasingly powerful computers and software for personal use.

In particular, the availability of inexpensive yet powerful microcomputers means that many functions that previously could be provided only by large institutional mainframe computers are now available to individuals using a small desktop machine. This paper describes the development and technology of the microcomputer and discusses its roles in psychiatric training and practice as an affordable and increasingly powerful component of the new information technologies. The microcomputer also serves as a convenient link to the more powerful mainframe computers and their extensive data bases.

THEORY AND TECHNOLOGY OF THE MICROCOMPUTER

A Brief History of the Computer

Electronic digital computers were developed in the late 1940s and early 1950s. The mathematical basis of the digital computer is the binary system, which uses the digits one and zero for all mathematical and logical operations. Early computer designers recognized that the one and the zero of binary mathematics could be directly translated into either an “on” (one) or an “off” (zero) position of an electronic switch. This “on” or “off” signal was called a bit and a group of eight bits was called a byte. Since groups of eight bits could be arranged in different ways to produce 256 unique bytes, all of the letters in the alphabet as well as numbers and other symbols could be represented. Therefore, given enough switches, the com-

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puter could store numeric and text data and perform operations on the data.

The first electronic switches were vacuum tubes. Since thousands of switches were needed, the early computers were enormous, and they required large amounts of energy and produced immense amounts of heat. With the development of transistors, which required less power and produced less heat, the size and power consumption of the computer was substantially reduced and its reliability was increased. The smaller transistors were able to perform the same on-off function previously performed by vacuum tubes. However, even transistor-based computers were large and expensive, so expensive and complex, in fact, that only government, universities, and large businesses could afford them.

In the early 1960s a revolution changed the entire electronics industry. Previously, manufacturers had produced each transistor from a chip of silicon and packaged it independently. Now they began to place several transistors and other electronic components on a single silicon chip called an integrated circuit. At first only a few components could be placed on each chip. Soon the number increased to hundreds, then to thousands, and finally to the millions of components placed on today's chips. The early integrated circuits allowed manufacturers to build smaller mainframe computers that consumed less energy but had greater computational power. In the late 1960s engineers went beyond placing many identical electronic components on a chip and began to fabricate entire functional electronic instruments on a single chip. The first commercial chips were elementary calculators that performed simple arithmetic. The manufacturer connected to the calculator chip a simple keyboard for user input, a display for user output, and a memory chip to hold intermediate results and produced a complete calculator in a small package.

As chip fabrication became more sophisticated, engineers began to place the entire central processing unit (CPU) of computers on one or a few integrated circuit chips. The CPU is the part of the computer that actually manipulates the data and performs the mathematical operations. It resembles a very sophisticated calculator. The extensive memory needed by the computer was also changed from the cumbersome "core" of early mainframe computers to much smaller integrated circuit chips. This innovation led to the development of smaller and more powerful mainframe computers in the late 1960s and early 1970s. Improved methods of chip fabrication allowed several companies to develop and market even smaller minicomputers with the power of the mainframe computers of the early 1960s. In the middle to late 1970s, the development of less expensive CPUs and memory chips led to the introduction of microcomputers that had less memory and less powerful CPUs (also called microprocessors) than the minicomputers.

The cost of microcomputers decreased to the point that individual professionals, scientists, and soon, members of the general public, were able to purchase them. As the volume of sales increased and the fabrication technology improved, the prices of microcomputers dropped dramatically and their power increased. By the early 1980s, microcomputers began to rival in power the mainframe computers of the early 1960s. By the middle to late 1980s, microcomputers provided nearly the same degree of power as minicomputers at a significantly lower cost.

This trend continues today, and it is clear that many of the most powerful microcomputers are virtually indistinguishable from minicomputers. The likelihood is that this evolution will continue over the next ten to 15 years, so that inexpensive microcomputers will approach, if not surpass, in power the mainframe computers of the 1970s and early 1980s. This decreasing price, combined with the increasing power, of the microcomputer has the potential to revolu-
tionize the way in which information is handled by individual practitioners in the next decade. Later in this paper, I will discuss the relevance of the effective application of this computational power to medical and psychiatric education and practice.

Types of Computers

There are two general types of microcomputers. The traditional serial processing computer is represented by the familiar IBM-PC and Apple Macintosh as well as by the various inexpensive clone computers. Most mainframe and minicomputers are also of the serial processing type. Serial processing computers are extremely efficient at performing large numbers of rapid sequential operations on data. The computers run their programs one step at a time in a linear fashion from beginning to end. The emphasis is on the step-by-step or sequential pattern of the programs.

Recently, a new category of computers has been developed called parallel processing computers. These computers are capable of running programs that carry out several steps at the same time. In essence, they function as if the parallel computer contains several traditional serial computers within it. The programmer decides how to split up the computing task and distribute it among the various parallel components within the computer. Depending on the number of independent parallel components within the computer, a parallel processing computer may approach the speed and power of a large mainframe computer.

Hardware Components of Microcomputers

Computer systems are traditionally divided into hardware and software components. Hardware refers to the actual physical electronic equipment, and software refers to the program or sequence of instructions that tells the computer how to manipulate data. Most computers contain the following hardware components: one or more mass storage devices; an internal memory; a microprocessor; a device to input information into the computer; and a device to output information from the computer to the user. The storage, input, and output components are often referred to as peripheral devices.

Programs are stored on mass storage media such as floppy disks, hard disks, magnetic tape, or compact optical disks in the form of bytes of data. A byte can be thought of as a single character (e.g., "a", "b", "1", etc.). A typical double-spaced typed page contains approximately 2,000 character bytes of information. Storage media differ in their physical structure, the number of bytes they can store, and the speed with which they can retrieve the bytes. A typical floppy disk can store at least 360,000 bytes. This is usually abbreviated as 360 kilobytes, or KB; a kilobyte is equal to 1,000 bytes. Most programs purchased by consumers are distributed on floppy disks. Hard disks typically store from ten to 300 megabytes, or MB; a megabyte is equal to one million bytes.

Optical disks, also called CD-ROM, for Compact Disk Read-Only Memory, can store from 250 to 500 megabytes. They resemble the compact disks (CDs) sold in local music stores. One of the major advances in microcomputers over the last ten years has been the increase in mass storage capacity as represented by media such as the CD-ROM. At the present time a small five-inch removable CD-ROM optical disk can store an entire 27-volume encyclopedia, a year of Medline, 200,000 typed pages, or all of the patient medical records for an entire psychiatry department for one or more years. This capacity can be expected to increase five to ten times in the next few years. The data on these disks can be retrieved by any microcomputer with a small attached optical disk reader. Until recently users were unable to write information on the CD-ROM. Instead they purchased disks that contained resource material prepared by the manufacturer. However, new systems are now
available that allow the user to transfer information to and from the optical disk.

Internal memory is the second computer hardware component. When a program is run it is first retrieved from the mass storage device and loaded into the computer's memory. There are two types of internal memory: random-access memory (RAM), and read-only memory (ROM). Read-only memory is loaded with information in the factory and cannot be changed by the user. It contains instructions necessary to start, or boot (i.e., pulling yourself up by your own bootstraps), the computer. Random-access memory can be loaded with programs and data by the user. Early microcomputers had as little as 16 KB of RAM, so they were able to run only very small programs. Newer machines contain as much as 16 MB of memory. The increasing power of new microcomputers is in part related to their expanded memory, which allows them to run larger and more complex programs. Furthermore, new software will allow users to run several programs at the same time on the same computer.

The microprocessor is the central controller, or brain, of the microcomputer. It contains a group of built-in directions called an instruction set. These instructions include simple arithmetic functions such as addition and multiplication as well as functions that perform other, more sophisticated manipulations of text and numerical data. When the user starts a program it is loaded into random access memory from the mass storage device. The program then takes control of the computer and issues a series of commands to the microprocessor. These commands tell the microprocessor which instructions to perform to carry out the goal of the program.

Another major reason for the increased power of modern microcomputers is the development of new, more powerful microprocessors. The power of a microprocessor depends on the number and type of instructions in its instruction set and the speed with which they are carried out. The speed at which a microprocessor runs is usually measured in megahertz (MHz). The original IBM-PC ran at 4.77 MHz. New microprocessors run at 20 to 33 MHz. In reality, the new machines run 10 to 20 times faster than the original IBM-PC because of changes in the way data are handled in addition to the increase in speed of the microprocessor. There are two main families of microprocessors: the Intel 80X86 series (IBM-PC and clones) and the Motorola 68000 series (Apple Macintosh). Clones are IBM-PC-like computers produced by other manufacturers. IBM personal computers and clones are often referred to in advertisements by the type of microprocessor they contain. The original IBM-PC contained an 8088 microprocessor. Newer computers containing 80286 and 80386 microprocessors are referred to as 286 and 386 machines. The 386 machines running at 33 MHz are the fastest microcomputers available. However, the new 80486 processor will probably run three to ten times faster than a 80386 system. If the present trend continues, during the next five years microprocessors will probably attain speeds 10 to 50 times faster than the present 80386.

All microcomputers require input and output devices to allow the user to communicate with the program. The standard input devices are the keyboard and the mouse, a small hand-held device that the user moves across the tabletop. The video display and printer are used for output. Recently, a new input device, the image scanner, has been developed to read text directly into the computer. Although this technique is fast and convenient, the scanned images of text take up far more RAM and mass storage space than text that is typed into the computer. However, there are programs that can translate the images into typed text. The real benefit of scanning technology appears to be its use in storing photographs, diagrams, and pictures. There are indications that in the future important documents and pictures
such as x-rays may be routinely stored as scanned, digitized images. This is already the case with CAT, NMR, and PET scans.

The modern FAX machine is another example of the application of scanning technology. The FAX machine operates by scanning a page of text or illustrations, converting the image into digital form, and sending it over the telephone line. The FAX machine on the receiving end reconverts the digitized signal to a series of small printed dots on paper, thereby reconstructing the original image. Several manufacturers now offer electronic boards that can be placed inside a microcomputer giving it FAX capabilities. An electronic board is a printed circuit board that performs specialty functions and fits into a slot in the microcomputer.

Video displays allow the program to present immediate output or feedback to the user. Displays are distinguished by their color and resolution. Resolution refers to the number of dots, or pixels, per square inch on the screen. The higher the number of pixels, the finer the resolution. The average business video terminal can display one color (monochrome) and has little capacity to display graphic images. Higher resolution color displays, like the VGA, are able to display images that are similar in quality to some color slides. Even higher resolution displays can be used with a microcomputer to show an entire page of typeset text, diagrams, and photographs.

Printers can produce permanent output, often with a higher resolution than the video display. Printers, like video displays, are distinguished by their printing resolution and color capabilities. Inexpensive printers use a dot-matrix system, in which small individual printed dots are produced by a series of 12 to 24 tiny wires. The wires strike the ribbon, pushing it against the paper to form characters and graphic images. The typical dot-matrix machine prints at a density of 50 to 150 dots per inch (dpi) and produces 75 to 150 characters per second (cps).

The laser printer, although more expensive, prints much faster (i.e., six to ten pages per minute) and with higher resolution than the dot-matrix type. It uses an internal laser to write characters or other graphic images on a photosensitive drum inside the printer and then transfers the image to paper in a manner similar to that used by a copying machine. The images are built from a series of small dots, which are much smaller and are printed at a higher density (i.e., 300 to 600 dpi) than those of the dot-matrix printer. Although the resolution of type by the laser printer is still significantly less than that of a typesetting machine, which prints at 1,200 to 2,400 dpi, the laser printer does produce typeset-like quality text and graphics.

The modem and local area network (LAN) are used for both input and output. Modems are connected between a microcomputer and a telephone line, allowing the computer to send and receive information from other similarly equipped computers at distant locations. If the user connects with a large mainframe computer, the microcomputer acts as a terminal for the larger machine, allowing the user to send data and commands directly to and receive data from the mainframe. Modems run at different speeds which are measured in a unit called the baud. Generally the baud rate can be divided by ten to estimate the number of bytes, or characters, transmitted per second. Microcomputer modems range in speed from 300 baud to 19,200 baud. This corresponds to approximately 30 to 1,920 characters transmitted per second.

The LAN system allows communication between a large number of computers within the same organization. Each computer is furnished with an electronic card that connects it with other computers through a cable network. The main data base is contained on a large hard disk attached to a powerful 386 microcomputer called the file server.

What should now be apparent is that new microcomputers with increased speed, memory, and mass storage capacity are con-
constantly being developed. In fact, the main obstacle to the application of computers is often not the hardware but the software. The rate of development of sophisticated computer software is significantly slower than the development of hardware. Therefore, consumers are presented with enormously powerful microcomputers whose capabilities are not fully used by available software.

Computer Software

The usefulness of a software program depends on whether it provides increased speed or productivity when compared to performing the same task by hand and if the time and effort necessary to master the program are clearly offset by ease in performing the task. Some tasks are hindered rather than facilitated by using a computer. A good example of this might be the use of a computer to print individual personal checks and balance a checkbook. In most cases, turning on the computer, starting the program and entering the information for one or a few checks would waste more time than writing the check by hand. On the other hand, the use of a computer program to manage finances and appointments in a clinic might be very efficient. The key to the effective use of a microcomputer is a realistic assessment of the task and the way in which a microcomputer may help or hinder its completion. Several categories of software are described below, and representative programs in each category are noted in Appendix 1.

Operating-system software. The operating system provides an interface between the computer and the application programs (i.e., word processor, data base program) as well as between the operator and the software. It provides convenient commands to manage files (i.e., a collection of data stored on the disk), transfer data, display information on the video monitor, and run programs. Operating systems are specific to the family of microprocessors that use them. For example, the operating system for the Intel 80X80 microprocessor family (IBM-PC) cannot run on computers that use the Motorola 68000 family (Apple Macintosh). The standard operating system for the IBM PC and its clones is PC-DOS (PC Disk-Operating System) or MS-DOS (Microsoft Disk-Operating System). The Apple Macintosh uses a different operating system. The difference in operating systems and microprocessors is what makes it difficult to transfer data and programs between the IBM and Macintosh machines.

The operator-software interface for most DOS-based software is keyboard intensive. The operator inputs commands through arbitrary keystroke commands that must be learned in order to effectively use the program. This step can be difficult for new users to master, but it is extremely efficient once the keystroke commands are learned. Some operator-software interfaces utilize visual operating systems (VOS), in which the main input device is a mouse that moves the cursor freely around the screen. Input commands are given by clicking the mouse when the cursor is pointing to icons or commands on the screen.

The Apple Macintosh initially popularized a mouse-driven VOS with pulled-down menus, iconic representation of commands and files, and multiple windows within the context of the metaphor of the computer interface as a desktop. VOS is extremely "user-friendly," allowing new users to operate it with greater ease; however, the VOS interface is extremely difficult to program and does not usually enhance the performance of an experienced user. The best of all worlds is an operating system that allows both keyboard commands and mouse-driven input. Both DOS-based and Macintosh-based software are increasingly utilizing both types of operator-software interfaces.

Word and text processing software. The use of the computer for word processing is well
established. However, it is useful to remember that 15 years ago word processing was an exotic function performed by trained personnel on expensive and specialized machines. The fact that word processing is so casually accepted and ubiquitous today is a measure of the enormous change in the workplace brought about by microcomputers. There are many different word processing programs available for microcomputers. Some include desktop publishing capabilities as well as sophisticated editing functions. The former are mainly useful with a laser printer and allow the incorporation of high resolution diagrams and images in printed documents. The editing functions make it relatively simple to revise documents.

There is another broad group of programs that are sometimes called personal information managers (PIMs), idea processors, or outline software. These programs allow users to "brainstorm," or record a series of ideas as they come to mind. The individual entries may consist of one word or several paragraphs depending on the type of program. Once all the ideas are entered into the program they can be rearranged and placed in any order the user wishes. Although many of these programs include word processing functions, they are mainly distinguished by the capacity to easily move ideas around and place them in different categories. Generally their word processing functions are relatively crude, making them impractical to use for creating long documents. However, it is possible to use some of them to organize the basic ideas of the document in an outline form and then transfer the outline to a word processor for the final writing. These programs are similar to the text data base software discussed below.

Data base software. A data base is an organized collection of numeric or text information. Various operations can be performed on these data, including sorting, transforming, and retrieving. A clinical data base might include a list of all of the patients on a psychiatric service along with information on their medical problems, current medications, and treatment responses. The data base can be sorted by any of the parameters to produce, for example, a list of all patients on one specific medication. The most sophisticated data base programs are for numeric data, although they do have some capacity to work with text such as names, addresses, or diagnoses.

Most numeric data bases are relational data bases. This name comes from their capacity to relate several small files into one large data base, making it easier to manage the data base. For example, if a clinic wished to establish a data base for its patients, it might enter each patient's identification number and demographic information in one data base file. Another file might have the identification number and information on medication dose, side effects, and response. The relational data base program would then treat these two smaller files as a part of a larger patient data base. As long as one field or piece of information, in this case the patient's identification number, is the same in all of the smaller files, the program can tie the files together into a larger data base system. A specialized type of numeric data base called a spread sheet is particularly effective for recording financial transactions.

One problem with a numeric data base is that it is not useful for storing, organizing, and selecting large blocks (i.e., several words and sentences) of text. Text data bases, on the other hand, are specifically designed for the storage and retrieval of blocks of text. Since there are no easy rules for coding and managing concepts, most text data bases depend on rapid searches using specially designated key words which are associated with the text. Slower searches for the occurrence of other words anywhere in the text are usually also available but become tedious and impractical once the data base reaches a moderate size. A separate group of programs is available to search through text to find one or
more words. These text retrieval programs will work on any text file produced by a word processor or outline program. They search very rapidly but usually require the words in the text files to be indexed before the search. The indexing process not only is time consuming but also produces a large index file that uses a substantial amount of hard disk space.

Hypertext is a text data base system that is based on the concept that the reader should be able to immediately explore any of the ideas discussed in the text. A hypertext system accomplishes this by linking additional relevant information to specific words or phrases in the text. When the video cursor is on the word, pressing a key will display the additional information. One major disadvantage of this system is that it can become hopelessly complex by reflecting conceptual associations that are idiosyncratic to the author and difficult for others to follow. However, hypertext does offer a sophisticated method of associating important information without interrupting the flow of the original text. The most successful microcomputer implementation of hypertext is Hypercard on the Apple Macintosh.

Desktop publishing software. Expensive computer typesetting and page-layout software have previously been used only in newspapers and large publishing companies. However, new microcomputer desktop publishing software, combined with laser printers, now provides sophisticated publishing capabilities at a low cost. Most desktop publishing programs allow the user to design a page, specifying different type styles and including illustrations. The programs are often referred to as “What You See Is What You Get,” or “WYSIWYG” (pronounced Whizzy Whig), because the image of the printed page, as it appears on the computer monitor, is very similar to the final printed page. The printed page is comparable in appearance to a professionally typeset page. Desktop publishing software can be used to produce small brochures or entire books at a substantial saving over the cost of professional services. In psychiatry they can be used to produce professional-appearing manuals, program brochures, forms, questionnaires, papers, and information flyers.

Artificial intelligence software. The applications of artificial intelligence technology that are most relevant to psychiatry are expert systems, natural language processing, and neural nets. An expert system is a series of rules that emulate a logical process normally performed by humans. For example, the process of psychiatric diagnosis according to DSM-III-R can be broken down into a series of rules or a decision tree. Diagnostic software applies these rules to clinical information entered by the user. In essence the software mimics the human process at a low level.

The name “intelligence” is misleading since the software only follows the rules previously programmed by humans. It makes no independent decisions. Although rule-based systems are being developed in many areas of medicine, they are difficult and time consuming to produce. A new computer specialty called “knowledge engineering” has developed around this process.

Natural language processing software may have applications in psychiatry in the future. It attempts to parse, or understand, human languages such as English. This may mean that in the future communication with computers can be accomplished using standard English phrases rather than technical commands. Natural language processing may also lead to the development of software that will automatically translate text from one language to another. Artificial intelligence software that performs any significant function takes an enormous amount of time to develop and generally runs slowly on any but the most powerful machines. The development of parallel processing machines in the future may significantly speed up the execution of such programs because
the process can be broken down into parts and assigned to different CPUs.

Neural nets represent another approach to artificial intelligence. These programs function completely differently than rule-based systems. Neural nets are an attempt to emulate the structure of the central nervous system in hardware and software. They are intrinsically parallel processing systems. The structure of a neural net system includes a number of simulated neurons that connect with one another in a netlike fashion. Neural nets can be used for processes like artificial vision and diagnosis. They differ from rule-based systems in that they do not have to include previously defined rules. Rather, neural nets teach themselves. For example, the user would collect 100 pieces of relevant diagnostic information on a group of schizophrenic patients and feed this information to the neural net system. The system would work with the data for minutes to hours before reaching an equilibrium. Once this training equilibrium was reached, the user could submit the same 100 pieces of data on a new patient and the system would quickly indicate the likelihood that he could be given a diagnosis of schizophrenia.

Computer graphics software. The computer can be used to produce graphic images limited only by the resolution and color capabilities of the video monitor and printer. Images on high resolution color video monitors can be photographed to produce slides. Such slides may equal or exceed the quality of graphic images drawn by hand using traditional graphic arts techniques. There are two types of computer graphic images: bit-mapped and vector. A bit-mapped image depends on the specification of the picture as a matrix of identically sized dots, or pixels, of varying colors. Since the number of dots is fixed, the image cannot be enlarged without increasing the size of each dot and thereby decreasing the resolution (i.e., the number of dots per inch) of the image. Vector graphic images depend on the specification of the picture as a series of equations that instruct the video monitor or printer how to draw each of the elements of the image. Since the exact number of dots is not specified, images may be created on any monitor or printer and produced at the highest resolution the device can provide. Computer graphics programs usually use a mouse, whose movements are reproduced by the cursor on the video screen, allowing users to draw and interact with the program.

Miscellaneous software. There are several categories of specialty software. New powerful statistics programs for the microcomputer rival similar systems on mainframe computers. They offer univariate and multivariate statistics as well as professional graphing functions. Project management software provides sophisticated methods of planning the timing of complicated projects in which one activity depends on others. Utility programs are used to perform routine hard disk maintenance, restore damaged and erased files, provide easy access to programs on a large disk, control various computer peripheral devices, and make backup copies of programs and data files.

Some type of backup software is essential to make copies of data on a hard disk. All hard disks will eventually fail or crash. The word "crash" is a generic term for a massive malfunction of the device. Hard disks crash when their magnetic recording head hits the surface of the disk and damages it. Hard disk failures can also be caused by computer errors in which meaningless information is written over crucial areas of data. When this happens the user’s information on the disk cannot be retrieved. If you do not back up your data regularly, you may lose them if your hard disk malfunctions.

THE ROLES OF COMPUTERS IN PSYCHIATRY

There are three broad areas in which microcomputers are useful in psychiatric educa-
tion and practice: data processing, text processing, and communications.

**Data Processing**

The primary use for the numeric data base in psychiatry is the organization and manipulation of financial data and quantitative clinical information. General data base programs and financial spread sheets can be used for patient billing, budget preparation, cost calculations, and fiscal management of clinical and research grants. Numeric data bases can also be used by individual practitioners as well as by clinical services to keep track of important components of patient care including laboratory tests, diagnoses, prescriptions for medication, treatment plans, psychometric testing, and demographic information.

In an outpatient service, a clinical data base can help the clinic’s director monitor the treatment of patients by staff and resident physicians. For example, information about the amount of neuroleptic medication prescribed to patients as well as documentation of the patient’s informed consent for medication can be stored. In addition, clinical supervisors can monitor whether abnormal laboratory values are appropriately evaluated with follow-up tests and consultations. A general residency training data base can be established to record information about the residents in the program including the clinical rotations completed by each resident, evaluations by clinical faculty, results of quantitative examinations, medical license status, planned electives, assigned supervisors, dates of meetings between the resident and training director, and other important information. Project management software may be used to design resident rotation schedules.

**Text Processing**

Most psychiatrists are familiar with word processing programs to prepare letters, manuals, publications, patient evaluations, and other documents. Yet, word processing programs have limited capacity to rearrange text once it is entered into the document. Outline and idea processing programs are more flexible since they are specifically designed to allow the text to be easily rearranged. Therefore, they are useful for preparing outlines for lectures, research proposals, papers, curricula, clinical programs, treatment plans, or any other project in which ideas are initially entered into the document in one order and must subsequently be reorganized.

Text data bases do not allow text to be easily rearranged but they do provide sophisticated search and retrieval capabilities. Therefore, a text data base could be used to store narrative evaluations of residents by supervisors, evaluations of courses and instructors by residents, the results of supervisory sessions, or the content of discussions between the training director and residents. This material can be indexed by key words so it is accessible for review or printing. Similarly, evaluations and progress notes for individual patients in treatment can be indexed and stored in a text data base and subsequently searched for specific events or clinical details. A special form of text data base is available for storing references and organizing a journal reprint collection. These reference management systems allow individual references to be cross-indexed and subsequently retrieved by author, title, topic, journal, etc. In addition, annotations can be stored with the references, and they can be printed in various formats to suit the requirements of most publishers. Customized bibliographies for residency courses or seminars can be printed from the file when necessary.

**Communications**

In the area of communications, a local area network (LAN) can be used to connect several computers to a group of central data
bases containing clinical records, budget information, or a large reference management system containing annotated journal references useful for residents in training. Electronic mail systems offer a rapid means of distributing memos to residents and staff. Local area networks also allow the development of workgroup projects in which several individuals contribute to the development of grant applications, manuals, publications, curricula, and other projects. Long distance communication with a modem allows access to specialized data bases, such as Medline, which contains references to the international medical literature. Similar reference data bases exist for psychology, chemistry, pharmacology, biology, and other fields. Long distance communication systems are also used to transmit manuscripts and other documents far more rapidly, and often at a lower cost, than express mail systems. In addition, many LANs allow computers that are not part of the network access to the system through a modem.

The recent literature contains several articles relevant to the applications of computer technology to medicine and psychiatry (1–17).

**COMPUTERS AND THE PSYCHIATRIC RESIDENCY CURRICULUM**

As new modes of diagnosis and treatment are developed, psychiatrists will have to absorb an expanding scientific literature and master a growing number of diagnostic and treatment techniques. Computers make this literature far more available than ever before. For example, Medline is now available on CD-ROM and can be used with most personal computers. In the future, scientific article and entire journals may be available to the practitioner through a personal computer. The current emphasis on using empirical, quantitative data in the process of psychiatric diagnosis and treatment will probably lead to a significant increase in the psychiatrist’s use of computers in these areas in the near future.

Furthermore, it is possible that even more qualitative data such as progress notes may soon be stored in text data bases rather than remain in handwritten form in the medical chart. The increasing utilization of the computer in psychiatry makes it important that every resident be taught the basic theory and use of the digital computer and, more specifically, the concepts of numeric and text data base management.

A curriculum to teach these concepts to psychiatry residents should include at least the following specific topics:

- The basic components of a computer and their function
- The concept and function of a computer language
- The categories and uses of computer software
- The concept and structure of a computer data base
- Storing and retrieving information in a data base
- Psychiatric applications for data bases (e.g., a patient log)
- Computer-assisted statistical analysis of psychiatric data
- Potential uses of artificial intelligence in psychiatry
- Limits of and problems in the application of computer technology to psychiatry.

**FUTURE TRENDS IN INFORMATION TECHNOLOGIES**

Although predictions of the future are risky, it is possible to project current trends into the future. Hardware will become faster and more powerful, software will become larger and more complex, and storage media will become faster and hold far more data than possible at present. Recent reports in the literature have announced storage devices such as optical floppy disks that hold 500
megabytes and cost approximately the same as today's floppy disk. These could be available in one or two years.

Relatively inexpensive storage media will soon be able to hold one, two, or even ten gigabytes (10 billion bytes). Such enormous storage capacity and speed will allow tremendous advances in processes that require more power and memory, such as high-resolution image storage and manipulation, speech analysis, and artificial intelligence. The traditional medical chart may eventually be replaced by a high-density optical disk. Sophisticated cross indexing techniques will allow a standardized chart organization with multiple ways of accessing the same information. High resolution monitors will allow immediate display of documents, and laser printers will produce printed copies of reports, scans, and x-rays rapidly. Many of these functions are already well within the capacity of modern sophisticated microcomputer systems.

The price for these systems should drop considerably in the future. The graphics and data base systems may be among the most significant innovations in information technology for medicine in the future. The use of the FAX machine and similar information transmission systems should increase dramatically. Medical records can easily be sent by computer as can article reprints and papers for publication.

One main question raised by this increased power is what kinds of data should be collected and how should they be used. Aside from the legal and moral questions there is the question of the relevance of data. It is always possible to think of information to collect without having any empirical justification for collecting it. Data collection is a time-consuming process. Collecting data that are not clearly relevant could result in significant waste of time and money. Therefore, critical analysis and selection of relevant data must go hand and hand with these new methods of information storage and organization.

References

APPENDIX 1. Representative software programs

<table>
<thead>
<tr>
<th>Word Processing Software</th>
<th>Communications Software</th>
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<tbody>
<tr>
<td>WordPerfect</td>
<td>Carbon Copy+</td>
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<tr>
<td>Microsoft Word</td>
<td>Crosstalk XVI</td>
</tr>
<tr>
<td>Xywrite</td>
<td>Smartcom II</td>
</tr>
<tr>
<td>Q and A Write</td>
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<tr>
<td>PFS Prof Write</td>
<td>Desktop Publishing Software</td>
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<td>Ventura Publisher</td>
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<td>Volkswriter</td>
<td>Aldus Pagemaker</td>
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<tr>
<td>PFS Prof Write</td>
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<td>Smartcom II</td>
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<th>Text Data Base and Outline Software</th>
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<td>Ask Sam</td>
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<td>BookPro Plus</td>
<td>Microsoft Graphics</td>
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<tr>
<td>Agenda</td>
<td>Boeing Graphics</td>
</tr>
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<td>Grandview</td>
<td>Cricket Graph</td>
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<td>Memory Mate</td>
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<tr>
<th>Numeric Data Base Software</th>
<th>Statistics Software</th>
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<td>dBase IV</td>
<td>SPSS PC</td>
</tr>
<tr>
<td>R:Base for DOS</td>
<td>Systat</td>
</tr>
<tr>
<td>Paradox 2.0 or 3.0</td>
<td>Statgraphics</td>
</tr>
<tr>
<td>Microsoft File</td>
<td>Statview series</td>
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<th>Financial spread sheets</th>
<th>Project Management Software</th>
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<tr>
<td>Lotus 1-2-3</td>
<td>Timeline</td>
</tr>
<tr>
<td>Borland Quattro</td>
<td>Microsoft Project</td>
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<tr>
<td>Microsoft Excel</td>
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<tr>
<th>Text Search and Retrieval Software</th>
<th>Utility Software</th>
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<tbody>
<tr>
<td>ZyIndex</td>
<td>Norton Utilities</td>
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<tr>
<td>Norton Utilities</td>
<td>Norton Commander</td>
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<tr>
<th>Hypertext Software</th>
<th>PC Tools</th>
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</thead>
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<tr>
<td>Hypercard</td>
<td>Copy II PC</td>
</tr>
<tr>
<td>PC-Hypertext</td>
<td>Sidekick Plus</td>
</tr>
<tr>
<td></td>
<td>Mace Utilities</td>
</tr>
</tbody>
</table>

Note: This list of programs is not comprehensive and should not be thought of as a recommendation for any specific program.
Residents' Satisfaction With the PRITE

Kenneth L. Matthews, M.D.
Christopher B. Ticknor, M.D.

Examinations are an integral part of resident and program evaluation, but they are considered particularly stressful on residents. The department of psychiatry of the University of Texas Health Science Center at San Antonio administered the Psychiatry Resident-in-Training Examination (PRITE) every other year to minimize stress and anxiety among residents. When questioned about their satisfaction with the PRITE and its administration, the residents reported high levels of satisfaction and a desire to take the examination yearly. Dissatisfaction was limited to the physical environment in which the exam was administered.

Examinations have always played a major part in medical and, more specifically, in psychiatric education. Examinations range from the Medical College Admissions Test (MCAT) to course exams or the National Board of Medical Examiners tests required to graduate from medical school, to clinical exams in residency training, and finally to the written and oral exams required for board certification. All exams offer an assessment in some area, hopefully in the area that the exam is designed to test. This assessment occurs with some costs, including multiple stresses on the examinee; examiner stress, preparation, and delivery time; and loss of service delivery time. The usefulness of exams is shown by the report that residents from medical schools that give grades were considered superior to those from schools that graded pass/fail (1).

Few exams have elicited as much attention as the oral portion of the American Board of Psychiatry and Neurology Certification Examination. Langsley expressed concern about the effects of the exam on staff, patients, and examinees (2). Brown reported that knowledge of board objectives and test-taking principles helps one to pass, despite what he perceives as ambiguous criteria, lack of reliability, and absence of feedback (3). Others openly called for its demise (4), reported casualty figures (5), or shared strategies in avoiding the exam but maintaining self-esteem (6).

Veloski and Gonnella addressed factors affecting performance relative to the National Board of Medical Examiners, Part III, exam (7). Werkman described the value of the Psychiatric Knowledge and Skills Self-Assessment Program in stimulating self-evaluation and learning without posing the risks associated with other exams (8). Leichner and Kalin discussed similar benefits to Canadian residents of a self-assessment exam (9).

The Canadian psychiatric literature, paralleling the American experience, contains articles outlining positive goals for a
certifying exam, expressing concerns about who passes and why, and suggesting changes in the exams (10-14). In Canada, the certification process requires the training director to complete an In-Training Evaluation Report (ITER) (15) based in part on an in-training examination. The training director recommends pass or fail for the candidate based on his or her residency performance. Shakan et al. demonstrate that the ITER fails to discriminate good candidates from poor ones for the Canadian certifying exam (16). In fact, they showed no correlation between candidates' performance on multiple-choice questions, oral exams, and the ITER.

Klein and Bobineau report on the rational and irrational components of evaluation of trainees, including issues of feedback and consequences of evaluation (17). Kardener et al.'s article on residents' impressions of training experiences does not mention oral or written exams (18). Small lucidly argues that rather than any method's being universally appropriate, oral exams, essays, and multiple-choice questions each have advantages and disadvantages, making each useful in certain situations (19).

**THE HISTORY OF PRITE**

Chaisson discusses the utility of resident-in-training examinations in graduate medical education to measure cognitive information (20). Several psychiatry residency programs have had in-house examinations for residents (21,22). The development of a national Psychiatry Resident-in-Training Examination (PRITE) to replace the exams of individual programs is more recent, dating to 1979. This followed the trend of medical specialties, beginning in 1963 with orthopedics, to develop national in-training resident exams (20).

Strauss et al. have examined the composition of the PRITE itself (22), and they compared it to the in-house psychiatry exam developed at the University of California, Los Angeles (UCLA) (23). They found a high correlation between the PRITE and cognitive knowledge, detecting areas of weakness, cost, and resident satisfaction. Negative correlations were found between the PRITE and the amount of information and feedback to residents and programs and the amount of time between testing and results. The more positive response of residents to the PRITE was attributed to the novelty of the new exam. The more positive response to the in-house exam feedback related to its quicker return even though the results were less detailed. Strauss et al. noted that the PRITE is not useful for all programs and named the Psychiatric Knowledge and Skills Self-Assessment Program (PKSAP) or the National Board of Medical Examiners' (NBME) exam as appropriate alternatives (24).

In 1985, Colenda reported that 90% of the ten psychiatry residency programs he surveyed used the PRITE, while 60 percent used mock oral boards, and all had psychotherapy supervision and evaluation (25). Procci's 1978 survey of 130 residency programs found that 25% used involuntary, nonanonymous written exams, and 8% used voluntary nonanonymous exams (26). Anonymous exams were given involuntarily at 12% of the programs and voluntarily in 14% of the programs.

The department of psychiatry at the University of Texas Health Science Center at San Antonio has participated in the PRITE since 1979. The exam has been administered every other year so that residents would take the exam twice. It was felt that the biennial schedule allowed the residents to gain experience but did not “overburden” them with a yearly exam. The exam is given in strict accordance with the guidelines for administration. However, residents are assured that the examination number code will not be broken and the results will remain anonymous, unless residents choose to volunteer information about their scores. Residents are required to take the test. Thus far, only high-scoring residents have volunteered information that would allow their names and
TABLE 1. Residents' responses to a questionnaire about the PRITE, by number of residents

<table>
<thead>
<tr>
<th>Question</th>
<th>Highly Satisfied</th>
<th>Moderately Satisfied</th>
<th>Neutral or Undecided</th>
<th>Moderately Dissatisfied</th>
<th>Highly Dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your overall reaction to this examination as an educational experience?</td>
<td>6</td>
<td>24</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>How satisfied are you with the organization, contents, and study value of the item-by-item reference list?</td>
<td>13</td>
<td>17</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>How satisfied are you with the type of statistical feedback you receive?</td>
<td>14</td>
<td>15</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>How satisfied are you with arrangements to ensure confidentiality and privacy for your PRITE results?</td>
<td>16</td>
<td>10</td>
<td>6</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Question</th>
<th>Definite Yes</th>
<th>Probable Yes</th>
<th>Neutral</th>
<th>Probable No</th>
<th>Definite No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you want our residency training program to participate in the PRITE in future years?</td>
<td>28</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Do you think our program should take the PRITE yearly rather than every other year as we do now?</td>
<td>11</td>
<td>13</td>
<td>5</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Do you plan to use the PRITE as an educational opportunity to study at least some part of the item-by-item reference list?</td>
<td>19</td>
<td>10</td>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Do you plan to use the PRITE at some point in preparing for board certification exams?</td>
<td>18</td>
<td>14</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Would you like to have the option to discuss the results of the PRITE with your career supervisor or with training director?</td>
<td>2</td>
<td>10</td>
<td>15</td>
<td>5</td>
<td>1</td>
</tr>
</tbody>
</table>

exams to be matched.

The chairman and training director have been encouraged repeatedly to administer the PRITE on a yearly basis. Out of concern for stress and anxiety endured by residents, the San Antonio program has continued biennial administration. In 1986, when the issue of a yearly exam was raised again, one of the authors (CT) suggested the novel approach of asking the residents their opinions about the PRITE.

THE QUESTIONNAIRE

A ten-item questionnaire was developed and distributed to the 40 residents. Responses were obtained from 33 residents. Since the questionnaire, like the PRITE, was answered anonymously, nonresponders could not be identified. While obtaining the residents' views about taking the exam yearly was the primary focus of the survey, we also inquired about their satisfaction...
with the exam and its expected uses. Table 1 summarizes responses to the first nine questions.

The tenth question asked respondents what could be done to make the PRITE a better educational experience at our institution. Seven respondents asked for coffee, cookies or donuts. One resident requested softer chairs, and one requested a general meeting to discuss the results as they related to the strengths and weaknesses of the residency program.

DISCUSSION

The respondents were satisfied with the organization of the test, the statistical feedback received, and the anonymous confidentiality arrangements we employ. The only areas in which any respondent reported feeling highly dissatisfied involved feedback and confidentiality, and both responses were given by the same resident. The residents’ overall satisfaction with the exam is reinforced by the respondents’ suggestions for changing the exam. Of those responses, 21% were requests for food, 3% were for better environment, and 3% were for more detailed feedback. All in all, residents’ satisfaction was high.

Surprisingly, our results found that the residents wanted more exams rather than fewer. They preferred yearly administration of the tests. The expected stress and anger or self-esteem challenge was not as high as expected by the faculty, particularly in terms of the PRITE. The required but anonymous participation helps moderate some stress and self-esteem issues. Thus all residents wanted to continue the PRITE, and all but four desired, or said they would be content with, yearly administration.

Twenty-nine residents (88%) indicated they intended to study at least part of the results of the PRITE as an educational activity. This confirms the test’s validity as an educational experience, as it is intended to be, in addition to it value as an evaluative exercise.

More surprisingly, 32 residents (97%) intended to use the PRITE results to prepare for board certification. The high percentage of residents anticipating board certification was unexpected.

When presented with the option of discussing individually the results of PRITE with the training director, only 12 residents (36%) expressed interest. Six residents (18%) said they would refuse the option. We assume that this division parallels residents’ performance; those whose scores were above the mean performance would probably be receptive to a discussion, and those who scored below the mean would tend to be unreceptive.

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10. McLean P, Fleming J: Evaluation of clinical competence in psychiatry by the Royal College Examina-
Faculty and Resident Response to an Innovative Mock Board

Shawn C. Shea, M.D.
Michael Rancurello, M.D.

The authors describe a format for mock oral boards that attempts to decrease resident anxiety concerning both the mock exam itself and the actual boards. The exam format was enthusiastically received by faculty and residents. Both faculty and residents felt that the format provided sound clinical education and simultaneously eased anxiety about the oral boards. Implications for residency training are discussed.

Over the years, mock board formats have become more popular as evaluation tools in psychiatric residency programs. In 1969 Miller and Burstein described an evaluation process in which two supervisors observed as a psychiatric resident interviewed a patient and subsequently provided feedback (1). Four years later, Raskin described a “mini-board format,” in which the resident conducted a 20-minute interview and then was questioned by observers for a one-hour period. Following the question period, the resident was provided feedback regarding his or her performance (2).

Two educational and political factors have contributed to the rise in popularity of mock board exams. The first factor is related to the increasing realization that some form of standardized assessment of residents, such as the Psychiatry Resident-in-Training Examination, or PRITE, may have value, however limited, in guaranteeing quality assurance in both residents and residency programs (3).

The second factor grows from the realization that certification and, in the future, some form of re-certification are facts of life for psychiatrists after they complete residency training (4). These certification and recertification procedures can generate considerable anxiety and represent rather unfamiliar evaluative circumstances. Thus it seems expedient to introduce residents to such formats before they encounter an actual test situation, in an effort to decrease their anxiety. The result, ultimately, is a more valid test of skills as opposed to a “test of nerves.”

GOALS OF MOCK BOARD EXAMINATIONS

Questions have been raised about residents’ response to an increased emphasis on review of their work by mock boards, which is, admittedly, a potentially intimidating process. It has been hoped that such exams will be viewed as aids for self-study and self-development rather than as high-anxiety hurdles. Yet Stone and Nelson have noted that mandatory evaluations may not always produce such satisfying results (5).

Dr. Shea is director of the Continuous Treatment Team at Monadnock Family Services, 331 Main Street, Keene, New Hampshire 03431. He was formerly associate director of residency training at Western Psychiatric Institute and Clinic of the University of Pittsburgh. Dr. Rancurello is director of residency training at Western Psychiatric Institute and Clinic.

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particular, there is a risk that some residents, perhaps even those in most need of remedial work, will feel infantalized or intimidated. In turn, this format creates a relationship between faculty and resident in which the faculty is forced to assume an authoritarian and judgmental stance.

Morgenstern, in an elegant description of this dilemma, wrote, "This risk [referring to the fear of failure] occurs in many educational rituals but it is of special concern in medicine where we need continuing education for our patients' welfare. Those who test us must confront the fact that the fear of failure can stimulate the avoidance of knowledge as easily as it stimulates its acquisition" (6).

In this regard, the process of evaluation can be categorized into two broad domains: evaluation by grade and evaluation by constructive feedback. These two approaches overlap, but it is useful to realize that any test can be structured to emphasize one or the other end of this continuum. Evaluation by grade stresses that the examinee's score will be used by an authority as a valid indication of the skill level of the examinee. Action by the training program or other repercussions is one possible outcome of this focus. In contrast, evaluation by constructive feedback, in its purest form, requires that the scores not be used as judgments of skill level for the purpose of advancement and recognition. Instead, the emphasis is placed on providing information concerning possible areas for improvement.

The more that an exam approximates evaluation by grade, the more that learning may be impeded by the type of anxiety described by Morgenstern. Such formats also foster a potentially hostile relationship between examiner and examinee. The American Board of Psychiatry and Neurology (ABPN) Boards, Part II, represent a prototypical evaluation by grade accompanied by prototypical anxiety in its participants.

This paper describes a mock board exam that attempts to create a true evaluation by constructive feedback. The goals of the exercise are as follows:

1. To provide practical feedback on clinical skills
2. To alert the resident to areas of weakness
3. To suggest approaches for strengthening areas of weakness
4. To decrease anxiety about the ABPN exams by familiarizing the resident, in an experiential fashion, with the board format
5. To decrease anxiety about the ABPN boards by providing practical tips about taking the boards
6. To create a heightened feeling of collegiality among faculty and residents by presenting the exercise as a method for faculty to help junior colleagues successfully navigate a common professional "rite of passage."

FORMAT OF THE MOCK BOARD

Each resident is sent a ten-page manual called "Preparing for the Oral Boards." The manual states clearly that the board exercise is not intended as a measure of the resident's accumulated skill level, as other more effective measures will be used for that purpose (e.g., feedback from supervisors during rotations and written or oral exams given on individual rotations). They are told that the exercise is strictly for their benefit and is designed to provide useful clinical feedback while helping to prepare them for the ABPN boards. The manual includes tips for structuring the interview, organizing the presentation, and handling questions.

The exercise begins with a 45-minute orientation attended by all residents and several of the faculty who will participate in the testing process. Further information about the exam is conveyed, including an exact description of both the videotape and interview sections. Faculty discuss further tips for note-taking, the interview process,
The examinees. The entire atmosphere of the orientation is an informal one characterized by the use of humor and personal anecdotes by the faculty regarding the board examination process. Once the teams leave for the exam rooms, the faculty maintain a politely friendly but unfamiliar attitude toward the examinees. This attitude is maintained until the feedback session.

The actual examination is designed to simulate the board experience. (The rationale for this is explained to the residents.) The resident interviews a patient for exactly 30 minutes. The resident receives a prompt when five minutes remain in the interview. Each resident is examined by two faculty.

After the interview, residents are given five minutes to prepare a presentation of the case. During the presentation, faculty may ask them questions. During both the interview and the questioning phase, a third faculty member may enter the room, at times asking questions. In this way, the impact of the "floating examiner" present in the ABPN exam is simulated.

Faculty are given 15 minutes to complete a form that provides the residents with feedback in three broad areas: the interview, the presentation and formulation, and the handling of examiners' questions. Next, the resident and the examiners meet for 45 minutes of constructive feedback and exchange, with the feedback form serving as the foundation for informal discussion.

At the conclusion of the exercise, both the residents and faculty members are asked to complete a satisfaction survey. The faculty satisfaction survey consists of seven statements. The resident survey consists of ten statements. All statements are phrased in a positive manner, and respondents are asked to circle one response on a four-point Likert scale, with 1 indicating strong disagreement and 4 indicating strong agreement.

### SATISFACTION WITH THE MOCK BOARD EXAMINATION

A study was conducted of resident and faculty satisfaction with the exam based on results from the satisfaction survey. The exam was given once in the spring and once in the fall. The subjects were 23 residents in their third or fourth year of training, and 37 faculty members. Surveys were returned by all but one resident and by all the faculty. The results are presented in Tables 1 and 2.

<table>
<thead>
<tr>
<th>Item</th>
<th>Number of Faculty (n=37)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The orientation helped me to understand the forms and format of exam.</td>
<td>Strongly Disagree 1 2 Mildly Disagree 3 4</td>
</tr>
<tr>
<td>The times allotted were appropriate.</td>
<td>1 2 7 22 3.6</td>
</tr>
<tr>
<td>I was able to provide good clinical feedback.</td>
<td>1 3 8 25 3.5</td>
</tr>
<tr>
<td>I was able to provide good board preparation feedback.</td>
<td>12 25 3.7</td>
</tr>
<tr>
<td>The form was easy to use.</td>
<td>12 25 3.7</td>
</tr>
<tr>
<td>The form offered a good framework for discussion.</td>
<td>2 5 29 3.8</td>
</tr>
<tr>
<td>I enjoyed this teaching format.</td>
<td>2 5 29 3.8</td>
</tr>
</tbody>
</table>

TABLE 1. Faculty responses to a seven-item survey of satisfaction with the mock board
The majority of faculty strongly agreed with the seven statements (Table 1). The average response ranged from 3.5 to 3.8 on a four-point scale. Of the 259 ratings possible by the 37 faculty respondents, they chose the most highly positive rating (strongly agree) in 174 cases. In only eight cases did the respondents choose the rating "mildly disagree," and in only two cases did they choose the lowest rating (strongly disagree). Thus in 241 of 259 instances, a positive response of 3 or 4 was returned. In eight instances no response was given.

The majority of residents strongly agreed with nine of ten positive statements. The average response ranged from 3.2 to 3.9. Of the 230 ratings possible by the 23 respondents, they chose the most highly positive rating (strongly agree) in 150 cases. In only 11 cases did they choose the rating "mildly disagree" and in no case did they choose the lowest score. Thus in 214 of 230 instances, a positive score of 3 or 4 was returned. In five instances no response was given.

**DISCUSSION**

Examinations that emphasize evaluation by grade, such as the American Board of Psychiatry and Neurology exam, Part II, clearly can be anxiety provoking, and failure can result in significant personal distress (7-10). These board exams have been criticized as having an unusually high failure rate, frequently around 40%. In a survey of examinees who failed the boards on their first try, 81% of respondents cited a lack of familiarity with the board format as a significant factor in their anxiety and resulting failure (11).

Partially in response to these potential problems, the use of mock boards during residency has become increasingly popular as a means of familiarizing residents with the board exam format. However, as noted earlier, a second factor in developing these boards has been the pressure to create mandatory methods of evaluating resident learning. This movement to more carefully monitor both resident and program accomplishment with regard to educational goals is a sound one, perhaps long overdue. Yet problems may arise when the attempt to help residents prepare for the boards and also receive good clinical feedback, in a non-threatening atmosphere, are inadvertently combined with the idea of mandatory evaluation by grade.

Ironically, if a resident is made to feel...
that the board exercise is also a true evaluation by grade, then the same anxieties that plague the actual board participants may emerge as a significant roadblock to learning. Thus, rather than assisting a resident, such mock board examinations run the risk of heightening anxiety in a counterproductive way.

Before initiating the novel board format described in this paper, we had had at least three years of experience with a mock oral board exam in the residency. These exams were similar in nature to the one described in this paper except residents were told that these exams would be used as an evaluation by grade by the Office of Residency Training; the written material distributed before the exam was formal in tone and placed heavy emphasis on performance expectations; and there was no collegial orientation designed as a forum for informally passing on suggestions for preparing oneself for the board examination.

In general, the former mock-examination format was relatively well received. Many participants were laudatory in their reaction to the format. On the other hand, an undercurrent that these exams were in themselves unduly stressful persisted. Few residents related that the exams were enjoyable, even though they viewed them as useful.

One case highlighted some of the potential stress. A third-year resident who had transferred into the program did not perform at his accustomed level. Despite the fact that he was reassured by both examiners that they were fully cognizant that his performance was not representative of his level of skill, he experienced what was intended to be a helpful exercise as demoralizing. His anxiety and anger toward the exam were long lasting. Indeed, he had an angry exchange with one of his examiners months later. It should be noted that the resident in question was of high caliber and the faculty member involved was a popular teacher who was viewed by most students as friendly and approachable.

Within this context, the innovative format described in this paper was developed. It essentially replaced evaluation by grade with a less-threatening evaluation by constructive feedback. Results attest to the success of the technique.

In response to the statement, “I enjoyed the teaching format,” residents displayed an average response of 3.6, and faculty gave an average response of 3.8. The residents’ average score is remarkably high when one considers that even with the approach used in this format, the residents still had to interview and perform in front of faculty. It is also striking that the faculty enjoyed the format so strongly, for their participation was mandated by the chairman on top of already heavy teaching, clinical, and research responsibilities.

One faculty member strongly disagreed with statements purporting the value of the orientation to the faculty and the appropriateness of the time allotted for the exam. In both instances he felt that too much of his own time was used. But even this faculty member expressed strong agreement with all other statements, including “I enjoyed the teaching format.” The enjoyable atmosphere of this mock board exam was probably most attributable to the feeling engendered in them that it existed purely as an aid for the residents. There was a true feeling of collegial support, and the faculty enjoyed providing important clinical feedback and helping younger colleagues overcome a common professional hurdle.

The written material was also well received. Several residents commented that they intended to save the material and review it carefully when they ultimately prepared for the boards. Residents seemed to appreciate the attention given to describing practical approaches to the structuring of the interview and to the organization of the presentation. Residents’ responses to the orientation session were also very positive. In particular, they seemed to appreciate tips faculty provided concerning note taking,
oral presentations, and handling difficult questions. Humorous anecdotes provided by the faculty seemed to decrease residents' apprehension.

Overall, the residents felt they received excellent preparation for the board format. More striking was the fact that 19 of 23 residents strongly agreed with the statement, "I received good clinical feedback." These results suggest that the residents believed that the mock board format provided a rich learning opportunity, fostered by the non-threatening environment. This conclusion is supported by the fact that faculty members gave an average response of 3.7 to the statement, "I was able to provide good clinical feedback."

Of some interest is the fact that the residents agreed only mildly with the statement, "This exercise decreased my anxiety about the boards." Although it still received a positive rating, this statement received the lowest average score. Some insight into this rating was gained by talking with one of the residents who disagreed mildly with this statement. This senior resident, who had demonstrated excellent clinical skills in the exam, related that, "Anytime I think about the boards it makes me anxious, so I just try not to think about them. This raised my anxiety a bit just because I had to deal with them. Other than that, I think the experience was a good one."

As this resident's comment suggests, it is unlikely that any format will be viewed by residents, at the time of the exercise, as substantially decreasing their anxiety about the boards, as passing the actual boards is the only real way to view them as non-threatening. On the other hand, it is hoped that this type of preparation may have a real impact on decreasing the failure rate related to genuine unfamiliarity with the board format on an experiential level.

Although this mock board exam format eliminates the use of evaluation by grade, we are not suggesting that direct evaluation by grade is a bad idea. On the contrary, such direct observation and evaluation of interviewing skills and case formulation is an important part of modern training. There is evidence that evaluations gleaned only from indirect supervision by faculty may be misleading and some faults in interviewing and clinical thinking may become apparent only upon direct observation (12).

However, such direct graded evaluation is probably best done on individual units and longitudinally throughout the training experience. If primarily focused upon the mock board exam, it may transform the exam from a learning experience into a potentially counterproductive event. On the other hand, when developed as a non-threatening resource for both clinical feedback and board familiarization, our experience has shown, the mock board examination can be a rewarding experience for both the faculty and the residents.

References
An Automated Approach to a Residency Log

Arnold Werner, M.D.
Leighton A. Price, Ph.D.
Ralph Tobias, M.A.

A highly automated system that meets the Residency Review Committee (RRC) requirements for documenting residents' clinical activity has been developed using readily available computer hardware and a specialized software package. Once in place, the system is relatively unobtrusive and requires only two to four hours a month of technical support but no additional clerical or secretarial time to operate. The costs of the system are primarily those it takes to make it operational. Maintenance costs are low. Regular monitoring of residents' clinical activity has had a salutary effect on program planning and enhanced the program's ability to meet RRC guidelines.

Monitoring residents' clinical activity is critical to the administration of a successful residency program. The Residency Review Committee for Psychiatry (RRC) refers to this matter prominently in two sections of the Special Requirements for Residency Training in Psychiatry. In the section on objectives of training, the RRC stipulates that residents must diagnose and treat "a reasonable number and adequate variety of patients" with a broad range of diagnoses. They should have experience with "patients of both sexes, of various ages...and from a variety of ethnic, racial, social and economic backgrounds" (1). In the section on administration of the program, the RRC stipulates, "There must be a record maintained of specific cases treated by residents, in a manner which does not identify patients, but which illustrates each resident's clinical experience in the program." Furthermore, this record must be reviewed with the program director "and be made available to the surveyor of the program" (1).

The RRC guidelines generally have been interpreted to mean that residents will have to maintain a log of their clinical activities. Although data on each resident's caseload on a clinical service are usually easily available, the type of highly specific information required by the RRC has led to the development of new monitoring methods.

Residents face large amounts of paperwork in addition to their clinical and educational tasks. Returning forms, completing charts, and dictating discharge summaries may already be sources of tension between residents and supervisors. In such an atmosphere, the imposition of another task without good justification can create...
hostility. At best, one can anticipate that any new record-keeping demands will be greeted without enthusiasm.

ALTERNATIVES AND DILEMMAS

An ideal system of tracking resident activity should be unobtrusive, inexpensive, require little additional effort by the resident, and utilize minimal clerical effort. A program in which all resident activity is located at an institution that has computerized its patient records and billing is often able to generate data on physician activity in a form that meets the RRC documentation requirement. However, most programs either place residents in more than one institution, including community settings, or do not have a sufficient level of automation to accomplish the task.

In a manual approach to keeping a log, the resident records patient contacts in a book or on cards and then tallies the results by hand periodically. Such a system may become unworkable because of the large amount of paperwork and the considerable effort required to generate reports. In addition, the manual approach is costly in the long run because of the clerical time required.

A partially automated approach requires the resident to complete data forms and then have clerical personnel type the information into a computer. The ease of handling data allows the residents to prepare regular, comprehensive reports, but it requires a considerable amount of clerical assistance to enter the data, as well as technical assistance to develop the computer program used to manage the data and generate the reports.

A more automated approach to monitoring clinical activity requires the resident to record information regarding patient contacts on a machine-readable form. This approach eliminates the time and cost of manually entering the data into the computer. Such a system requires a minimum of clerical assistance but does require technical assistance to develop the program and some ongoing assistance to produce periodic reports.

A fourth method requires the resident to enter the data into the computer directly. This approach requires training the resident and providing adequate computer facilities so that each resident can have access to a computer terminal. In this approach, the resident would still be expected to maintain summary data, which duplicates some recording tasks.

Each of these approaches has recently been described (2).

AN AUTOMATED APPROACH

Residents in our training program work at several clinical locations in two communities. The facilities are not linked by a common data system. Earlier efforts to monitor residents' clinical activities relied on hand-tallied summaries that the resident compiled for each semi-annual review with the residency director. Based on the tremendous discrepancies reported by residents on the same service, we concluded that any resemblance between what was reported in the summaries and what actually happened was purely coincidental.

Our efforts to find a better means of monitoring residents' activities led us to explore an automated method that uses an optically scanned card to record patient contacts. In its present form, the resident log project relies heavily on a software package developed by one of us (LAP) for designing questionnaires and other types of information collection. The package, called the Survey Research System (SRS) has been used for a wide variety of survey, research, and evaluation projects for more than a decade. We have designed a system that requires a minimum amount of training, contains all instructions for use on the optically scanned card, and does not require patient identification numbers or any coding system to record
data. The basic elements of the system are:

1. A machine-readable data form produced with computer-aided design software
2. An optical-mark card reader
3. IBM-compatible computer equipment with a hard disk
4. A software package that enables the data forms to be scanned, screened for errors, and converted to data records
5. Database procedures that transform the data and compile summaries.

Figure 1 illustrates both sides of the data card.

<table>
<thead>
<tr>
<th>FIGURE 1. Sides one and two of the resident log card. The computer-generated data card measures approximately 7.5 by 3.25 inches and fits easily in a purse or pocket.</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>RESIDENT LOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESIDENT ID (Last 4 digits of your Social Security Number):</td>
</tr>
<tr>
<td>RESIDENT NAME:</td>
</tr>
<tr>
<td>DIVISION: Lending</td>
</tr>
<tr>
<td>TYPE: Initial</td>
</tr>
<tr>
<td>DURATION: Brief</td>
</tr>
<tr>
<td>PATIENT ID (First two initials of first and last names):</td>
</tr>
<tr>
<td>First name initials</td>
</tr>
<tr>
<td>DATE OF CONTACT:</td>
</tr>
<tr>
<td>Day (code both digits):</td>
</tr>
</tbody>
</table>

| PATIENT AGE: |
| PATIENT SEX: Male | Female |
| SOCIAL CLASS: |
| RACE/ETHNICITY: |
| SITE: |
| IN PATIENT: |
| OUT PATIENT: |

| PRIMARY PSYCHIATRIC DIAGNOSIS: |
| PRIMARY MODE OF TREATMENT: |

| TREATMENT (choose any appropriate category): |

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We decided to limit our goals to meeting the RRC requirements while providing useful data to the program regarding resident activity. Thus, we did not view the cards as a potential source for billing information, research on utilization of services, or data on other such matters, all of which would have required a more elaborate and precise system. A similar system could be devised using standard machine-scored answer sheets rather than the cards and card reader we use.

### How It Works

Residents receive a supply of cards and pencils. They are requested to fill in both sides of the card for each new patient (see Fig. 1). The resident is identified by the last four digits of his or her Social Security number (we are planning to replace this with an assigned two-digit number to save time and space). Patients are identified by the first two letters of their first and last names. This obviates the use of chart numbers, adequately assures confidentiality, and does not require added effort by the resident. The odds of duplicating the identification data are too small to concern a project of this nature. The month and year of contact are recorded. With recent modifications, up to nine visits can be recorded on each card. This substantially decreases the number of cards the resident must fill out and yet ensures that cards are turned in at regular intervals. After a patient’s ninth visit, the resident fills out the front side of a new card. The second side is filled out again only if there are changes in information on that side.

The Hollingshead-Redlich ranking of social class is also recorded (3). A primary and secondary diagnosis can be indicated in our current system. We also document the frequency of various therapeutic modalities.

### Processing the Data

The cards are collected weekly. The SRS software is used on an IBM-compatible computer with a hard disk connected to a Chatsworth optical-mark reader. The SRS software allows the residents’ log cards to be scanned by the reader, screened for errors, converted to variables, and written to a data file on a standard diskette for subsequent analysis. With the data in a manageable form, a data-base program developed by one of the authors (RT) sorts the data and generates reports. We use dBase for this purpose, although other data-base programs could be used. The dBase system is very widely used, facilitating consultation and sharing of programs. Discounts on such software are generally available to educational institutions. Because of the number of records and the nature of the data-base program used in assembling the reports, we have found it 75% faster to use an AT-type computer rather than an XT-type. The two types differ only in processing time.¹

Reports are issued to the residents and service chiefs each month. Summary reports are prepared for semi-annual and annual reviews of the resident.

### Cost of the System

Basic hard-disk, IBM-compatible computers are almost commonplace in educational institutions, so most programs would not need to purchase this piece of equipment. An IBM-compatible XT-type computer with a hard disk would cost about $1,300 and an AT-type would cost less than $2,000 based on widely available educational discounts. A card reader costs between $700 and $4,000, depending on the speed of the reader. SRS software is available through the authors on a lease basis, with

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¹ Information on the card reader is available from Chatsworth Data Corporation, 20710 Lassen, Chatsworth, California 91311. Information on the dBase data system is available from Ashton-Tate, 20101 Hamilton Avenue, Torrance, California 90502.
cost being a function of volume. Cards cost from 4¢ to 10¢ each, depending on volume.

IMPACT OF THE SYSTEM

One of the significant concerns expressed by training directors during workshops on the log system concerns the interpersonal dimensions of implementation. In particular, concerns about levels of cooperation, or lack of cooperation, by the residents are often raised.

The log system received mixed reviews from the residents when it was first introduced. Although they understood the necessity of a log system, and found the opportunity to document their activities appealing, they were somewhat resistant to filling out the cards. For several months during the first year of implementation there were an inordinate number of errors. Some residents consistently turned cards in late. With time, however, cooperation greatly increased. As would be expected, residents already in the program found the log system to be a greater imposition than those who entered after the system began, and they tended to be less cooperative. The graduation of residents who did not start out with the system has solved most of these problems.

We also found that the more immediate feedback accomplished by distributing reports monthly rather than quarterly has increased cooperation. A modification permitting the recording of multiple contacts on each card has led to a considerable decrease in residents' complaints.

The residents like the idea of being able to document their activities. They also regard access to specific information about the range and depth of their activities with patients as an advantage when applying for positions upon completion of training.

The two types of problems we commonly encounter are failure to submit the cards on time and incomplete or inaccurate completion of the cards. Lateness is managed by sending reminder notes and making an occasional telephone call. We inquire about difficulties in filling out the cards and elicit suggestions for improving the system. Whenever a resident has a large number of mismarked cards, one of the authors (RT) meets with the resident to review the errors. Occasionally, a resident is asked to redo some cards.

Technical problems have been few, in part because of the ready availability of consultation. The only critical piece of equipment is the card reader, as computers are widely available and easily substituted or repaired. The card reader has been very reliable. At worst, equipment or technical problems would result only in delaying reports but would not impede data collection.

Now that the system is in its second year, we are finding it very useful for analyzing the clinical activities of the residents. We can easily examine residents' number of hours of patient contact on different services, examine variables required for RRC documentation, and produce data necessary for program planning.

The system also provides ready access to the types of data that are often requested in surveys and reports. All of this information can be obtained with only modest effort. The regular monitoring of resident activity has also been helpful in planning part-time rotations for residents.

The highly specific reports generated by the system were of great value to the program in preparing for an RRC site visit. Questions raised on a prior site visit about the variety of clinical experiences could now be convincingly answered using numerical data derived from the log system.

Although it is an added burden, the RRC requirement can be met without great difficulty. There are substantial advantages to implementing a log system that become apparent once one has the capacity to generate reports easily. The use of an automated system has been well worth the effort needed to overcome the inevitable start-up problems.
References

Factors That Affect Selection of a Psychiatry Residency Program:
Faculty, Resident, and Student Perspectives

Paul Rodenhauser, M.D.
Merijeanne Moore, D.O.
Sidney H. Weissman, M.D.

The influence of the application-interview process on recruitment into psychiatry has recently attracted attention. Surveys of student perspectives indicate that certain program characteristics are of vital importance in selecting a residency and that students evaluate residency programs as much as residency programs evaluate them. This paper describes a survey of faculty members', residents', and students' perspectives on attributes important to program recruitment. The three groups of respondents agreed on two-thirds and disagreed on one-third of the items on the survey, which was distributed throughout psychiatry residency training programs in Ohio. Analyses of disagreements imply that specific changes in faculty behaviors and program procedures might benefit the recruitment process for students and for programs.

Concerns about diminishing interest in psychiatry residency programs among U.S. medical students in the late 1970s and early 1980s (1) generated a series of studies on medical students' attitudes toward psychiatry as a career (2–4). Other studies focused on the medical school curriculum and its influences on medical students' decision to pursue psychiatry (5–8). A national conference on the recruitment of U.S. medical school graduates into psychiatry (9) was held in 1980.

In the 1980s, psychiatric careers became increasingly attractive, as evidenced by the increasing numbers of U.S. medical graduates selecting psychiatric residencies. Educators began to explore medical students' perceptions of the residency training experience (10) and their perceptions of the residency selection experience (10–13). These studies have documented that certain aspects of the application-interview process are of vital importance to students (11–13). No reports, however, have examined the possibility that the various groups who participate in the process, namely students, residents, and faculty, might have different views about it.

A study was undertaken to test the hypothesis that the three groups (students, residents, and faculty) have significantly different perspectives on the entry process into psychiatry. The study compared the
groups' views of the relative importance of training program characteristics in the selection of a residency program.

METHODS

Based on a review of the relevant literature and the experience of the authors, a 37-item questionnaire (available from the senior author) was designed to assess psychiatric faculty, resident, and medical student perceptions of the importance of various psychiatry residency program characteristics in selecting a residency program. Items covered personal and professional considerations, as well as social, geographic, institutional, programmatic, and marketing factors. Indicators of program quality were also included. Responses were made on a 5-point Likert-type scale ranging from 5, indicating very important, to 1, indicating unimportant. Zero was used to indicate that the item was not applicable.

There are nine residency programs in Ohio, five based in public universities, two in a private university, and one each in a proprietary hospital and a private foundation. Each has clinical rotation assignments in multiple settings. Because of their diversity, Ohio's programs were considered representative of the spectrum available throughout the United States. Residency training directors from Ohio's psychiatry residency training programs were contacted by telephone to enlist their collaboration on this project. Each was asked to identify the number of individuals eligible for the survey at his institution. Those eligible were all fully affiliated faculty of a department of psychiatry, all psychiatry residents, and all fourth-year medical students interested in psychiatry as a career.

In September, 1986, through the offices of the Ohio psychiatry residency training program directors, questionnaires and instructions were distributed to 214 faculty, 202 residents, and 70 students. Those students qualifying for the survey represented 7.9% of the 1987 graduating classes of Ohio's allopathic medical schools. Pre-posted envelopes addressed to the department of psychiatry at Wright State University School of Medicine were distributed with the questionnaires. All reports were anonymous; however, respondents were asked to identify their location and position.

For each questionnaire item, agreement between the three groups was determined by comparing their mean responses. The statistical tests used were one-way analysis of variance and Duncan's Multiple Range Test. In the analyses, zero (not applicable) responses were omitted. Only those responses between one and five were used; hence, the higher the average value for a given group on an item, the more important the group believed the item to be. All inferences were made at the .05 level of significance.

Participants (n=25) in a workshop on recruitment at the 1987 meeting of the American Association of Directors of Psychiatric Residency Training (AADPRT) were also asked to complete the survey. All of the participants were faculty, and 92% were residency directors. Student's t-test was used to analyze agreement between the Ohio faculty and the AADPRT workshop participants.

RESULTS

Response rates from Ohio's psychiatry residency training programs, collectively, were 45.3% for faculty (n=97), 51% for residents (n=103), and 35.7% for students (n=25). Student respondents were distributed among all Ohio allopathic medical schools. Faculty and resident respondents were distributed among all Ohio psychiatry residency programs with no identifiable over-representation.

There was agreement among the three groups on 25 of the 37 questionnaire items (p<.05) (Table 1). The groups' mean responses differed significantly on 12 questionnaire items (Table 2). Eight items were significant well below .05, but the results for
TABLE 1. Survey responses\(^1\) by students, residents, and faculty of Ohio's psychiatry residency programs for items on which the three groups agreed

<table>
<thead>
<tr>
<th>Item</th>
<th>Topic</th>
<th>Students (n=25)</th>
<th>Residents (n=103)</th>
<th>Faculty (n=97)</th>
</tr>
</thead>
<tbody>
<tr>
<td>36</td>
<td>Quality of faculty</td>
<td>4.50 0.72</td>
<td>4.61 0.67</td>
<td>4.72 0.55</td>
</tr>
<tr>
<td>6</td>
<td>Enthusiasm of faculty</td>
<td>4.58 0.83</td>
<td>4.53 0.74</td>
<td>4.59 0.61</td>
</tr>
<tr>
<td>1</td>
<td>Academic environment</td>
<td>4.42 0.83</td>
<td>4.39 0.69</td>
<td>4.43 0.86</td>
</tr>
<tr>
<td>21</td>
<td>Impact of interview visit</td>
<td>4.46 0.66</td>
<td>4.25 0.87</td>
<td>4.49 0.69</td>
</tr>
<tr>
<td>37</td>
<td>Quality of residents</td>
<td>4.38 0.71</td>
<td>4.28 0.91</td>
<td>4.47 0.69</td>
</tr>
<tr>
<td>22</td>
<td>Level of personal attention</td>
<td>4.58 0.58</td>
<td>4.22 0.74</td>
<td>4.28 0.66</td>
</tr>
<tr>
<td>35</td>
<td>Reputation of program</td>
<td>4.21 0.83</td>
<td>4.21 0.89</td>
<td>4.47 0.66</td>
</tr>
<tr>
<td>29</td>
<td>Orientation (e.g., analytic vs. biologic)</td>
<td>4.29 0.55</td>
<td>4.24 0.78</td>
<td>4.13 0.79</td>
</tr>
<tr>
<td>17</td>
<td>Affiliation of medical school/university</td>
<td>4.17 1.20</td>
<td>3.98 1.27</td>
<td>4.27 0.81</td>
</tr>
<tr>
<td>20</td>
<td>Accuracy of information</td>
<td>4.00 1.20</td>
<td>4.07 0.88</td>
<td>4.04 0.88</td>
</tr>
<tr>
<td>19</td>
<td>Quality of information</td>
<td>NA(^2)</td>
<td>3.98 0.84</td>
<td>3.95 0.90</td>
</tr>
<tr>
<td>18</td>
<td>Availability of the program</td>
<td>3.83 0.97</td>
<td>4.03 0.93</td>
<td>3.93 0.85</td>
</tr>
<tr>
<td>13</td>
<td>Spouse education or career</td>
<td>3.89 1.05</td>
<td>3.86 1.15</td>
<td>3.87 0.98</td>
</tr>
<tr>
<td>28</td>
<td>Rotations available</td>
<td>3.69 1.02</td>
<td>4.04 0.87</td>
<td>3.82 0.80</td>
</tr>
<tr>
<td>12</td>
<td>Spouse preference</td>
<td>3.79 1.03</td>
<td>3.90 1.12</td>
<td>3.69 0.86</td>
</tr>
<tr>
<td>3</td>
<td>Practice interest</td>
<td>4.00 1.35</td>
<td>3.61 0.98</td>
<td>3.59 0.86</td>
</tr>
<tr>
<td>25</td>
<td>Clinical experience with program</td>
<td>3.64 1.33</td>
<td>3.70 1.24</td>
<td>3.76 1.03</td>
</tr>
<tr>
<td>4</td>
<td>Practice subspecialty</td>
<td>3.74 1.18</td>
<td>3.48 1.04</td>
<td>3.55 0.97</td>
</tr>
<tr>
<td>31</td>
<td>Size of program</td>
<td>3.29 1.16</td>
<td>3.56 0.90</td>
<td>3.36 0.71</td>
</tr>
<tr>
<td>27</td>
<td>Salary and benefits</td>
<td>3.26 0.92</td>
<td>3.57 1.05</td>
<td>3.34 0.87</td>
</tr>
<tr>
<td>14</td>
<td>Physical condition of facilities</td>
<td>3.54 0.83</td>
<td>3.14 0.97</td>
<td>3.21 0.83</td>
</tr>
<tr>
<td>16</td>
<td>Size of institution</td>
<td>3.13 1.08</td>
<td>3.42 0.95</td>
<td>3.21 0.82</td>
</tr>
<tr>
<td>15</td>
<td>Type of institution (private vs. public)</td>
<td>3.21 1.10</td>
<td>2.98 1.24</td>
<td>3.05 0.97</td>
</tr>
<tr>
<td>8</td>
<td>Climate</td>
<td>2.88 1.23</td>
<td>2.87 1.17</td>
<td>2.92 0.99</td>
</tr>
</tbody>
</table>

\(^1\)Scores ranged from 1, unimportant, to 5, very important.  
\(^2\)Not applicable

Items 5, 23, 24, and 34 should be interpreted with caution, since multiple tests of statistical significance (37 tests) may have resulted in one or more of these items capitalizing on probability in being declared statistically significant.

Five questionnaire items were rated higher by students than by one or both of the other two groups. In order of most to least importance to students, these were enthusiasm of residents (compared with responses of residents), practice location (compared with residents and faculty), community receptivity (compared with faculty), fellowship availability (compared with residents and faculty), and structure of PGY-I (compared with faculty). Both students and residents thought life-style was more important than did the faculty. Students and faculty thought that a recommendation of the program by medical school faculty was more important than did residents.

In order of most to least importance, the questionnaire items rated higher by residents compared with one or both of the other two groups were call schedule (compared with responses of students), proximity to family (compared with students and faculty), and proximity to friends (compared with students).

Faculty assigned more importance to recommendation of program by a friend than did students or residents and assigned more importance to the existence of a personal acquaintance in the program than did students. With the exception of two items,
TABLE 2. Survey responses\(^1\) by students, residents, and faculty of Ohio’s psychiatry residency programs for items on which at least two of the three groups disagreed

<table>
<thead>
<tr>
<th>Item</th>
<th>Topic</th>
<th>Students (n=25)</th>
<th>Residents (n=97)</th>
<th>Faculty (n=103)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Enthusiasm of residents</td>
<td>4.58 0.72</td>
<td>4.18 0.98</td>
<td>4.42 0.71</td>
<td>.041</td>
</tr>
<tr>
<td>26</td>
<td>Recommendation of program by medical school faculty</td>
<td>3.96 1.08</td>
<td>3.25 0.97</td>
<td>3.95 0.77</td>
<td>.0001</td>
</tr>
<tr>
<td>7</td>
<td>Community (education and social)</td>
<td>4.04 0.93</td>
<td>3.72 1.04</td>
<td>3.41 0.92</td>
<td>.008</td>
</tr>
<tr>
<td>2</td>
<td>Practice location</td>
<td>4.17 1.13</td>
<td>3.30 1.08</td>
<td>3.36 0.86</td>
<td>.001</td>
</tr>
<tr>
<td>9</td>
<td>Life-style</td>
<td>3.83 0.92</td>
<td>3.68 1.00</td>
<td>3.20 0.88</td>
<td>.0004</td>
</tr>
<tr>
<td>30</td>
<td>Call schedule</td>
<td>3.22 1.17</td>
<td>3.87 0.99</td>
<td>3.50 0.97</td>
<td>.004</td>
</tr>
<tr>
<td>33</td>
<td>Structure of PGY-1</td>
<td>3.70 0.97</td>
<td>3.53 1.08</td>
<td>3.18 0.90</td>
<td>.019</td>
</tr>
<tr>
<td>24</td>
<td>Recommendation of program by friend</td>
<td>3.30 1.22</td>
<td>3.22 1.18</td>
<td>3.64 0.99</td>
<td>.033</td>
</tr>
<tr>
<td>34</td>
<td>Fellowship availability</td>
<td>3.74 1.14</td>
<td>3.08 1.22</td>
<td>3.13 0.99</td>
<td>.037</td>
</tr>
<tr>
<td>23</td>
<td>Personal acquaintance in programs</td>
<td>2.71 1.45</td>
<td>3.25 1.40</td>
<td>3.52 1.14</td>
<td>.030</td>
</tr>
<tr>
<td>10</td>
<td>Proximity to family</td>
<td>2.83 1.34</td>
<td>3.45 1.31</td>
<td>2.77 1.10</td>
<td>.0004</td>
</tr>
<tr>
<td>11</td>
<td>Proximity to friends</td>
<td>2.42 1.35</td>
<td>3.04 1.28</td>
<td>2.68 0.89</td>
<td>.019</td>
</tr>
</tbody>
</table>

\(^1\)Scores ranged from 1, unimportant, to 5, very important.

medical school–university affiliation and accuracy of information, the three groups agreed on the ten most important characteristics.

The response rate for the AADPRT workshop participants was 96%. The workshop participants and the Ohio faculty agreed on all but three items. Ohio faculty rated practice subspecialty and call schedule as more important than did the workshop faculty, and workshop faculty rated enthusiasm of residents higher (they ranked it first) than did the Ohio faculty, who ranked it seventh. The groups agreed on the nine most important characteristics, however.

**DISCUSSION**

Studies of student perspectives on psychiatry residency programs have demonstrated that the residency selection process involves a mutual evaluation by programs and students and that certain program features are of prime importance to students (11–13). Of the program characteristics considered most important to each of the groups in this survey, nine appeared in the top ten list for each group. Student responses were consistent with results in previous reports (11,12). In the current study students ranked three characteristics—enthusiasm of residents, enthusiasm of faculty and staff, and level of personal attention—as having the greatest, but equal, importance. Residents and faculty agreed on their first and second choices, quality of faculty and enthusiasm of faculty and staff. The sense of agreement among the three groups on two-thirds of the questionnaire items and the almost unanimous agreement on the top ten priorities are encouraging outcomes.

Also of interest among the agreed-upon items were features of lesser importance, such as physical condition, type and size of institution, size of program, size of classes, salary and benefits, and climate, which ranked lowest. These findings, which confirm previously reported impressions that educational goals and alliances are viewed as pre-emptive (12,14), are challenged by a recent report by Sledge and colleagues in which geography received prominence (13).

The students’ disagreement with residents or faculty on the importance of certain
attributes may be cause for concern, since faculty and residents are responsible for creating and projecting program images during student interviews. Ohio faculty and residents were not as impressed as were students with the importance of enthusiasm of residents. In this case the medical students are in agreement with the results of the AADPRT workshop. We suspect that training directors who deal directly with applicants are aware of the impact of residency morale on the recruitment process but that other faculty focus more narrowly on their own interests and do not appreciate this issue as clearly. In the Ohio faculty sample, only 10% at best could have been training directors. The faculty or the residents, and possibly both, were also less concerned than were the students about practice location, community receptivity, fellowship availability or PGY-I structure. Weissman and Bashook have noted the importance of program structure or format in the selection process (10). Call schedule and proximity to friends and family were not as important to students as they were perceived to be by residents. Perhaps this issue is skewed by the residents' focus on the "burden" of call and the students' struggle to assess the program's overall quality. Residents' sensitivity to stress and the benefit of the programs' support systems are palpable themes throughout their responses. The level of residents' satisfaction in a program is important to the students' evaluation of programs (12) and could be the most critical factor in their selection of a program.

Confirming previous findings (12), students rated salary and benefits and size of program relatively low among their priorities. In 1981, students ranked the geographic location of the residency as the most important variable in selecting a residency program (13). In this study of the class of 1987, the program's "climate," which we see as another way of describing geographic characteristics or life-style concerns, was considered unimportant in program selection by senior medical students. There are a number of possible explanations. First, the 1981 sample was a national sample, whereas this sample of the 1987 class is restricted to Ohio. Potentially, the Ohio group has a subset of special interests. Second, in the class of 1981, 489 students matched into psychiatry through the National Resident Matching Program, compared with 675 students in 1987, an increase of 39% (15). Has an increased competitiveness for psychiatric residency positions altered how students assess residencies? Third, have students become concerned that long-term practice opportunities may be restricted in certain "desired" geographic areas and are now looking in greater numbers elsewhere? Finally, the 1981 study was a survey questionnaire mailed to senior medical students by researchers unknown to them. In this study of the class of 1987, the medical students' teachers were involved. Did the involvement of the students' own teachers lead them to emphasize certain issues of program quality and underemphasize life-style concerns? Further study of subsequent medical school classes will be necessary to answer these questions.

The response rates for students and faculty suggest caution in interpreting the results of this survey. Confidence in generalizability of data for students is fortified by their general agreement (with the exception of geographic location) with students who responded to prior surveys (11-13). Confidence in the response rate for faculty is fortified by their general agreement with faculty members assessed during the 1987 AADPRT meeting workshop on recruitment.

The unique aspect of this study—opportunity to evaluate contrasting responses among students, residents, and faculty—suggests that the individuals influential in program selection have different priorities in recruitment, namely faculty and residents, are inclined in part to assign values based on inward rather than outward assessments. This finding has its counterpart in the clini-
eral literature (16). Demonstrated differences in priorities between students and residents suggest that the views of both groups need to be addressed, since the satisfaction of residents is very important in the recruitment of future generations of psychiatrists.

The outcome of this study can be translated into recommendations for specific actions by psychiatric residency directors and psychiatry department faculty:

- Realize that faculty’s, residents’, and students’ views about residency programs are not necessarily coincident.
- Be aware that the satisfaction of current residents in a program will significantly affect recruitment.
- Keep abreast of current views of residents and students about career plans and communicate how these views are addressed in residency education.
- Make appropriate adjustments in programs and procedures in accordance with new information.

The authors wish to thank Harry J. Khamis, Ph.D., and Amanda M. Romero, B.S., for their technical assistance and Ronald J. Markert, Ph.D., for his critical suggestions.

References

Relationship Between Medical Students' Participation in a Behavioral Science Discussion Group and Performance on a Cognitive Task

Howard B. Roback, Ph.D.
Pauline L. Rabin, M.D.

The authors investigated the association between first-year medical students' verbal participation in a behavioral science discussion group, course satisfaction, and performance on a cognitive task (a written essay). Results showed that students who were sociometrically selected as having enhanced the group discussion performed better on the course essay and evaluated the course more favorably than their reticent counterparts. Some shortcomings of this exploratory research are discussed, as are future research recommendations.

As part of an exploratory project on factors associated with learning in discussion groups, the authors investigated the relationship between first-year medical students' level of participation in a behavioral science course and their performance on a cognitive task—a written essay due at the end of the course. We hypothesized that active participants would perform better on the essay than would more passive members.

METHODS

Subjects

Subjects were 97 first-year medical students randomly divided into seven groups of about 14. The groups remained intact and rotated over the seven-week block through each discussion seminar.

Instrumentation and Classification

Students completed a post-course, 23-item questionnaire which included peer ap-
praisals of persons contributing most and least to the quality of the seminar discussions. Students also evaluated their own participation level. For purposes of this study, High Participants (HP) were those students (n=11) named by at least four other participants as having made a valuable contribution to the discussion throughout the course. Low participants (LP) were those students (n=12) identified by their peers as having contributed least to the discussion. Socio-metric ratings were supported by comparisons between HPs and LPs on self-rated participation levels (t=4.66, df=21, p<.001). Specifically, persons externally rated as HPs also rated themselves as more active participants than did LPs.

**Course Essay**

All students were asked to review a clinically relevant topic. Each essay was graded by two psychiatry faculty as a High Pass (a score of 92 to 100), Pass (a score of 85 to 91), or Fail (a score of 70 to 84). Although the papers were assessed on hard-to-define factors such as “critical thinking,” faculty were in agreement on approximately 90% of the essay grades.

**RESULTS**

As hypothesized, HPs had significantly higher mean±SD grades than the LPs (90±3.3 and 85±2.58, respectively; t=4.02, df=21, p=.001). In addition, HPs reported a greater degree of interest in the course (t=2.80, df=21, p=.001), gained more information (t=2.27, df=21, p=.03), and placed greater value on the assigned readings (t=2.98, df=21, p=.01) than the LPs. The two groups did not differ in their retrospective expectations about the amount of useful information the seminar would provide, their opinion about the value of a discussion format, the value of student interactions, the value of student-faculty interaction, or ratings of the individual seminar topics.

**DISCUSSION**

It appears that students who were more confident talking in a group and taking risks (revealing personal information as well as their ideas to peers and faculty) may have experienced concept strengthening and modification. That is, through defending their ideas and being confronted with other persons' ideas on the same subject, active participants likely enhanced their understanding and critical thinking. Educational researchers believe that group feedback helps members reshape their ideas and learn new information that they might not discover on their own (1-3). Similarly, conceptual conflicts among group members have the potential for encouraging participants to approach their information base from new perspectives (4). Webb (1) also emphasized the role of socio-emotional variables (motivation, anxiety, satisfaction) in mediating the effects of participation on achievement. In our study, none of these sociomotivational variables statistically differentiated HPs and LPs. However, Taylor (5) found a relationship between social anxiety and preference for a lecture over a discussion instruction mode.

There are several other alternatives that should be considered when interpreting the data. HP students may have been characteristically higher achieving students. However, the two groups of students did not differ in their mean scores on a multiple-choice examination (82.1, HP; 81.0, LP) administered after the lecture format of the first segment of the course. A more viable alternative is that some other “entry characteristic” (e.g., precourse level of critical thinking and ability to express these thoughts in writing, previous experience with discussion groups) had a more significant relationship to outcome than did the quality of verbal participation (6).

The relationship between these and other entry level characteristics and course outcome should be seriously considered and
We hope that this exploratory work will encourage other medical educators to systematically study their discussion groups' process and outcome. Future research should investigate what types of interaction patterns enhance specific types of learning, predictors of student participation, techniques for increasing the participation rates of low interacters, and the role of participation and group feedback in mediating learning. Clearly, we are dealing with a complex subject that invites collaboration between the group leader and group researcher.

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New Ideas

A Model for Research Training in a Child Psychiatry Residency:

Process and Outcome

Herman S. Belmont, M.D.
Marshall Swift, Ph.D.
Joel L. Schwartz, M.D.

There is a clear need for basic and clinical researchers and educated research consumers in child psychiatry. Few who enter the field consider research a part of their role. While some specialized training has occurred, there is a dearth of models for integrating the research process into a traditional child psychiatry fellowship. This paper describes a well-developed model, tested for three years, for feasibly involving research into an ongoing clinical fellowship. The program has already led to conference presentations, research papers, and continued study.

While there has been growing emphasis on increasing research training for child psychiatrists, very little information is available to help child psychiatry training programs implement research training activities. The American Academy of Child and Adolescent Psychiatry publication "Child Psychiatry: A Plan for the Coming Decades," published in 1983, addressed some of the contributory problems.

The Clinical Research Branch of NIMH could identify only about 30 child psychiatrists in the United States in 1980 who might legitimately be called "career investigators," and most of the productive scholarship emanated from only five programs. The report noted that "Historically, research was not a priority of most child guidance clinics," where many child psychiatrists were trained. There are too few training sites with enough investigators with adequate research programs to provide training and role models in research. Without training or role models it remains extremely difficult to mount research training in residency programs.

One highly successful model, described by Tuma et al. (3), involves bringing together from a variety of sites a specialized faculty and a selected group of highly motivated students for a three-day "intensive task-oriented" contact, during which both formal and informal research presentations and discussion are held. Tuma and colleagues concluded that the future of child psychiatry depends "heavily on its ability to recruit, train, and maintain the productivity of a critical mass of basic and clinical researchers."

To a large extent the selection process for

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child psychiatrists runs counter to the achievement of this goal. Typically, a candidate is accepted in a child psychiatry residency based primarily, if not solely, on interest and capability in clinical psychiatry. Rarely is the presence or absence of research interest considered, and rarely does the fellow weigh research opportunities in the selection of a residency.

This paper describes a model for engaging and developing the skills of child psychiatry fellows by integrating the research process into a clinical residency. Our goal was to increase involvement in research by bringing an intensive, time-limited research training experience to all fellows and to achieve the goal in the most efficient and inexpensive manner possible.

THE MODEL

Recognizing that research in child mental health often requires multidisciplinary collaboration and that we did not have a psychiatric child researcher on our faculty, we arranged with our clinical psychology research colleagues to provide research training. In exchange for our providing regular and consistent assignment of fellows to research projects, psychology faculty would provide training designed to enable each fellow to actually do clinical research. We also agreed that the fellows and the directors of child psychiatry and child residency training would participate in biweekly research meetings. This would provide senior psychiatrist models as research students.

Encouraged that we could offer both research and clinical training, we proceeded to create a block rotation system. During the first year, each fellow would participate in three four-month half-time rotations devoted, respectively, to consultation-liaison, child psychiatry acute inpatient services, and research. At any given time, one or two fellows would be on research rotation. The others, assigned to the same hospital during the same hours, would be able and required throughout the year to attend biweekly conferences to discuss the research of residents on the research rotation. In this manner, each fellow on rotation would take leadership by providing feedback about the research process.

From discussions with psychiatric fellows we were cognizant that many had limited motivation for research. Taking this into account, the program was designed to enable them to grow into the research role by providing a clinical-researcher model, by encouraging the active participation in the research process of the directors of child psychiatry and the residency program, and by teaching research concepts and skills in the context of a hands-on project. From this foundation, we could broaden their knowledge of the interplay between research and clinical issues.

The specific project chosen was the study of the relation between coping mechanisms and mental health in a population of socioeconomically deprived seventh-graders, all of whom were between 12 and 14 years old. We consciously established a project about which clinical psychiatry fellows and researchers could share values. Because of its subject matter, it was an appropriate way to introduce a series of child psychiatry fellows to research and engage them in the process by capitalizing on their interests and abilities. The project was also chosen because it could be divided into segments and continued as an ongoing study over a number of years. Through such a process, we could give continuity to the project and assign both discrete and overlapping research activities to each rotation.

THE PROJECT

All of the fellows, from the beginning, participated in a review of the literature, collected a bibliography, presented and discussed a pool of coping behaviors, and developed a comprehensive, yet manageable set of categories of coping skills. This
entire exercise stimulated questions about the role of thinking, feeling, and action responses to stress situations. These issues prompted extensive discussion among the fellows and faculty, which introduced them to some of the problems in planning and carrying out a research project. Furthermore, this process provided an entrée to consideration of the nature of stress and coping through the eyes of young adolescents.

Involvement of our fellows in such a research process added to its credibility in the local professional community by relating the research data collected to the DSM-III classification system. Our project was consistent with our decision to avoid an overwhelming theoretical and statistical emphasis. Instead, it offered clinically oriented work utilizing interviewing and diagnostic skills that were familiar territory to build on. This strategy allowed the fellows to capitalize on their special aptitudes with children. By using a project requiring and building on skills mastered previously, the fellows could concentrate their energies on the research project and concepts with comfort.

Each year the project was introduced to the new group of residents with the aid of selected articles. Major stimulation was provided by the work of Strayhorn (4), a child psychiatrist role model who argued for the addition of a coping-skills axis within the DSM-III multiaxial diagnostic process; by Pearlman and Scholer (5), National Institute of Mental Health researchers who examined coping behaviors that protect people from being psychologically harmed by problematic social experiences; and by Lazarus (6), who developed a model for understanding and analyzing coping. The residents used these authors to help define terms and develop a conceptual base for the project. Furthermore, they recognized that the study of coping was important to clinicians because coping skills, according to Strayhorn (4), "may play a role in protecting against psychiatric symptoms (or, conversely, deficiencies may contribute to symptoms)...and they may be promoted (or taught)" (p. 678).

To blend clinical skills and research learning, the first task for the fellows was to examine diagnostic measures. A review of rating scales and observation systems in the literature revealed these to be inadequate as diagnostic measures of coping. Therefore we undertook the development of a psychiatric coping interview, a project that allowed the fellows to use their interviewing skills and knowledge of child development to gain firsthand understanding of how adolescents cope with distressing events. The creation and use of this instrument, called the Psychiatric Coping Interview, taught the fellows how to develop an interview and to use a reliable, standardized interview process.

Interview data were collected from 90 youngsters. A scoring system was then created, and a scoring manual was developed. At this point, inter-scorer reliability was meaningfully introduced and tested.

Once interview data were collected, other child and teacher measures and a variety of statistical approaches were introduced to the students. The results of the other measures were then related to the fellows' Psychiatric Coping Interview data and used to validate the interview. Thus the issues of validity and reliability were taught. (Results of the study and the Psychiatric Coping Interview Manual are available from the authors.)

Once the basic interview data were analyzed, the fellows participated in the creation of a therapeutic intervention program and contributed to the development of a research grant that was subsequently funded. The grant allowed the fellows to observe how theory and preliminary data form the basis for a research design.

**EVALUATION**

A total of 14 child psychiatry fellows participated in a one-year rotation, a total of four or five each year. It is too early to assess the
long-term impact of the program on their careers. However, we can report on the short-term results, which are promising. These include the decision by several fellows to share their experiences at professional meetings and to go on to conduct other research. At the end of Year 1, one fellow presented the project at the annual meeting of Child Psychiatry Directors (7). After Year 2, another fellow presented the Psychiatric Coping Interview and its scoring manual at the annual meeting of the American Orthopsychiatric Association (8).

Another fellow took a further research elective to broaden his research skills in pharmacology. During Year 3, the fellows took part in creating a research grant, which was funded by the W. T. Grant Foundation beginning in 1988 and extending through 1991.

Although the three-year rotation training experience has ended, the fellows' research provides the basis for a more complete study of the therapeutic intervention they devised for young adolescents. The measures developed and utilized are being applied by subsequent researchers. Fellows still in training at Hahnemann serve as consultants to the research team.

CONCLUSIONS

What did the fellows learn? In the course of a four-month rotation accompanied by a year of biweekly one-hour research discussion meetings, each fellow has had the opportunity to participate in a variety of research facets, to learn about and use statistical methods, to engage the statistician or computer expert, and to design and implement an action research project in a practical manner. Recent interviews with fellows who participated reveal that all feel they have been able to apply what they learned in the research program to their clinical work. They talk about their efforts to more carefully structure their interviews to get more reliable data and indicate continued interest in presenting findings at future psychiatric meetings. We have strong indications that the research experience was important to their development and thinking as child psychiatrists and for some opened their minds to continue to do research in the future.

As far as the American Academy of Child and Adolescent Psychiatry's postgraduate research training is concerned, such an undertaking is beyond the immediate reach of most child psychiatry fellowships. Our program is a readily achieved first step toward child psychiatry fellows' becoming informed research consumers by providing a foundation in understanding, assessing, and applying research. Further, it enhances the potential for some aspect of career research involvement. Significantly, each fellow had direct participation in a piece of research and presented it to peers and faculty, and some experienced the added positive reinforcement associated with presenting the research at professional meetings.

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Teaching Transcultural Psychiatry

Joel Yager, M.D.
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Marvin Karno, M.D.

The ethnic diversity of patients in most training centers requires that attention be given to cultural issues affecting the psychiatric presentation and treatment of patients from different backgrounds. This paper describes programs in transcultural psychiatry for medical students, residents, and fellows that have been implemented and refined at UCLA over the past six years. Suggestions are offered for the development of such programs elsewhere.

The mental health needs of ethnic minority populations far exceed the availability of trained mental health professionals, especially psychiatrists, to care for them. Yet, psychiatry is not a popular specialty choice among minority medical students. The percentage of minority medical students entering psychiatry, about 1.5%, is far less than for other specialties, 6.5%, according to data from 1986 (1). Remedies to upgrade the psychiatric care of ethnic populations include attracting more minority medical students into psychiatry and training nonminority psychiatrists to be interested in and sensitive to the psychiatric needs of ethnic populations. For the last six years, the department of psychiatry and biobehavioral sciences at UCLA has attempted to address these issues through an organized program in transcultural psychiatry for medical students, residents, and advanced fellows. This paper describes the programs developed at UCLA and evaluates their successes and failures.

THE PROGRAMS' HISTORY

For 15 years a short course in ethnic issues in psychiatry was offered in the residency curriculum. The didactic series, such as it was, consisted of four to six seminars presented as part of the core curriculum, sometimes in PGY-2 and sometimes in PGY-4. The seminars covered the mental health characteristics and special needs of the major ethnic populations of Los Angeles, i.e., Latino, black, Japanese, and Chinese Americans.

The better organized and more elaborate programs described in this article were introduced in 1982, when UCLA became one of six medical schools collaborating with the American Psychiatric Association to develop summer programs for minority medical students.

In the course of setting up the didactic and clinical programs for these students, several UCLA residents and chief residents with minority backgrounds organized programs that interested other residents as well.
The summer program stimulated the UCLA psychiatry department to establish a year-round transcultural psychiatry clerkship for medical students. The elective course lasts four to six weeks. This, in turn, led the department to develop an ongoing weekly transcultural psychiatry seminar, which has been run for the past five years. In 1985, the department received an NIMH training grant to support the training of medical students, residents, and fellows in the care of minority populations. The grant enabled the department to expand the programs. The grant was refunded for three years in 1988.

THE PROGRAMS' AIMS

The aims of the programs are several:

1. To fill a gap in the training of medical students and residents in cultural aspects of care.
2. To inform students, housestaff, and faculty about cultural issues in psychiatric care through an organized training program and seminar.
3. To legitimize the interests and aspirations of minority students and housestaff to work with and receive supervision in the care of their own minority groups.
4. To encourage minority trainees to work with ethnic populations rather than succumb to strong pressures to "mainstream."
5. To increase the recruitment of minority medical students to UCLA with the hope of attracting some of them to psychiatric residency. We believe that state-supported programs in ethnically mixed areas are obliged to train as many well qualified minority housestaff as possible.

GOALS AND OBJECTIVES OF TRAINING

We have delineated specific objectives for the attitudes, knowledge, and skills of medical students, housestaff, and fellows. The expectations for knowledge and skills are, of course, greater for the advanced trainees:

Atitudes

Trainees should realize that in order to deliver sensitive care to patients from diverse ethnic backgrounds, they must respect and understand the differences between their own values, family relationships, belief systems, and social class and those of their patients.

Knowledge

By the end of training residents should be able to describe and discuss the following:

1. For social or cultural groups in general:
   - Principles of social organization, particularly regarding health-related issues, such as belief systems, attitudes toward illness and treatment, and influence of social class and economic status as barriers to care
   - Psychological aspects of immigration, such as immersion, culture clash, alienation, language-related problems, and patterns of acculturation
   - Sociology of ethnic minority communities.

2. For each major ethnic group in the vicinity:
   - Major values, traditions, and cultural patterns
   - Reactions to psychiatric disorders, such as belief systems about nature and causes, patterns of use of traditional services, and culture-specific indigenous care
   - The relation of cultural factors to manifestations of psychopathology
   - Family responses to mental illness
   - Beliefs, behaviors about psychiatric treatments and psychotherapies
- Family patterns, including traditional and changing practices regarding sex roles, marriage, child rearing, education, and assignment of family responsibilities
- Participation in major social institutions, including churches and gangs
- Demography and epidemiology, including information about geographic location, age, social class distribution, and prevalence of psychiatric disorders.

Skills

By the end of training, trainees should be able to perform the following tasks, appropriate to their overall levels of skill:

1. Conduct an ethnically sensitive psychiatric assessment of patients from any background.
2. Distinguish culturally determined behaviors from psychopathology.
3. Be able to use translators in psychiatric assessment.
4. Provide psychiatric treatment to patients from ethnic groups different from the trainee's own.
5. As a member of an interdisciplinary treatment team, be able to formulate and effect treatment plans using community resources that are ethnically sensitive to the patient's needs.

With these general goals and objectives in mind, we next describe how they are implemented for each level of training.

PROGRAM DESCRIPTIONS

Medical-Student Curriculum

Training in transcultural psychiatry has occurred at two levels. In the first, preclinical students take six-to-eight-week summer programs following their first or second year of medical school. In the second, advanced medical students take four-to-six-week electives after completing a basic clerkship. To date, approximately 30 students have taken the elective clerkship, the majority from other medical schools.

Because of the diverse backgrounds and interests of the students, the large number of available faculty interested in transcultural psychiatry, and a wide choice of clinical settings that preferentially serve different ethnic groups, we designed and have been very satisfied with a program that combines structured didactic experiences with a "clinical cafeteria."

The participants have included black, Mexican-American, Cuban, Puerto Rican, Japanese-American, Chinese-American, Indo-American, Vietnamese-American, British, German-American, Irish-American, and Jewish-American students as well as midwestern white Anglo-Saxon Protestant students of mixed national origin.

Students have trained in the UCLA Neuropsychiatric Institute, which has a Spanish-speaking clinic; the West Los Angeles VA Medical Center, which cares for a large black population; the Martin Luther King, Jr., Medical Center, located in a predominantly black neighborhood; the Asian-Pacific Mental Health Center; the South-East Asian Refugee Center; and several Los Angeles County mental health programs including those in East Los Angeles, which serve predominantly Latino populations.

The diverse faculty have black, Mexican, Japanese, Chinese, Native American, East Indian, Iranian, and Jewish origins.

Clinical Experiences. On the first day of clerkship, students are oriented to the program and are scheduled for interviews with faculty members who specialize in areas in which the student is particularly interested. Students are obliged to submit a full clinical schedule within a few days, accounting for clinical assignments and didactic programs for each half-day block. Accordingly, our students have rotated through each of the
sites mentioned above, each one ordinarily combining experiences in the walk-in clinics and other clinics at the Neuropsychiatric Institute and VA (the local hospitals) with one or two other sites. Clinical supervision is provided on site by faculty and staff.

**Didactic Program.** Students participate in a weekly tutorial in which they are expected to make presentations based on assigned basic readings. Chapters in books edited by Harwood (2), McGoldrick et al. (3), and Kleinman and Good (4) have been particularly valuable. In addition to attending the tutorial, students participate in the weekly transcultural seminar series described in more detail below and, depending on the time of year and their interests, may also participate in three other regularly scheduled seminar series at the Neuropsychiatric Institute. The seminars cover the assessment and treatment of the Afro-American family, Hispanic mental health issues, and transcultural research.

**Required Scholarly Paper.** As an additional requirement designed to foster the academic aspects of the clerkship, each student is obliged to write a paper of at least 10 typed pages on any aspect of transcultural psychiatry. Students are informed at the outset of the clerkship that the paper counts for half their grade, and, therefore, they usually devote considerable effort to it. Representative topics have included cross-cultural aspects of child abuse and child sexual abuse, psychological effects of migration, the effect of culture on psychosomatic illnesses, transcultural perspectives on posttraumatic stress disorder in Vietnam veterans, and issues in the psychiatric treatment of many different groups.

**Residency Curriculum**

Throughout the residency, housestaff are expected to evaluate and treat patients with ethnic backgrounds different from their own. Most residents focus on case-oriented learning. The program attempts to convey that every patient is a micro-culture, and that ethnically relevant supervision and case consultation should be sought to help residents understand their patients and to examine how their own ethnocentric biases and distortions affect their clinical perceptions and the quality of care they deliver. In this way, we encourage residents to seek out culturally knowledgeable consultants on a case-by-case basis, just as they would use subspecialty consultation for any other aspect of care.

In addition to attending the brief transcultural psychiatry seminar series in the core curriculum, residents can participate in some or all of the ongoing transcultural psychiatry seminars and the other seminars about ethnic groups mentioned above. Each year anywhere between three and six residents at a time attend the transcultural seminars. Latino residents and other residents fluent in Spanish generally work in the Spanish-speaking clinic at the Neuropsychiatric Institute.

In the past year, we have included a new monthly case conference at which general psychiatry residents working in the outpatient department take turns presenting patients or families with whom they are working from a transcultural perspective. This exercise has been woven into the weekly transcultural psychiatry seminar series. Since most of these residents have not attended the weekly seminar series regularly, and since all are treating patients whose ethnic and cultural backgrounds differ from their own, this requirement serves to force them to “think culturally” about their patients as they work up their presentations. It also introduces them to the faculty and staff who regularly attend the seminar and provides them with a clinically valuable, culturally sensitive and culturally oriented consultation on the cases they present.

At UCLA, PGY-4 residents are offered many options, including opportunities to
take part in any of the clinical and research transcultural psychiatry activities in our department or anywhere in Los Angeles County. Several PGY-4 residents have spent their elective time as essentially transcultural psychiatry fellows. All residents in our program are obliged to write a scholarly paper as a graduation requirement, and several have written on transcultural psychiatry topics.

Fellowship Curriculum

From our chief residents' initial involvement with the medical student programs has evolved a year-long PGY-5 transcultural psychiatry fellowship. Fellows spend at least half their time working with minority patients, providing direct service or consulting to other professionals who are working with minority patients. The remaining time is spent teaching medical students, helping to coordinate the seminar, and in research. Thus far, two fellows have completed the program. One spent the majority of his time with black adolescents at a Los Angeles County juvenile justice facility, and the other worked at a mental health center devoted to the care of South-East Asian refugees. The current fellow's clinical and research program focuses on Hispanic schizophrenic patients and their families.

WEEKLY SEMINAR SERIES

Over the years we have experimented with many different seminar formats. The average weekly attendance, including students, housestaff, fellows, faculty, and other staff is about 10 to 15, with a range of six to 20. In addition to the physicians, attendees have included psychologists, social workers, nurses, and others. Like other universities, UCLA often hosts foreign psychiatrists on mini-sabbaticals and fellowships, and they have always been invited to attend and, if possible, make presentations to the seminar. So far, the seminar has hosted visiting faculty from Japan, China, France, Germany, Canada, and Finland.

From time to time the seminar has included experiential reports, case conferences, films, and didactic presentations. Experiential presentations have included a detailed sharing of ethnic backgrounds of seminar participants. The presentation may start by participants' telling stories of their greatgrandparents or grandparents and tracing family history up to the present time. It may also involve exploration of one's multiple identities—including roles and national, ethnic, and religious identifications. This technique was adapted from a presentation on transcultural psychiatry by faculty at Baylor College of Medicine at a meeting of the American Association of Directors of Psychiatric Residency Training. The presentation may also involve detailed personal histories combined with an explication of ethnic context, for example, one sociology professor described his own family's complex history and migration from China.

In addition to considering the assessment and treatment of patients from many different backgrounds, case conferences have examined countertransference distortions that arise in the treatment of ethnically different groups. For example, we have discussed the treatment of minority patients by Caucasians, the treatment of Caucasians by minorities, the treatment of minority patients of one ethnic group by therapists of another, the treatment of Caucasians of one ethnic group by Caucasians of another, and so forth. Cross-ethnic therapies have proven particularly interesting: some have combined, for example, a black psychiatrist and a homosexual man who had recently emigrated from Romania and who was feeling both excluded from his own group and immigration shock; a black female psychiatrist and a white male cross-dresser; a Jewish male psychiatrist and an Egyptian Coptic Christian woman who had recently immigrated to the U.S. and who had marked culturally defined marital problems; and
various psychiatrists and undocumented Latino patients.

Films have occasionally been shown, such as the powerful *El Norte*, which depicts the plight of Guatamalan refugees as they travel through Mexico to Los Angeles, and *The Color Purple*, featuring a discussion led by a black female psychiatrist whose family background closely paralleled the one depicted in the film.

Didactic seminars have included presentations by members of the transcultural faculty, trainees, and many invited speakers from elsewhere in the university and community at large. Journal clubs, book reviews, and reviews of ethnically pertinent autobiographies and other literature have been presented. We have sometimes scheduled extended series of up to six sessions on a given subject, such as psychiatrically pertinent aspects of anthropology (presented by faculty in the anthropology department), Hispanic mental health issues, or Asian-American mental health issues. We often invite faculty from other university departments (particularly psychology and the social sciences) and other universities and colleges in the area. Seminar topics have included health belief systems, various health practices, epidemiology, body language and the expression of emotional distress in different ethnic groups, culture-bound psychiatric syndromes, immigration experiences, the confounding of social class and ethnic issues, using translators in psychiatry, interracial marriages and their offspring, pregnancy among black teenagers, emotional problems of minority medical students, the therapy of minority medical students, sex-role strains in relation to ethnic background, cultural aspects of drug abuse, aging, and many other topics.

We quickly realized that we have much to learn from non-traditional sources. Since good published data on health care utilization patterns of local ethnic groups are hard to find, we have benefited from hearing from nonacademic staff working in the local community mental health centers and county agencies devoted to the care of various ethnic groups and from clergy who serve ethnically diverse congregations (and who often serve as the principle counselor for psychiatric and marital problems). They, in turn, have appreciated the opportunities to describe their work and the problems of their congregants to the seminar and to get some consultation. Two of our more interesting presentations have been by folk healers, including a French-Cambodian woman who specializes in Chakra systems and Native American shamans.

Ethnic holidays have served as the basis of special presentations. St. Patrick’s Day has become a traditional date for a presentation on Irish culture. As an additional bonus for participants in the transcultural psychiatry series we have sponsored a transcultural psychiatry lunch every few months. The lunches, held at ethnic restaurants chosen by seminar participants from the same ethnic group, are accompanied by detailed explanations of the culture —and cuisine—of the group under discussion. Field trips to various ethnic neighborhoods, such as Japan-town and Chinatown, have also been included through the seminar and always include a transcultural lunch.

**EVALUATION OF THE TEACHING PROGRAMS**

We have been largely successful in achieving the aims set forth above, particularly those involving medical student activities and recruitment. Since the inception of the program, the number of students who sign up for the elective clerkship has increased. Their response to the clerkship, indicated by their written evaluations, has been uniformly excellent and enthusiastic. As a measure of the program’s appeal, in succeeding years other medical students from the same schools as their predecessors frequently apply for the clerkship, indicating the clerkship has benefited from some positive word-of-mouth ad-
vertising. The individualized schedules and the attention students receive from senior faculty and fellows have been cited as particularly attractive aspects of the program. Since the program started, about two-thirds of the medical students taking the clerkship have been of minority background and about 80% of the students taking the clerkship have gone on to psychiatric residencies; virtually all applied to the UCLA residency program, and a number have been accepted. Those who did not choose psychiatry have all entered primary care specialties.

Since the inception of the program, the psychiatry department's recruitment of minority medical students has increased. For example, four new black residents started in the general psychiatry residency program in 1988. It has been clear that the presence in the department of a transcultural psychiatry training program run by the general residency director (JY) has been extremely important in establishing that our programs are "minority-friendly," eager in deed as well as in word to make transcultural issues a central concern of training. This Zeitgeist, manifest through the ongoing seminar and faculty participation in transcultural activities, may more than any other single factor be responsible for helping the program to achieve its aims.

The influences of the program on the general residency is more difficult to assess. Since even before the transcultural program was instituted the psychiatry department's residency goals explicitly stated that all residents would work with some minority patients, the extent to which the additional seminar series has impacted the nonminority residents is unclear. Most residents have not attended the weekly transcultural seminar regularly, but the monthly transcultural case conference at which residents now present in rotation has thus far been successful; residents who have attended report that the experience of presenting and the ensuing discussions has been uniformly worthwhile.

Although we have the general impression that our residents are culturally sensitive, this impression cannot be substantiated concretely at the present time. Our routine assessments of residents, like those of other programs, include judgments by supervisors, the PRITE, and year-end live clinical examinations for all residents, none of which specifically assess cultural sensitivity or knowledge.

The fellowship program appears successful thus far, but our two graduates have not been in practice long enough for us to fully assess the impact that the fellowship may have had on their careers. Both have continued to work with minority patients in a variety of community settings. Of course, the NIMH stipends required minority-relevant payback, and it is very possible that even without the fellowship these particular residents would have elected to work in similar settings. However, the fellowship activities definitely facilitated linking the fellows with the agencies at which they were subsequently employed. The fellows have clearly been important in the medical students' experiences and are often cited as important role models.

Several books have been particularly helpful in teaching transcultural psychiatry (2-4, 8-13). The number of high quality journal articles is much smaller than a field of this importance deserves. Some that we have found useful are listed in the references (14-20). Some good training tapes are also available, including The Bilingual Medical Interview, produced by the Boston Area Health Education Center.

We can identify several weaknesses in the program. First, to some extent the program is "preaching to the converted," i.e., teaching primarily those who are most positively disposed to working with ethnic populations. While the converted obviously need knowledge and skill-sharpening education, and while the clerkship may have enticed a few medical students who were not initially drawn to the area, we still need better ways of involving all the residents, an
effort that has begun in the new required case conference.

Second, our experience in conducting the seminar over many years reveals that the transcultural psychiatry data base is still quite limited. Many discussions in the seminars take anecdotal and speculative turns, pointing out a great need for additional research in this area. The large amount of "soft" data discourages those trainees who seek hard-minded answers.

Third, as others have described (5–7), teaching transcultural psychiatry can potentially generate ethnic stereotypes of the type we generally wish to avoid. Breaking down set stereotypes while simultaneously evaluating how patients' behaviors are shaped by ethnic influences requires constant artful attention. In our view, most larger communities have resources available that would permit medical student and residency programs to organize transcultural psychiatry curricula. The programs described above may, with local modifications, provide guidelines and suggestions of use to others.

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References

Letter

Psychiatry Clubs

SIR: In our experience at Wright State University School of Medicine (WSUSOM), the involvement of students and enthusiastic faculty in the school's psychiatry club has possibly influenced recruitment of students into psychiatry. Since the club's inception in 1984, we have observed a steady increase in the number of students showing interest in the club, an increased interest among students in the WSUSOM psychiatry residency program, and, as reported elsewhere (1), an increased interest in psychiatry as a specialty choice.

In 1983–85, only 1.5% of WSUSOM graduates entered psychiatry. In 1986–88, an average of 8.2% graduates entered psychiatry. The percentage of the 1988 graduating class who entered psychiatry was 9.9%, compared with a national average of 5.2%. In addition, several recent graduates have transferred to psychiatry programs from residencies in other specialties. All this has occurred despite intense emphasis by the medical school on primary care specialization.

Psychiatry clubs can offer students an auxiliary education applicable not only to psychiatry, but also to aspects of patient care in all specialties. Especially beneficial is the assembly of a group of students who by virtue of their numbers and common interests give themselves "permission" to consider psychiatry as a career choice, despite pressures by other medical educators to avoid psychiatry as a specialty consideration (2). The club provides an opportunity for classes to share ideas and thus help each other to clarify their thoughts about specialty interests. Clubs also allow students to know the "person behind the professor," an opportunity of inestimable value in the education of today's students.

Department of psychiatry faculty members are important resources for contributions to the content of club activities; however, a commitment on the part of one faculty member to serve as the club's faculty adviser is critical for energizing and focusing the process. An effective communication system between faculty, club officers, and student members is also essential. The department's contribution of funds for club activities is an excellent indication of its commitment to the club. The department can facilitate student involvement in other ways as well, for example, by offering students research positions and annual awards for excellence in clerkship courses and by including students in extracurricular pursuits such as literature study group meetings or journal clubs.

Approximately 15% of WSUSOM students are active members of the psychiatry club. Elected officers are responsible for all club activities. Secretarial support is provided by the department.

In recent efforts to determine the program attributes that students view as important when choosing a psychiatry residency, faculty enthusiasm was identified as a critical factor in residency program attractiveness (3–5). The recent increase in popularity of psychiatry residency nationally suggests that psychiatry faculty may have become more active in the recruitment process. Because medical students' experiences critically influence their choice of a career specialty (2), we recommend that faculty become more visibly involved with medical students, and an established specialty club provides this opportunity.

From our experience, we can recommend the following elements for the successful development and maintenance of a specialty club: visible departmental sponsorship and support; a committed, energetic faculty advisor; fiscal allowances for activities; utilization of university resources such as grants and facilities; promotion of autonomy by club officers; and the establishment of a culture complete with annual patterns and traditions.

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