MEASURING CLINICAL COMPETENCE: THREE PERSPECTIVES

Volume 7, Number 2
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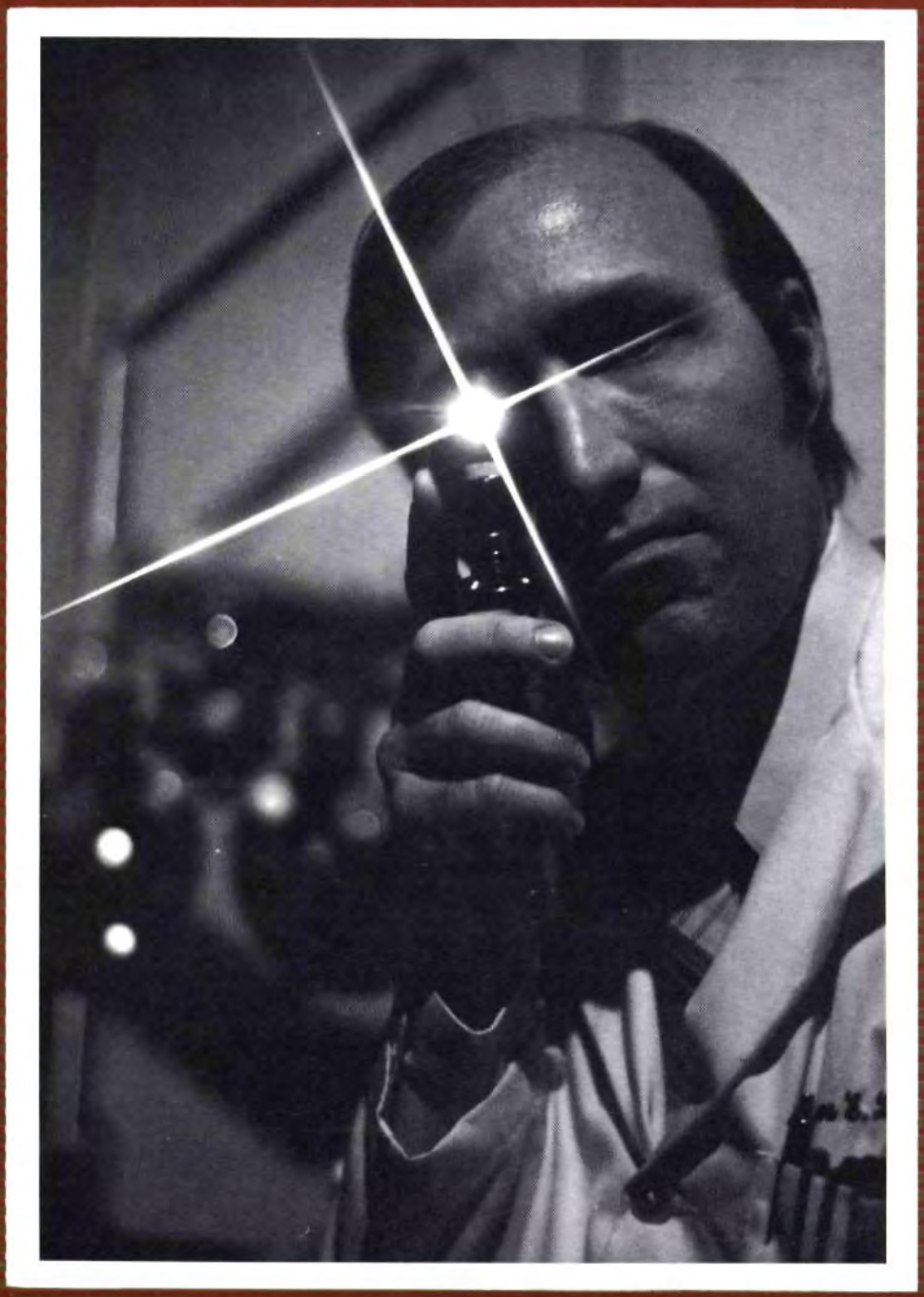
JOURNAL OF OPTOMETRIC EDUCATION



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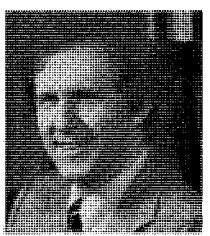

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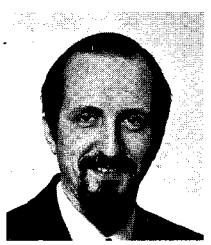

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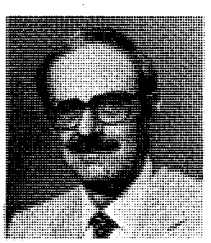

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JOURNAL OF OPTOMETRIC EDUCATION

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DEPARTMENTS

The **JOURNAL OF OPTOMETRIC EDUCATION** is published by the Association of Schools and Colleges of Optometry (ASCO). **Managing Editor:** Harriet E. Long. **Art Director:** Dan Hiatt, Graphics in General. Business and editorial offices are located at 600 Maryland Ave., S.W., Suite 410, Washington, D.C. 20024. **Subscriptions: JOE** is published quarterly and distributed at no charge to dues-paying members of ASCO. Individual subscriptions are available at $10.00 per year, $15.00 per year to foreign subscribers. Postage paid for a non-profit, tax-exempt organization at Washington, D.C. Advertising rates are available upon request.

Cover photo by John Carswell, photographer for the School of Optometry, University of Alabama in Birmingham.

ANNOUNCEMENTS

AOSA 12th Annual Convention

The American Optometric Student Association (AOSA) will hold its 12th annual convention on January 5-10, 1982, in midtown New York City. Site of the congress will be the Hotel Roosevelt on Madison Avenue and 45th Street.

Students from the SUNY State College of Optometry will host this year's meeting, whose theme is "Reflections of the Future."

Continuing education lectures by prominent leaders in the field, an extensive exhibit hall, seminars, workshops, tours and a host of social attractions that only New York can offer will be featured. Foremost will be the opportunity for the exchange of ideas and information among over 1200 students expected to attend.

The AOSA serves to represent the 4500 student doctors of optometry in the 18 optometric schools throughout the United States, Canada and Puerto Rico. Over 85 percent of all enrolled students are members.

For information on registration or assistance in coordination of a group meeting, please contact:

Paul Cosenza
Co-chairperson, AOSA Congress
c/o SUNY State College of Optometry
100 East 24th Street
New York, N.Y. 10010
212-477-7149

Journal of Optometric Education Call for Papers

The *Journal of Optometric Education* (JOE) cordially invites all educators, administrators, students, practitioners and others with a demonstrable interest in optometric education to submit manuscripts for publication consideration in the academic years 1981-1982.

The *Journal* is a national quarterly publication of the Association of Schools and Colleges of Optometry. Its circulation encompasses all U.S. accredited optometric educational institutions, as well as foreign institutions, private practitioners, government leaders and others in the health care field. Established in 1975 as a forum for the exchange of information, the *Journal* now represents the only publication devoted entirely to the educational aspects of the profession.

All authors wishing to submit manuscripts are directed to comply with guidelines provided in the "Notice to Contributing Authors." Manuscripts will be formally reviewed by experts in the selected subject area, and authors will be notified of reviewer recommendations.

For further information or to submit manuscripts or queries contact:

Harriet E. Long, Managing Editor
Journal of Optometric Education
600 Maryland Ave., S.W., Suite 410
Washington, D.C. 20024

Erratum

Letters ("VOSH Information"), *J. Optom. Educ.* 7(1), Summer, 1981. Page 4: At the time the letter by Dr. Russ Dorland was written the president of VOSH International, Inc., was Dr. Ed Foote, as identified in the letter. However, the officers have changed since, and the new president is:

Vernon E. Falkenheimer, O.D.
P.O. Box F
Rolla, Missouri 65401

CLASSIFIEDS

The Challenge of Optometric Clinical Competence

The issue of clinical competence measurement, or assessment, is critical to any health profession. As with all applied disciplines, the ultimate test of our knowledge, skills, and the social value of our profession, is dependent upon our ability to solve problems and satisfy patients' needs. In the final analysis, the practitioner's only justification for existence is his or her ability in a clinical setting—and, consequently, the existence of the profession itself is dependent upon this same competence.

Much is said about clinical competence in optometry. Optometry's existence today as an independent, viable profession testifies to the public's acceptance and support of its ability to solve vision problems. Challenges, however, to the profession's competence have always existed since it first received legislative recognition in Minnesota in 1901. Even today a number of public agencies, and other health professional groups are challenging the profession's social and professional competencies.

Consequently, it appears that no matter how long the profession has been formally recognized, it always will have to fend off attacks. From a social perspective, the challenge to optometric existence and performance is not a matter of the style of practice or how long the profession has been recognized. We must accept the fact that there are going to be challenges, always. However, the real and only important challenge comes back to the point being discussed here: the competence of optometry to deliver its particular clinical care.

The purpose of the symposium presented in this issue of the *Journal* is to review where the profession is now in measuring clinical competence at the local level through the schools, at the state level through the state boards, and at the national level by the National Board. Further, the intent is to try to identify the weaknesses in the current methods and to discuss new methods available to all involved in credentialing, including the schools, the state boards and the National Board. The important issue in these endeavors is to unequivocally assess how the profession designates who is, or is not, minimally competent in a clinical setting.

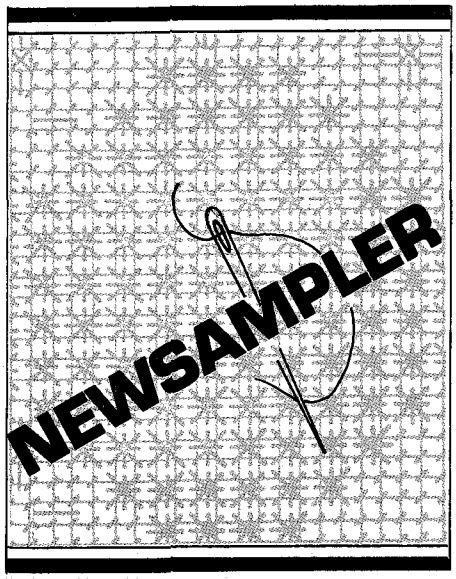
The first presenter is Dr. Frank Brazelton, a member of the Board of Directors of the National Board of Examiners in Optometry (NBEO) and a former president of the board. He is one of only three optometric educators to hold a Master of Science in Education degree in the special area of health professions evaluation. Dr. Brazelton will discuss the status of academic optometry and its ability to predict clinical competence from existing written examinations.

The second presenter who is going to address the issue of the observational and practical assessment of clinical competence, is Dr. Jess B. Eskridge, a professor at the University of Alabama in Birmingham School of Optometry. Dr. Eskridge was very involved in developing *An Optometric Clinical Practicum Examination Model*, published by the International Association of Boards of Examiners in Optometry (IAB) and the NBEO, which also has appeared in the *Journal of Optometric Education*.

The third presenter is Dr. Leon Gross, director of examination services of the National Board of Examiners in Optometry. Prior to joining NBEO, Dr. Gross spent two years at the Center for Educational Development at the University of Illinois Medical Center, followed by three years as Assistant Director for Research and Development at the Board of Registry of the American Society of Clinical Pathologists. He will report on what the discipline of psychometrics has done and is doing to provide new methods to validly and reliably make a clinical competence assessment.

Following these presentations there will be reactions from four people who represent didactic faculty interests, clinical faculty interests, a state board, and a fourth year student being evaluated at one of the colleges. Following that, comments from audience participation will be presented.

Norman E. Wallis, Ph.D., O.D.
Executive Director
National Board of Examiners in Optometry



Pacific Earns Seven-Year Accreditation

The Pacific University College of Optometry, Forest Grove, Oregon, is the first of sixteen accredited colleges and schools of optometry in the nation to receive a seven-year accreditation from the Council on Optometric Education under new policies.

In the past accrediting teams from the Council on Optometric Education would evaluate a college every five years or more frequently if a problem was being worked on. Under the new policy this is extended to seven years, and Pacific has become the first institution to be granted a seven-year cycle.

In granting the long-term accreditation the council noted the "strides made by the university and the college in improving the financial situation, faculty salaries, and teaching loads."

The accrediting report also noted the high calibre of students in optometry despite the drop in the number of applicants, which is a national trend. The graduate program, research emphasis, and clinics also were singled out for commendation in the report.

Research was called a "high point in the program," and the report noted its importance to professionalism and to practicing optometrists after they leave school.

SCCO Receives Library Fund Grant

The Southern California College of Optometry (SCCO) in Fullerton, California, has been notified by the U.S. Department of Education that a grant for the purchase of library materials has been funded under Title II-A of the Higher Education Act of 1965.

The funds will be available for use October 1, 1981, through September 30, 1982. Mrs. Patricia Carlson, chief librarian of the M.B. Ketchum Memorial Library at the college, said they will be used to augment the collection with new books, journals and visual materials.

"We are very appreciative to receive this grant now as our previous three-year grant, which added so much to our library, ended in June," Mrs. Carlson said. "This one will enable us to continue to make the latest visual science material available for use by the students."

ICO Alumni Award Student Activities

The Illinois College of Optometry Alumni Council awarded more than $5,000 to various ICO student activities at its annual fall meeting October 16 and 17.

The council earmarked $2,000 for Student Volunteer Optometric Services to Humanity (SVOSH). The organization's members travel nationwide and worldwide to bring vision care to the poor and underprivileged. FOCUS, the ICO student newspaper, was awarded $1,000 to cover publishing costs, and the college's intramural activities received $500. The council also donated $925 to the American Optometric Student Association to fund its many community projects. In addition, the council pledged to financially support ICO's class of 1982 graduation.

As part of the alumni association's annual contribution to the school, the council again voted to purchase 150 chairs for classrooms.

International Accreditation Scheme Underway

The accreditation scheme approved at the Annual Delegate's Meeting of the International Optometric and Optical League (IOOL) in Japan last year, is now underway. Its purpose is to analyze optometric education programs and qualifying examinations in relation to the IOOL Syllabus and Teaching Guide. Inspections are carried out at the request of organizations responsible for educational and examination programs. Membership in the IOOL is independent of the accreditation of an education/examination program.

Evaluation of teaching programs is carried out by a team of three including a practicing ophthalmic optician and an optometric educator. At least one of the members of the team must visit the school, and the report is discussed with the other evaluators.

—*Interoptics*, April 1981

ASCO Expands Membership

Manufacturers or distributors of ophthalmic and related equipment and supplies, paraoptometric education institutions, and non-profit, education-affiliated agencies or institutions are now eligible to apply for membership in the Association of Schools and Colleges of Optometry (ASCO). The new membership categories were unanimously approved at the Annual Meeting held in Las Vegas, June 19-20.

The categories provide for sectional membership in the following three areas: (1) *sustaining member section*—manufacturers or distributors of ophthalmic or related equipment and supplies; (2) *paraoptometric education section*—accredited institutions which offer programs in the education of paraoptometric personnel; and (3) *non-profit agency section*—non-profit agencies or institutions which carry out an affiliated optometric education program with an active member of the association.

Eligible organizations may affiliate with the association upon petition to the executive committee and upon a two-thirds majority vote of the board of directors.

Individuals or groups interested in applying for membership are encouraged to contact ASCO Executive Director Lee W. Smith, 600 Maryland Avenue, S.W., Suite 410, Washington, D.C. 20024.

RESOURCE REVIEWS

Felix M. Barker, II, O.D.
Pennsylvania College of Optometry

"Complications of Contact Lenses," edited by David Miller and Paul F. White. *International Ophthalmology Clinics* (21)2. Little, Brown and Co., Boston, 1981. (265 pp., illus., $46.50 per year for 4 volume subscription).

International Ophthalmology Clinics (IOC) is a quarterly bound journal published by Little, Brown and Co. Issues of IOC are devoted to specific topics and usually represent symposia or collected writings on each topic.

"Contact Lens Complications" is a compendium of 24 short articles concerning problems related to contact lens wear. The editors have organized the chapters into five major sections concerned with physiological, refractive, extended wear, materials and solution complications. There is also a small section concerned with research and developmental issues in contact lenses. All sections are written at the basic to intermediate level and therefore could serve as reference material in a contact lens course.

As a reader, this reviewer was perhaps most impressed by the organization and completeness of the opening section on physiological effects, corneal edema, staining, vascularization, endothelial changes, corneal sensitivity, precorneal fluid, blinking and giant papillary conjunctivitis. Any contact lens instructor could fit this easily flowing sequence into the introductory portions of a course. The remaining treatises in the text concern specific areas such as solution problems and extended wear lenses which would be of interest to any practitioner or educator but which in the rapidly changing arena of contact lenses may become dated very quickly.

"Contact Lens Complications" is easy reading, interesting and can be very useful to teachers and clinicians alike as a source of current information. One drawback to this as a text is that it is difficult to own a copy unless one subscribes to the IOC journal on an annual basis. The publisher will not sell single copies.

Radiant Energy and the Eye, Vol. I, Functional Ophthalmology series, by Sidney Lerman. Macmillan, New York, 1980. (321 pp. illus., $49.95).

The topic of radiation effects upon the ocular tissues has subsisted throughout the decades as chapter or even subchapter material in the routinely used textbooks about the eye. We are all familiar with photokeratitis and glass blower's cataract as clinical entities to be watched for. Recent research, however, has caused the ophthalmic community to reevaluate the importance of incoherant radiant energy in producing damage to the eye. Ultraviolet, infrared and now even visible radiation are being more strongly implicated in the production of cataracts and retinal disease.

The book, *Radiant Energy and the Eye,* is written as a summary of much of the current data and theory on this subject. The author covers basic photochemical mechanisms of damage by incoherant radiation and susceptibility of ocular tissue as well as the effects of ultraviolet, visible, infrared, microwave, radiofrequency and ionizing radiation.

Although discussion largely centers upon the biochemical bases of damage, this text has sufficient clinical orientation to have direct application for the practitioner.

In view of the future implications for ophthalmic protection, *Radiant Energy and the Eye* makes an important contribution by summarizing information in this underpublicized area.

Optometry Handbook, 2nd ed., by Leroy Rubin. Butterworths, Boston, 1981. (374 pp., illus., $34.95).

If you've ever searched for a table to give you extended range keratometric values, tried to design an isekonic lens or looked for a supplier of an optical device, the *Optometry Handbook* will be useful to you.

Optometry Handbook is a large compilation of tables and charts of data concerning visual acuity norms, visual requirements, opthalmic optics, lens design, refraction, contact lenses, low vision, pharmacology, pathology, visual training and many other topics. This reference text was found to contain tabular information about nearly every area of optometric science.

Tables of standard information which are often found in a variety of texts have been brought together in this volume for easy access. There are also many presentations of current data about contact lenses, spectacles and other topics which do change over time and therefore must be updated periodically. There are frequently address lists of current suppliers of optical lenses, devices and equipment.

The handbook is indexed for easy use and represents a real contribution to optometric practice and education.

Contact Lenses: Volume 1—Background, Prefitting Care and Basic Hard Lens Techniques; Volume 2—Soft and Advanced Fitting Techniques and Post-Fitting Care, edited by Janet Stone and Anthony J. Phillips. Butterworths, London, 1980. (692 pp. illus., some color plates, $79.95 per volume).

This two volume text is a complete and detailed treatise on the subject of contact lenses. Volume 1 deals with the historical development of contact lenses, corneal anatomy and physiology, photography, patient selection, patient management, scleral fitting, corneal fitting, and verification procedures. There are many tables and appendices with pertinent data required by the contact lens practitioner.

Volume 2 of *Contact Lenses* covers soft lens fitting, soft lens verification, patient management, refractive changes, toric lenses, bifocal lenses, pathology applications, hard lens manufacture and modification of hard lenses.

The authors devote a relatively large amount of space to the detailed discussion of the little used art of scleral lens fitting. This is in all probability a specialty interest for them and should be of great interest to those who fit scleral lenses.

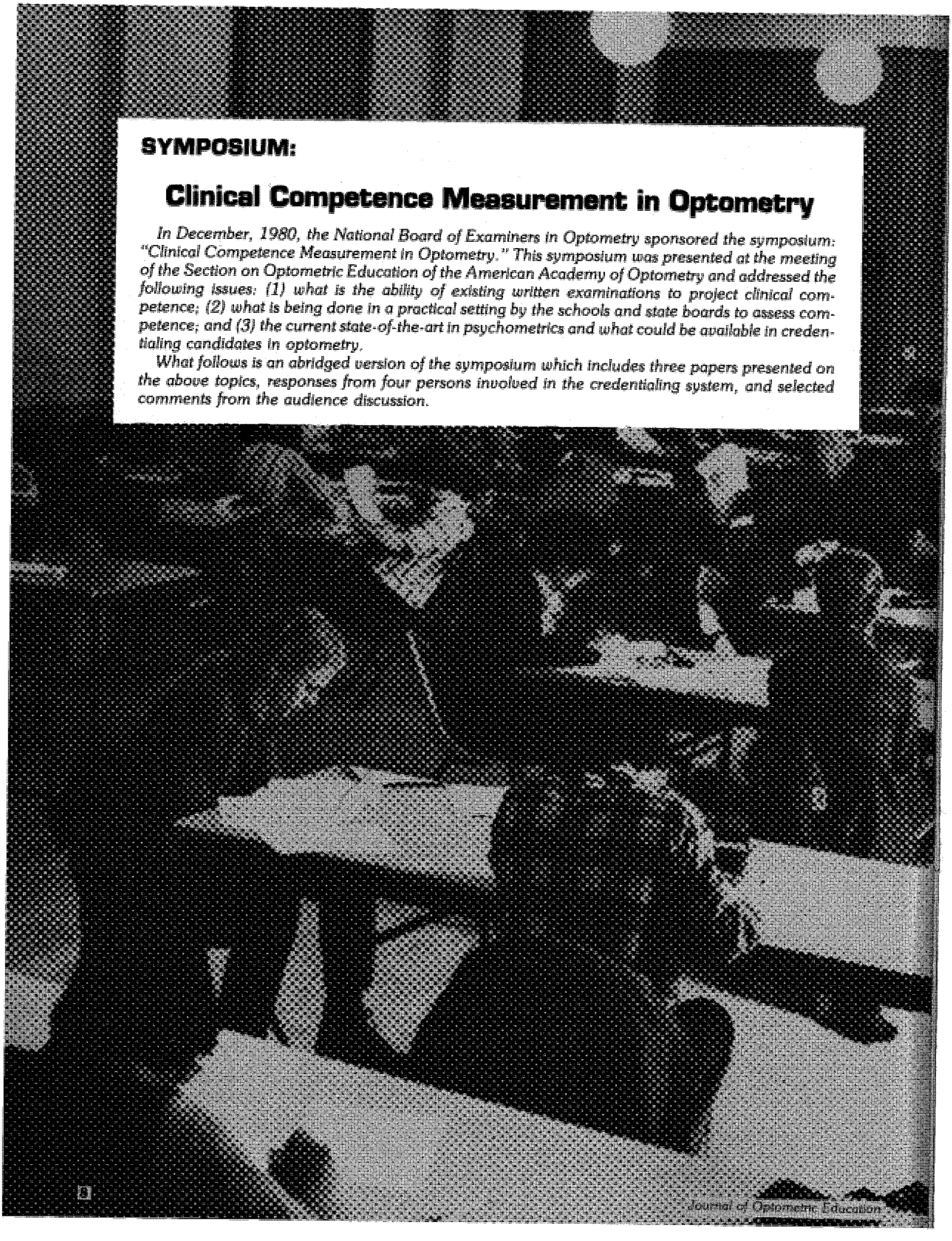
A strength of *Contact Lenses* is that it covers the entire field from the classical to the contemporary. There is appropriate discussion of the current questions of soft lens care such as fitting characteristics, oxygen permeability and water concentration, but the authors' writing also is founded upon indepth understanding of basic optics and lens-cornea relationships of hard lens theory.

SYMPOSIUM:

Clinical Competence Measurement in Optometry

In December, 1980, the National Board of Examiners in Optometry sponsored the symposium: "Clinical Competence Measurement in Optometry." This symposium was presented at the meeting of the Section on Optometric Education of the American Academy of Optometry and addressed the following issues: (1) what is the ability of existing written examinations to project clinical competence; (2) what is being done in a practical setting by the schools and state boards to assess competence; and (3) the current state-of-the-art in psychometrics and what could be available in credentialing candidates in optometry.

What follows is an abridged version of the symposium which includes three papers presented on the above topics, responses from four persons involved in the credentialing system, and selected comments from the audience discussion.



The Status of Academic Optometry in Projecting Clinical Competence from Existing Written Examinations

Frank A. Brazelton, O.D., M.S.Ed.

The capacity of academic optometry or any other health profession to project clinical competence from written examinations is quite limited. Indeed, some would argue that it barely exists at all. This view, startling as it may seem, may become more understandable as this discussion proceeds.

The discussion must begin with a definition of clinical competence. Trouble arises, however, when one tries to write it down in terms which allow for objective evaluation, because then the definition becomes very indefinite. Providing a very broad definition as a basis for this discussion, however, the premises on which clinical competence is based are as follows:

> When presented with a given clinical situation, that is, a patient manifesting a particular problem, the competent clinician will:
>
> a. *always* perform those actions which are crucial to safe and effective care; and
>
> b. *always* avoid those actions which are detrimental to safe and effective care.

There usually will be a number of actions the clinician may take which fall under neither of these strictures and which may be slightly beneficial, slightly detrimental, or even neutral. These neither contribute to nor detract from competence although they may make the diagnostic and therapeutic processes less efficient. Generally speaking, however, competence must be evaluated in terms of the two rules cited: the competent clinician has to know how to render safe and effective patient care. When that statement is analyzed, certain elements of competence begin to emerge.

The clinician has to "know"—facts, technique and concept. There is, in other words, a cognitive base to competence. But is the student's grasp of this knowledge a guarantee of competent clinical performance? Probably not.

The clinician has to render "safe and effective" patient care. In other words, he or she has to distinguish between what is safe and what is injurious; between what is effective and what is inconsequential or counterproductive. The ability to make these distinctions is a consequence of diagnostic ability, reading signs and symptoms, interpreting data, and making judgments.

The rendering of care signifies not only treatment, i.e., those actions taken consequent upon diagnosis in order to meet the patient needs, but also the interaction with the patient which provides the information for diagnosis and treatment planning; in particular, history taking and the examination process.

"Patient care" often is used synonymously with the entire clinical process, obscuring the fact that it implies not only what is done to or for the patient but whether or not it is done humanely and compassionately.

What exists, in other words, is a triad of skills or behaviors which must be measured in assessing competence: cognitive, psychomotor, and affective. The cognitive or knowledge base is that with which those in education feel most comfortable. Those basic, visual, and clinical sciences fundamental to clinical performance can be taught and evaluated most effectively by close observation over a period of four years as to whether they have been adequately learned. But does the student's grasp of these concepts and technical skills guarantee competent clinical performance? The answer must be no.

The psychomotor aspects underlie the acquisition of data upon which diagnosis and treatment must depend. Here again, our evaluation processes are good ones validated by experience. Examination skills can be and are accurately assessed. Academic optometry can certify uncompromisingly that the clinician knows how to measure a refractive error, modify a contact lens, or adjust a spectacle mounting within rigid tolerances.

Frank A. Brazelton, O.D., M.S.Ed., is professor and chairperson of the Department of Professional Studies at Southern California College of Optometry in Fullerton.

The higher level cognitive skills used in diagnostic problem solving and treatment planning such as analysis, synthesis, and evaluation, are less susceptible to direct measurement. In fact much of the diagnostic process is opaque to measurement except by outcome. Finally, the affective skills which most directly determine the quality of care are the most difficult of all to assess. The attitudes of the clinician toward his patient, his vocation and himself; his sense of values; his personal integrity, responsibility, and perseverence—all the qualities and attributes which elevate his efforts from mere technical performance to professional fulfillment—require instruments of measurement of the most sophisticated kind. The state of the art in this area is, admittedly, primitive.

This relative difference in evaluation capabilities has led to an over emphasis on those which are more successful and, in turn, seductively has created an equation of basic cognitive and psychomotor capabilities to clinical competence. This is misleading for two reasons: (1) although there is obviously a connection, these skills by no means suffice to guarantee competence; and (2) the emphasis on these skills, important as they are, results in an unbalanced view of what optometry really is. To oversimplify: the heart of optometry's professional endeavor is not in the ability to use a retinoscope, measure a phoria or insert a contact lens; the entire data base and many of the technical activities could in some future dispensation be entirely delegated to others without reducing the professional role at all. The essence of what optometry does is problem solving in the patient's interest; diganosis and treatment; discussion and action. It is, therefore, just those elements of clinical competence which are most important that are most difficult to assess.

Very little has been published on evaluating competence in optometry. Those in medicine, dentistry and pharmacy have been involved in assessing competence much longer than we have and to some degree, because of scale if nothing else, they are ahead of us though not so much as one might think.

The definition of clinical competence presented in the beginning of this paper is derived from a study the National Board of Medical Examiners conducted some years back using what is called the "critical incident" technique.[1] A group of experienced attending physicians were asked to observe interns and residents. At each point in the clinical process, the physicians had to decide whether the apprentice clinician actions were appropriate or inappropriate—whether they were essential, neutral, or contrary to safe and effective care. The 3,000 or so resulting observations were grouped in certain categories very similar to the categories in optometry and accordingly have been modified for use here. The headings are descriptive of the recognized major areas of clinical activity or performance. The subheadings are specific competences in operation terms.

I. CASE HISTORY
   - A. Takes a complete and cogent case history based on information from the patient as well as other sources
   - B. Records information accurately and concisely
   - C. Lists and prioritizes patient's problems

II. VISUAL EXAMINATION
   - A. Performs a thorough visual exam noting manifest signs and utilizing appropriate tests and procedures
   - B. Modifies tests correctly in accordance with patient's needs and characteristics
   - C. Interprets and properly records test results on an organized written record

III. DIAGNOSTIC ACUMEN
   - A. Recognizes causes
   - B. Explores conditions thoroughly
   - C. Distinguishes normal variations from patho-physiological change
   - D. Arrives at a reasonable differential diagnosis
   - E. Identifies further procedures needed for confirmation of diagnosis
   - F. Summarizes and records diagnostic impressions in order of significance

IV. TREATMENT PLANNING
   - A. Recommends appropriate type of treatment
   - B. Determines immediacy of need for treatment
   - C. Judges scope of treatment required
   - D. Summarizes and records treatment program

V. TREATMENT IMPLEMENTATION
   - A. Makes necessary preparations
   - B. Uses correct method and procedures
   - C. Adapts treatment to patient's needs
   - D. Keeps adequate record of treatment instituted

VI. CONTINUING CARE
   - A. Follows patient progress
   - B. Modifies treatment appropriately as needed
   - C. Communicates findings and proposed treatment
   - D. Fosters cooperation

VII. PROFESSIONAL BEHAVIOR
   - A. Demonstrates a primary concern for patient's welfare
   - B. Recognizes and meets community health responsibilities
   - C. Recognizes and meets obligations to the optometric profession

The seven areas fall into certain logical groups. Case history and visual examination provide the information on which all other clinical activities depend. Diagnosis may be considered an isolated entity, although, in fact, it is a thread running through all else. Tentative diagnosis begins during the examination and even the definitive diagnosis may not be established until the effects of treatment have been seen. Nevertheless, the skills that underlie diagnosis are separable and probably *can* be isolated for purposes of measurement. They essentially duplicate the inductive process intrinsic to the scientific method. A hypothesis is generated from available data (treatment) and either confirmed or negated. Areas IV, V, and VI, all involved with treatment, represent this testing or challenging step. The final two areas have to do with the care process, rendering safe and effective care in a humane and personal way, and doing so in a professional context.

This, then, is the flow chart of the clinical process. How well can student performance be evaluated in each of the elements? Ideally, a paradigm or ideal

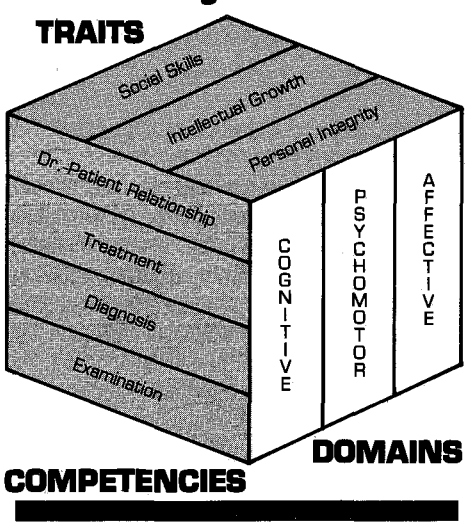
clinician would be used against whom to measure a student's performance. Having the student clinician observe, work with, and meet the exacting standards of such a model practitioner might constitute an acceptable way of establishing competence except for two things. First, a successful practitioner has very little time to do this and conduct a busy practice simultaneously. Second, rampaging specialization has put the full spectrum of optometric practice beyond the scope of any single practitioner. The student would not have the opportunity to experience the wide variety of conditions without which training is incomplete. Thus the apprenticeship mode, which was the norm until the beginning of this century, has given way for very practical reasons to the current mode of centralized education. In fact, however, a substitute has been found for the practitioner model: the clinical faculty. Unable to send students out into the "real world" to learn, the "real world" has been brought in to them.

When these clinical faculty meet the standards of experience and judgment that are the hallmark of the successful practitioner, this system can work pretty well. However, it still has its problems when it comes to evaluation. For one thing, the clinical faculty are quite varied in terms of their own experiences and standards. One may rate the student high for exactly the same reason that another rates him low. This particularly is likely to be true when judgment is rendered on the affective elements of patient care and on such elusive qualities as attitude, integrity and interpersonal skills. Having ten different clinical faculty observe a student involved in some technical task such as performing a cover test probably will produce ten evaluations that cluster pretty closely. The same ten faculty observing a complete patient care process performed by a student more than likely will be much further apart in their overall evaluation.

One may overlook technical flaws if the student relates well to the patient. Another may have strong views on the length, neatness and location of facial hair, on hygiene, or on the wearing of jeans or other individual personal attributes. A third may be swayed by verbal or written fluency to overlook significant shortcomings in test skills or diagnostic reasoning, while a fourth may view their respective importance differently. This is similar to the problem of evaluating essay test responses in which the subjectivity of evaluation leads to a major reduction in reliability.

Therefore, it is more than simply the knowledge base and technical skills that clinical faculty assess. They look at the student's *total* performance compared to what they believe it should be. What makes this process ultimately valuable is that there are many such judgments made within a variety of clinical settings on a wide range of patient conditions over a period of two years or more. This tends to overcome the inconsistencies much the same as increasing the number of items on a written examination raises its reliability.

Figure 1



Can the results of such day-to-day cinic observation be duplicated by use of written examinations? It would be encouraging to think so, but recent studies give little ground for optimism. The best correlations reported seldom exceeds .40 which means that the intrinsic relationship between the two types of performance being measured is much less. This is not to say that written tests cannot measure clinical competence but simply that they cannot predict it. Nor should we be discouraged from trying to improve the predictive quality of a written examination.

In summary, clinical competence is a multi-dimensional complex of behaviors —cognitive, psychomotor, and affective —each of which requires its own unique type of evaluation. Each of these domains is involved in each of the four major groups of patient care competencies shown in figure 1; i.e., examination, diagnosis, treatment, and the doctor-patient relationship. Finally, these competencies themselves are dependent to a greater or lesser extent on a group of personal traits of which only three examples are shown: social skills, capacity for intellectual growth, and personal integrity. It should be apparent that while some of these competencies can be more readily measured by written examinations—a good example would be the cognitive element in diagnosis—others cannot. It will be much more difficult to design a written exam which will measure the affective element in the doctor-patient relationship such as caring or compassion.

Does this mean that academic optometry cannot do a better job of measuring clinical competence by written examination? Not at all. It does mean that a more precise definition of these competencies is needed, of which this model is only a gross approximation. Needed, as well, is a surer grasp of how these competencies interrelate. If clinical teaching experience shows that a trait that can be measured on paper, such as the extent of a student's information base and conceptualizing ability is productive of good treatment skills, then measuring the former will, in effect, measure the latter. Written examinations also can be designed which will more closely simulate the clinical decision making process. Such patient management problems are a promising method for extending our measurement range.

To the question posed at the beginning of this paper, "How well do written tests project clinical competence?," the answer must be, "At present, not very well." What *can* be measured are those basic skills and the knowledge which are indispensable to if not sufficient for clinical competence. The fact that diagnostic and treatment skills are not now adequately assessed by written examination does not mean that they cannot be. □

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The Assessment of Clinical Competence in a Practical Setting

Jess B. Eskridge, O.D., Ph.D.

One of the essential problems in competency assessment is determining and defining what competency truly is. In general terms, competency is said to be the appropriate collective manifestations of situational responses. However, the process of competency evaluation in optometry requires a much more specific description. What is needed, first, is to know what patient care services the optometric student and the optometric practitioner must be able to deliver before the quality of the delivery can be assessed. In order to know that, optometry and optometric patient care services must be defined. This is indeed an awesome and difficult task. Some of the difficulty involved is discussed in an editorial by Sloan.[1] When this information is available, an optometric competency evaluation procedure can be developed.

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Definition

Several years ago the Association of Schools and Colleges of Optometry organized a committee to define optometry. Although differences in opinion arose, the committee largely was unsuccessful primarily because one stated definition of optometry could not be developed to adequately fulfill the social, political, educational, and clinical aspects of optometry. Each definition became either too general or too specific when the various aspects of optome-

try were considered. Though the ASCO committee did not develop a universal definition of optometry, it did develop a statement regarding the educational and clinical aspects of optometry. That statement or working definition is:

> An optometrist is a health care practitioner who participates as a member of the primary health care team in providing for comprehensive health care, health maintenance, and health education, and a primary vision care provider with the responsibility to prevent, detect, diagnose, treat, and/or manage visual and ocular problems, to enhance visual performance, and to provide vision and ocular health education and a continuing program of vision and ocular care.[2]

Such a definition provides optometric competency assessment with a given direction.

Measurement of Competency Assessment

Dr. Paul Pottinger[3] recently wrote an article on competency which indicated that competency evaluation in certification and licensing so seldom is correlated with patient care outcome criteria that training, certification, and licensing often lead to a state of complacency rather than to a state of competency. The techniques and procedures that are used to assess competency generally are associated with an evaluation of clinical tests and procedures, but these often are not directly related to patient care outcome criteria. Therefore, with this type of evaluation procedure, all of the parameters of competency have not been assessed, but really only the ability to perform clinical tests and procedures. If the results of testing are satisfying, it sometimes can be mistakenly concluded that the candidate is competent.

Optometric competency assessment must therefore be related to the total delivery of optometric health care services—the diagnosis and management of the patient's clinical problems and needs. The delivery of optometric health care requires the utilization of both optometric knowledge and skills. Competency assessment must therefore include an evaluation of the ability to utilize both knowledge and clinical skills in the delivery of optometric health care. Educators or state board members who understand this concept realize the issue is a complex one and that the true assessment of clinical competency indeed will be very difficult.

Competency Assessment Proposal

Using the above definition and direction, this author proposes that an assessment of optometric clinical competence in a practical setting should consist of an evaluation of the knowledge and skills in the following four clinical categories.

Category one is the ability to develop professional interpersonal relationships.

"Competency evaluation in certification and licensing so seldom is correlated with patient care outcome criteria that training, certification and licensing often lead to a state of complacency rather than to a state of competency."

This is the ability to communicate and work effectively with patients and colleagues. It includes being able to obtain information from the patient, effectively involve him in the examination process, discuss examination results and therapy, and secure therapeutic compliance. This ability, in many cases, is as important as the ability to utilize a sophisticated diagnostic instrument. Good patient care requires a good doctor-patient relationship. This skill, as well as others, improves with practice; but its essence must be present for competent clinical performance.

An evaluation of the ability to develop professional interpersonal relationships could be determined by carefully observing the candidate in his relationships with patients and colleagues. A thorough interview also may provide information for this category. This skill can be more easily evaluated in schools over a long period of time than it can during a short state board examination.

Category two is the ability to determine the specific information and clinical data that are needed for the care of any given patient. Perhaps all of the problems in any given patient could be determined by performing every conceivable test in every conceivable way, but this is doubtful. The competent practitioner is one who constantly is directing the examination and selecting the data that need to be obtained, so that the significant clinical decision making information needed for that given patient is available.

An example of an evaluation procedure for this category would be to present the candidate with a patient who has reduced corrected visual acuity in one eye, and then ask the candidate to select and perform those testing procedures needed for diagnosis and indicate their significance in management.

Category three is the ability to perform clinical tests and procedures, to analyze and evaluate the quality of the data, and to accurately record the data and information. Competent patient care cannot be delivered without accurately recorded clinical data and information.

An example of an evaluation procedure for this category would be to present the candidate with an ophthalmodynamometer and ask the candidate to indicate when it is used, describe how it is used, and indicate what information is obtained. Finally, the candidate could be directed to use the instrument on a patient and record the data.

Category four is the ability to interpret, integrate, and utilize clinical data and information in the process of differential diagnosis, decision making, and the delivery of appropriate patient care.

An example of an evaluation procedure for this category would be to present the candidate with the symptoms and clinical signs of a given patient and ask him to use this information to make

a specific diagnosis and prognosis and to recommend the appropriate management.

Though a detailed testing and evaluation program will need to be developed for each category, such testing based on the above direction and concepts will produce a sound and valid competency assessment program.

Relation to Patient Care Outcome

There is still another complicating aspect of competency assessment that should be considered. Competency evaluation should be criteria related; that is, it should be related to patient care outcome. In addition to the clinical data, patient care outcome is a function of the involvement of the patient and the philosophical health care orientation of the doctor.

Patient involvement in the examination and in the therapy is a definite factor in the outcome of patient care and thus is related to competency assessment. Many of the tests and procedures in the examination involve patient cooperation and response. Patient compliance also is necessary in many treatment procedures. If the criterion for competency is patient care outcome and patient involvement is a part of that product, then competency assessment of the doctor must take that into consideration.

Though it may be said that the appropriate professional response is a consequence of the demands of the professional situation, the professional response to any given professional situation is also a product of health care philosophy. Though the data and the patient are the same, different patient care decisions could be made on the basis of different health care philosophies. Though the doctor may have the ability to develop a good working relationship with the patient, though he may know what data and information to collect, and though he may have the ability to properly take and accurately record the data, the decision for patient care therapy may be different depending upon professional philosophy. Sometimes what appears to be a very illogical avenue for therapy provides the same patient care outcome as another avenue which does appear to be logical and appropriate. If the outcomes are the same, does this suggest that both therapeutic procedures indicate competence?

Competency Assessment in Schools and Colleges

One place where competency is evaluated is in the schools and colleges of optometry. In order to learn what kind of procedures were being utilized in the various schools and colleges of optometry to assess competency, a survey was sent to each school and college. Of the eleven schools who responded, all had organized programs for evaluating clinical skills before students entered the clinic. All of the schools evaluated the students in primary care; six of the schools had evaluation programs for binocular vision; five had such programs for contact lenses; and one school had a competency assessment program for low vision, all before the students entered the clinic. Even though all schools had such programs, some schools felt that it was not appropriate and productive to evaluate students before they entered the clinic. All of the schools felt that it was very important to evaluate students with an organized competency evaluation program after the students were in the clinic. However, only nine schools had organized programs for evaluating clinical skills after the students were in the clinic.

Competency assessment in the schools generally was accomplished by having the student collect the clinical information and data that he felt was appropriate. The clinical instructor then would collect the clinical data and information that he felt was appropriate, and the instructor's data and clinical decision making would be compared to that of the student. One of the schools set up a program for competency assessment similar to that designed for the National Board.[4] In this program, five stations designed to evaluate certain areas of clinical competency were erected. All students were tested in each station. The five stations were as follows:

Station one—ophthalmic lens and contact lens analysis and evaluation.

Station two—the use of a Goldmann tonometer on a given patient.

Station three—retinoscopy and the determination of the subjective refraction.

Station four—taking a case history.

Station five—a case discussion. The student was given the clinical data and information for a patient and was asked to analyze it and select an appropriate therapeutic program.

Organized competency assessment in the schools has been directed primarily toward the evaluation of the ability to perform clinical tests and procedures. As indicated, this assessment usually is made before the students begin their clinical experience. Competency assessment after the students are in the clinic generally is done on a day-to-day basis with instructors evaluating the students' patient management abilities for specific patients. The correlation of this assessment process with organized competency assessment programs such as the one above may yield valuable information for the design of future competency assessment procedures.

Although this survey did not request such information, it would be interesting and informative to know the correlation of the results of competency assessment to grades in didactic courses, NBEO scores, and state board examination results.

Comment

While attempts have been made to develop competency-based examinations by the schools and colleges of optometry, the National Board of Examiners in Optometry and some state boards, it appears that more study, effort, and experience is needed to move optometric competency evaluation more solidly in that direction. It is hoped that the proposed program of evaluating knowledge and skills in the four clinical categories suggested in this paper will assist in that endeavor. □

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Psychometric Advances in Measuring Clinical Problem-Solving Skills

Leon J. Gross, Ph.D.

Clinical problem solving generally can be defined as a "higher order, cognitive process that involves the application of knowledge in a manner requiring an integration and evaluation of multiple information fragments."

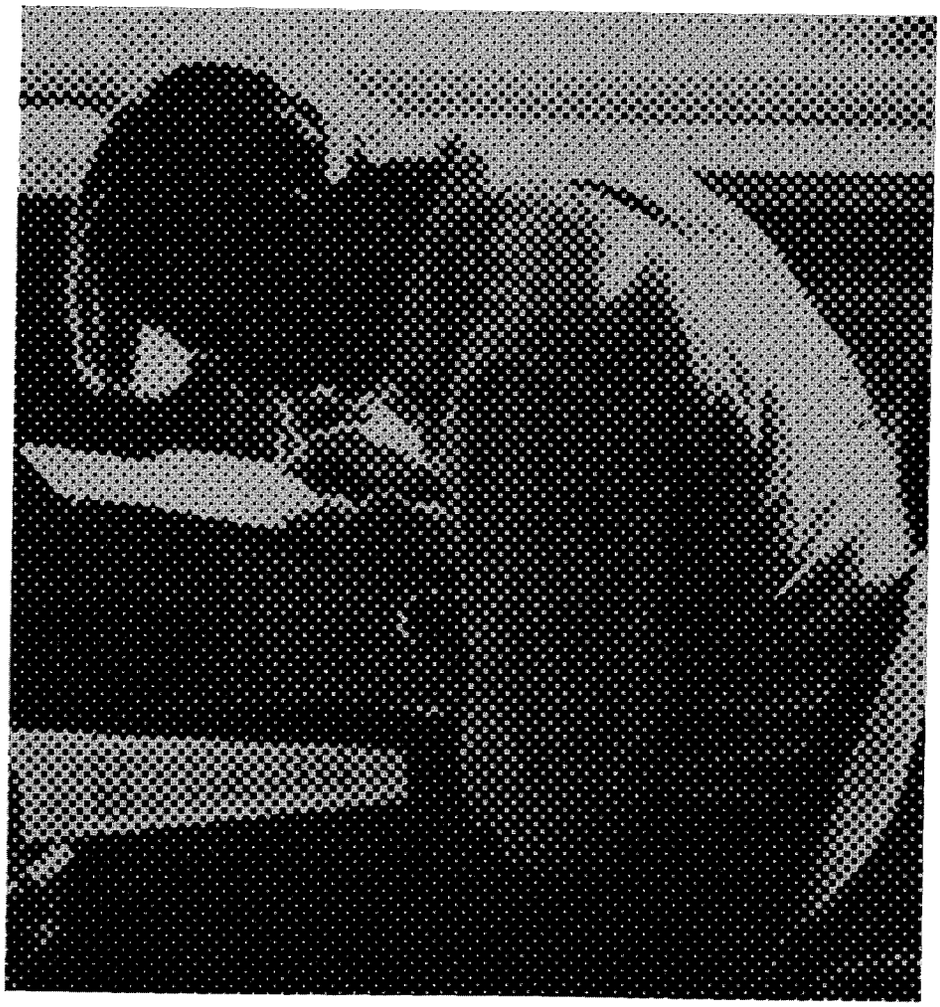
Since it is a higher level, cognitive skill, the assessment of clinical problem solving requires probing by the examiner, a task for which multiple-choice tests are considered to be inadequate. In the formative days of licensing by tests, the oral exam was widely used for this purpose. Unfortunately, this technique posed difficulties in scoring and standard setting, was overly subjective and thus of low reliability, and therefore was of questionable validity. Specifically, variability between examiners and patients was found to be greater than the variability among candidates.[1] There were also substantial logistical problems involved by the high ratio of examiners to candidates.

A more easily administered alternative to the oral was the essay test. But this format, similarly, had the same kinds of problems. Because of these prevalent scoring dilemmas, oral and essay testing in credentialing has been almost universally replaced by the objective multiple-choice examination. In fact, the science of psychometrics was built upon (although it since has grown well beyond) the evolving state-of-the-art of multiple-choice tests.

Despite its objectivity and utility, the multiple-choice examination was perceived as inadequate for the type of in-depth probing that orals and essays were designed for. Thus, substantial efforts in research and development were begun to create objective assessment instruments to fill the void. This paper will report briefly on a variety of techniques that were developed with respect to: (1) scoring; (2) standard setting; (3) development, production and administration; (4) reliability; and (5) validity. The commonality of these psychometric techniques is that they attempt to capture or simulate the real world clinical setting through an objective paper-and-pencil test format.

Linear Written Simulations

The first breakthrough, and thus far the most enduring, is the linear written simulation, developed in the 1960s by the National Board of Medical Examiners (NBME) for its Part III examination.[1] Referred to as a programmed test or a written simulation, this test format places examinees in a clinical setting in which they have to make a sequence of decisions from a series of multiple-choices that ultimately results in a favorable or unfavorable patient care outcome. The unique characteristic of this test format is the manner in which examinee responses are recorded. Unlike the traditional objective test, examinees select their



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responses by scratching out an opaque overlay near the option of choice. This reveals patient data, effectiveness of a treatment regimen, or other feedback appropriate to that phase of the problem. The dynamic feedback then is processed by the examinee in determining the subsequent actions and decisions that culminate in a diagnosis and treatment. Subsequent to the opaque overlay method, a similar but less expensive production technique became available known as latent-image development. Under this response mode, examinees record their responses by rubbing with a chemically treated felt-tip pen the response area for the selected option. Upon contact, the patient response which previously was invisible, is "developed." The psychometric characteristics of this assessment device can be summarized as follows.

1. Scoring: Under the NBME model, scoring the linear simulation is a function of the contributory effect of each option. Options that are contraindicated have weights of -1, options that contribute to a satisfactory patient outcome have weights of +1, and options that are neither indicated nor contraindicated have weights of 0. Scoring then consists of tallying the number of +1s from which the sum of the -1s is subtracted. It should be noted that the examinee is not necessarily restricted to one response per multiple-choice section, and that there can be more than one acceptable response. In order to insure that no examinee, regardless of how poorly he or she might perform, receives an overall negative score, the difference between the plus and minus ones is added to the absolute value of the maximum number of negatives that can be selected. Although there are scoring complexities, computer scoring is readily available. Data entry may be accomplished by key punch or terminal entry,or by wand scanning a bar code corresponding to the options selected.

2. Standard Setting: Linear simulations are very adaptable to absolute standard setting and in many evaluation settings, one of several pass-fail cut-off models is applied. Since the three-part NBME examinations are norm-referenced, standard setting is accomplished by subtracting a predetermined number of standard deviation units from the mean score of the examinee reference group.

3. Development Production, and Administration: Simulation development is very time consuming to develop and refine for live evaluation. Incorporating simulations within a testing program is a major effort. Production is inexpensive using the latent image development process and merely requires use of a ditto machine. Successful administration, particularly on a credentialing examination, is highly dependent on examinees and proctors who are very familiar with the format and technique. Just as practitioner error cannot be retracted, contraindicated responses selected on a simulation exercise are similarly irrevocable. Unfortunately, however, a careless slip of the pen cannot be erased as in multiple-choice items, and thus, examinees must be made well aware of the inordinate amount of care that must be used to record responses.

4. Reliability: Adequate levels of reliability on linear simulations have been reported.[1]

5. Validity: Linear simulations are very compelling from the perspective of content validity. Studies also have shown that they have relatively low correlations with multiple-choice test components, thus suggesting that they are measuring a cognitive skill not otherwise tapped.[1] Unfortunately, intercorrelations among simulations also have been relatively low, leading some researchers to conclude that performance on these exercises is too case-specific and does not generalize across the content domain.[2,3] It has not yet been determined whether this lack of generalizable problem-solving acumen is an artifact of the test, or a fact of life for the practitioner. This question probably will not be adequately addressed until a more standardized format is developed.

Branching Written Simulations

A short while after the development of the linear simulation, McGuire and associates at the University of Illinois College of Medicine developed a branching simulation technique which most users refer to as patient-management problems or PMPs.[4] The real world practitioner setting and response mode of this technique are identifical to its linear predecessor; the distinction is in the type of feedback that creates a more dynamic patient problem. Unfortunately, while the branching model is more dynamic and a truer approximation of clinicial problem-solving skills, it has encountered psychometric problems that are not characteristic of the linear model. Following are the psychometric traits of branching simulations.

1. Scoring: McGuire and associates developed an option weighting scale ranging between ±16, although this is not a continuous scale. There are several other scoring procedures in use, with a recent study comparing nine methodologies.[5] The inherent problem in branching is that different examinees take different sections of the simulation exercise, with scoring artifacts resulting from examinees taking less direct or effective routes through the PMP encountering a greater number of response options and thus being able to accumulate more points than the ideal problem-solving route. To date, this remains a major psychometric shortcoming.

2. Standard Setting: Unlike the normative approach used by NBME, McGuire's branching approach is the first to use an absolute pass-fail cutoff. Under this procedure, the cutoff is set as a function of the item content rather than as a consequence of the examinee test score distribution.

3. Development, Production, and Administration: The development and production of branching simulations are similar in nature to that of the linear model. Administrative concerns are greater with branching than linear exercises because of the more serious scoring consequences of a careless or clerical error.

4. Reliability: There currently does not appear to be a consensually accepted technique for computing the reliability of a branching simulation and more psychometric research is needed.

5. Validity: The issues mentioned in discussing the validity of linear simulations also apply to branching, particularly the need for greater standardization.

Another psychometric advance worth mentioning very briefly is the conver-

sion of paper-and-pencil simulations to interactive computer problems.[1] Under this format, the computer scores and prints on the terminal screen the patient feedback that in a paper-and-pencil mode would be developed by latent image pen. The computer has greater versatility, however, and can monitor such variables as the order in which responses are recorded. Nonetheless, the aforementioned psychometric concerns in scoring, standard setting, reliability, and validity prevail for simulations in the computer mode.

Exhaustive Response Lists

Probably the most recent innovation in measuring clinical problem solving was developed last year by Gross and associates[6] at the American Society of Clinical Pathologists in the practical component of the credentialing examination for blood bank specialists. In this examination, examinees are required to manipulate and analyze the characteristics of live blood specimens.

The uniqueness of this examination is the degree of intimacy between the problems that have to be solved, and what can be termed the domain or universe of problem solving tasks. For example, for the section of the exam dealing with ABO testing, every known possibility is enumerated in what is termed an exhaustive response list. As such, the response options will not change between administrations. What will change is the specific blood specimen or test outcome that can be selected for administration virtually at random. The psychometric characteristics of this test format are summarized below.

1. Scoring: A 4-point option weighting scale is developed for each option in a response list as a function of the one best response; this response receives a weight of 3. Responses that are partially correct receive weights of 2, a weight of 1 is assigned to incorrect responses representing non-serious errors, and a weight of 0 is assigned to an incorrect response representing a serious error. Since each examinee has to analyze seven specimens, the response list weighting is an iterative procedure. The actual scoring can be done by computer.

2. Standard Setting: Pass-fail cutoff scores are determined for each analytic section, as well as for the overall examination. Absolute standards are used, with the cutoff set such that one serious error will produce a failing score. Because this test simulates the practitioner tasks so closely, it is felt that there is a very close approximation between this standard setting procedure and real performance competency.

3. Development, Production, and Administration: Following the initial domain generation, little test development work has to be done on the paper-and-pencil portion; however, preparing the blood specimens is very time consuming. Production of this exam is fraught with the intricacies of obtaining the blood specimens from donors, and then matching them with respect to the domain tasks across the examinee population. The ideal manner in which to administer this exam would be in regional or state assessment centers. Since none are available, candidates work independently in their individual laboratories and sign pledges of independent work that are verified by their supervisors.

4. Reliability: Because not every examinee has the identical sets of blood specimens, internal consistency reliability cannot be computed during the initial administrations of this examination. However, since the entire response domain has been specified and the practice effects of testing can be assumed to be negligible, split-half reliability is a very feasible procedure for computation.

5. Validity: The face validity of this technique is very compelling. Its low correlation with the multiple-choice component suggests that it measures other skills, presumably a mixture of motor and higher level cognitive skills.

Other Psychometric Advances

There are several other psychometric experiments that have been done with traditional multiple-choice items, but on a limited scale. One developed by Shuford, Albert and Massengill[7] involves probabilistic or confidence testing in which examinees are allotted multiple points per item to distribute among each option based on their internal perception of the probability of each being correct, with a full range of partial credit awarded on the basis of the number of confidence points assigned to the correct response. This technique intrigued psychometricians, but the intricacies and time consumption of the test directions and response format rendered this technique not feasible.

A related technique which could be useful for convergent problem solving is based on the inverse of typical multiple choice directions. Developed by Coombs,[8] this format directs the examinees to select each of the distractors, or incorrect responses. In a four-option item of this type, 1 point is awarded for each distractor selected (i.e., ruled out), and 3 points are deducted if the one correct response is selected. This technique also was initially promising, but it was felt that the examinee time required to respond to each item would be better spent in administering additional items. Nevertheless, this and the preceding techniques do hold promise for helping to assess the process of problem solving.

Another technique that has been suggested but to the best of this author's knowledge has not been used, is the traditional multiple-choice item in which the distractors are consistently generated to represent systematic types of problem solving errors.[9] For example, in postulating a diagnosis from various sources of data, the correct diagnosis is embedded among distractors representing: (1) an over-interpretation of the data; (2) an under-interpretation; and (3) a crude error. The diagnosis that can be rendered of students' problem solving skills is impressive.

Summary and Conclusions

The objective test item was devised in the 1920's; approximately one and one half decades later, the science of psychometrics began to mature around it. It is now one and one half decades since the first substantive advance in assessing problem solving skills in an objective format was introduced. It may be somewhat presumptuous to suggest 15 years as a "due date," but the wide variety of nuances that have been implemented for only a few basic techniques suggests that we should be converging on solving the remaining psychometric problems.

Because of the extremely impressive face validity of written simulations, it

would appear that most of the research will continue to be in this area. A shift in research emphasis, however, is needed from correlational studies to test development studies. The critical issues of reliability and validity are not likely to be resolved until a more structured format for these exercises is developed. That is precisely where the exhaustive response list technique has succeeded. Furthermore, its problems of test development, administration, and reliability are not inherent in the technique, but largely a function of the complexities of the discipline for which it was implemented. This technique may have great utility for optometry, particularly if its exhaustive structure were combined with the sequential decision making of the simulation. The other techniques cited also have potential, and they may be considerably more efficient than simulations. One final consideration is limiting the length of simulations in order to increase the number of problems that may be administered. This will improve content sampling and validity. □

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Symposium: Clinical Competence Measurement in Optometry

Responses to Presentations

Following are four short responses from persons involved in the credentialing system: evaluators within institutions; an evaluator with a state board; and a fourth-year student being evaluated.

Dr. Paul Pease, New England College of Optometry: One of the things that has not been addressed is that the tool of evaluation, or the instrument of evaluation, can be used as a teaching device. Maybe we should be teaching our students and future optometrists how to assess competence. This same discussion could repeat itself ten or fifteen years from now if we don't start teaching the ability to assess competence. Carrying the students through the same process that we are today is part of the definition of competence— being able to assess where one is and where one's peers are, so that one can make these judgments. Maybe students need to be totally involved and get immediate feedback about what's going on. Let's use the process of evaluation to teach people about self-evaluation and peer evaluation. Maybe we'll evolve a method for something which, I think, should be struggled with forever, because no two people are going to agree in the abstract on the definition of competence.

Paul Pease, O.D., Ph.D., is associate professor of physiological optics at the New England College of Optometry in Boston, Massachusetts.

Dr. Irvin Borish, Indiana University: While I have been listening to this, a couple of points have crossed my mind. We are evaluating not just student competence, but another factor—and that is the competency of the measuring devices that we're using. For example, suppose a simulation gave the case history but did not provide the second or third parts to the student. The student may not have known to take all of those tests, except that the examination itself told him that. We would have a different evaluation of competence then— and that's the examination performed. In many instances I find myself going through enormous convolutions, attempting to write objective tests to try to determine whether a student has a particular point of knowledge.

Irvin M. Borish, O.D., LL.D., is professor of optometry at Indiana University; School of Optometry in Bloomington.

So, the thought occurred to me that part of the problem is that we are trying to work out not merely measures of student competency, because part of the flaw in our correlations, is that a good evaluation can tell whether a student is competent if left alone with that student for a while. There's a method. It's hard, but at least it's as competent a method as we now have. Let's say it's valid. But the fact is how to we develop a testing process which will tell it for us?

I'm not sure how to judge clinical competence, frankly. I have a kind of "gut feeling" that I do it all the time with students. I did it with my associates in my practice. But I'm not sure about how we evolve an *objective* system of testing these competencies. That, too, perhaps isn't as much the issue at hand as the question of examining the competence *itself.*

Dr. Lloyd Milavitz, Wisconsin State Board of Optometry: Wisconsin and Minnesota, I think, were pioneers in this new concept of state board examinations mentioned by Dr. Eskridge, which was shown two years

Lloyd Milavitz, O.D., is chairman of the Wisconsin State Board of Examiners in Optometry.

ago in California. We have five stations: a contact lens station, a pathology station, a visual training and development vision station, a station for refracting, and a station for fitting and adjusting. Wisconsin and Minnesota have done this for about five years, and North Dakota participated last year. We have one board member from each state at each station and all cover for each other. I think it works out well.

I think the present optometric graduate is the best trained of any profession from the health field. I feel inadequate to check these students. As far as I can see, probably all the graduates of all the schools of optometry should be passed. In Wisconsin, we do pass practically everyone. As far as competency evaluation goes, I think it would be more effective and important if it were done at intervals *after* being in practice as well as at entry into the profession and it should be done in the proper environment.

Mr. Robert Nyre, Illinois College of Optometry: Right now, I don't think that clinical evaluation and competency assessment is actually happening in the schools. The evaluation of the skills necessary to use the equipment is being evaluated, but the actual evaluation of ability to deal with the patient is not being done. I admit we are being trained to do it. I don't see, as yet, that we are being evaluated. We're challenged by different tests, but most of those are mechanical tests. There are some people who come in on an informal basis and evaluate us, but formal evaluation is not being done. As a non-educator, I challenge academic optometry to do it.

It's a very serious matter to the students when one calculates that greater than one-quarter of the students tested failed the national boards last year. What can you say to a student going to take them? If the correlation between clinical competency and written exams can be raised, I think the National Board would be a useful tool. The questions raised were correct and I think that is a challenging way of evaluating clinical competency—better than anything we have right now. I was asked to react to all this and I do so with some form of suspicion and, yet, great hopes that we can do this for the students and for the profession. Thank you very much. □

Robert Nyre, O.D., is a private practitioner in Minot, North Dakota. At the time this symposium took place, Dr. Nyre was a fourth year student at the Illinois College of Optometry.

Symposium: Clinical Competence Measurement in Optometry

Audience Discussion

Dr. Robert Berman, Pennsylvania College of Optometry: The quality of the patient's response is very important, and it has a significant implication as to evaluation of the response and as to the direction an examination will take in sequencing of subsequent tests. Is there any way of evaluating the response of the practitioner to the *quality* of the patient's response? For example, in a case of hysteria, a patient would be very hesitant to "push out" responses, and this has a tremendous amount of significance as to diagnosis, how sequential tests are weighted, and the approach of the doctor to the patient. How can a candidate's ability in something like this be tested?

Dr. Frank Brazelton, Southern California College of Optometry: I'm not sure that I know of any way that it can be done except by an actual assessment of a student or a candidate with an actual patient. And that, I think, is the ultimate method of doing any evaluation. The problem is that it is a very time-consuming and costly method and that's why it's not used. Here we are talking about paper and pencil tests because they *are* more efficient and more convenient to use. If we had unlimited time and funds, we would put the candidate with a patient and observe them.

Dr. Jess B. Eskridge, University of Alabama in Birmingham: I think there's another problem we have to consider here, as well. The practitioner might well be competent on one patient but incompetent on another patient. Therefore, it would depend upon what patient he gets during the test to determine whether he is competent or not. That's another reason, then, that we go to pencil and paper because we can cover a broader category. If we really wanted to evaluate a potential practitioner for clinical competence, the thing we would have to do is take the epidemiology of problems in the particular area where he is going to practice and present a patient with each one of those conditions for him to evaluate. That might take as much as three to six months to evaluate whether this practitioner will competently detect and properly manage all the patient problems that he gets in his particular area. That's another reason why we have this problem of competency assessment.

Dr. Leon Gross, National Board of Examiners in Optometry: There has been a method developed to systematize the evaluation of the patient response. One of the medical schools in Canada uses actors for this purpose. Of course, actors are supposed to be the same, performance after performance; that's what makes them professionals. They've collected some very interesting data on that.

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That's their way of standardizing the item. Of course, the way to ensure that you're not dealing with a patient-specific skill is to specify that whole domain of patient reactions that the practitioner is concerned with. However, the logistical problems would be enormous.

Dr. Robert Rosenberg, State University of New York: I see something very interesting emerging here and that is that we are talking about testing something that the clinicians and the teachers are supposed to be the role models. I wonder what the implications really are for feedback from what we are trying to test back into our educational process, where, perhaps, we have to permit and encourage and demand that the student and his teachers spend more time in broad discussion of analysis and, perhaps, even see fewer patients and spend more time with them. Perhaps turning things around from student exposure to as many patients as possible to a different quality of patient experience, so that the student throughout his years is required to analyze more and be challenged, in depth, to reason things out would be tremendous for changing our education process.

Dr. Brazelton: I think you're reflecting back on something that came up in all three presentations, and that is the cognitive element called "problem-solving." It probably is common to all good clinicians but is not common to all types of situations. There are studies that show that a student might do very well with a particular patient. Let's say he's dynamic in analyzing and caring for a contact lens patient and absolutely abysmal in taking care of a low vision patient. It's the same student, and, therefore, he obviously still has that same problem-solving ability. What is it that makes it different? Well, part of it is the content of the area, as there are different principles involved. Part of it is the student's visceral response to the area—an affection for or detestation for it. And, part of it is the character of the patient involved and how the student relates to him. This is the one thing that we don't have any control over in testing. There are many people who could state that there's no way in which you can test independently of that relationship between the clinician and the patient.

So, the answer, I think is: it would be awfully nice if we could emphasize in education much more the ability of the student to think through a case and to spend more time dialoguing with the student to find out how the decision was arrived at, and what their mental processes were, instead of, as so often happens in clinical education, a rapid-fire reaction, right down the line. You get a surface presentation in a case and you move on to somebody else. Unfortunately, the extensive dialoguing and analysis also limits the student's availability to the different types of situations. If all he sees is one type of patient—let's say, one diopter myopes—then he will turn out to be the world's leading specialist on diopter myopes. But he may not be able to even start the thinking process with something else. So we have to expose them to a variety of situations simply to give that kind of opportunity to develop the reasoning power. We are really squeezed at both ends. We are squeezed because we have to give the student enough variety to present the different clinical situations, and yet, we have to give enough time for the instructor to evaluate competence at that level. How you weight one against the other is the ultimate judgment in clinical education.

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Dr. Willard Bleything, Pacific University: One advantage to the station-to-station approach to clinical proficiency evaluation is that you have examiner to examiner consistency; one disadvantage is you don't have the opportunity to pull it all together at the end, which is really what must be done when examining a patient. I'm wondering if anyone has thought of using electronics, taping the student's performance and having a panel of clinicians see every student under parallel conditions to achieve both of those aspects. Further, nobody has made reference to the presentation of cases by students as a means of evaluating how they would solve patients' problems.

Dr. Eskridge: I don't know if anybody's ever used electronic methodology in competency evaluation. Perhaps it has been done, but I am unaware of it. The second part of your question has been done. A number of places using the station concept actually have presented the student: these are the data; now with these data, and with this history, what do you think is the problem? What do you think further needs to be done? What would you do? And so forth. So the case presentation concept has been used by the state boards and by some of the schools and colleges as a teaching *and* an evaluation process. I think it is an effective method of both.

Dr. Gross: The point about the whole being different than the sum of the parts is very well taken. In the development of the blood bank examination, the tasks had been split out. First, ABO testing was done, then Rh testing, and then compatibility testing. During the initial administration, nowhere did the candidate have to pull all those separate tests together and come up with one statement, or maybe several statements, about the particular donor or patient. This was to have been the next step in the development of that

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test for those reasons. That, obviously, is very important.

Dr. Brazelton: In our school we've used an evaluation in which the student clinician gives a case presentation with prepared information that is almost like the PMP. The student is given, essentially, case data, five or ten minutes to look at that, and then asked to present that case to an instructor orally. The same case is used for every student, so that gives you your common factor. And it has some advantages, just as that particular type of written test has advantages.

A piece in the *Journal of Medical Education,* May, 1980, bears on your question regarding use of audiovisual equipment. The title is, "The Effects of Student Personal Characteristics on the Evaluation of Clinical Performance." While it does not say that this is an invalid method of assessing clinical competency, it points up one of the dangers:

> This study shows that the evaluation of clinical competence, based on the student case presentation, can be significantly influenced by the personal characteristics of the students, and the faculty members do not appear to share common standards for evaluating case presentations.

Now, I would say, expand case presentations to every other element of clinical performance that deals with interaction—whether it's student/patient interaction, peer interaction, or faculty interaction—and you have exactly the same situation.

Dr. Bleything: That points out the exact problem. Typically we use "A" evaluator, but evaluators A, B, and C might have so different standards on the checklist they apply on that student. I wonder if some commonality might not be arrived at by a formula and have a panel of people give their opinion, thereby neutralizing some of the extremes that might occur if done on a one-to-one basis.

Dr. Brazelton: I don't think you'd really get away from this problem, though. Maybe the person on the panel who spoke the loudest would have the most influence.

Dr. Lloyd Milavitz, Wisconsin State Board of Optometry: In our clinical exams, Minnesota and Wisconsin have two people at each station, and we have between fifteen minutes and half-an-hour for each individual candidate. A lot of information can be elicited in that amount of time. It's a subjective test with give-and-take, and the candidates can really be evaluated. Whether it's at the pathology station, or the subjective refraction station, or one of the others, they get a tremendous going-over which is very low key. The candidate is very relaxed and he can say anything he wants. And you can get a real fine evaluation. Sometimes the people we have as "patients" take a beating, because some of them are sitting there all day.

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Dr. Frank Gianfriddo, Illinois State Board of Optometry: We can't have any stations in the State of Illinois. If we have 140 students taking a clinical oral and practical examination with a patient, every student has to use the same patient. Is this simulation method being considered by the NBEO to improve the exams so we'll have a lower failure rate? And how would you compare that with a written or oral practical examination? Is it the same thing?

Dr. Gross: The bottom line is validity. The failure rate is a consequence of the responses to the items that appear on any examination. In other words, when we're considering something like simulation as a testing technique, the motivation is not because of failure rates. It's because this is perhaps a more valid way, or will give us a more well-rounded picture of the individual's competence. Everything else will flow from that.

Dr. Alden Haffner, State University of New York: There were two parts to the competence issue which were addressed by the speakers. One was judgmental competence or judgmental skills, and the other was applied skills. Dr. Borish very correctly says it takes a kind of "gut reaction" to determine whether they are in some kind of delicate balance. But isn't there a third set of skills—the social skills that the practitioner, be he a student or be he already licensed, brings to the patient? Aren't there then three sets of skills: judgmental skills, applied skills and social skills? Not infrequently, a person may bring considerable social skills that may mask a lack of other skills.

In the long-run, probably, all professions, including optometry, will be testing continuing competence of individuals to sustain a license. That there is initial competence does not necessarily mean that the person has the continuing competence to justify the maintenance of a license. Initially, probably, the judgmental skills are terribly important. And after ten or fifteen years, the practitioner has the applied skills. But, perhaps, the judgmental skills tend to wane or become somewhat fuzzy. I wonder whether the members of the panel would comment on the ability of testing methods to address the issue of judgmental skills ten to fifteen years down the line?

Dr. Brazelton: We have discussed the elements of competence and

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pointed out that if you look at the model of clinical competence that you really have what we normally consider the competence elements to be—examination, diagnosis, treatment, and so on—on the face. But we also have those skills which include social skills and the capacity for intellectual growth and personal integrity. The point was that all of these are, whether we formally evaluate them or not, implicitly evaluated by every clinical assessor of competence. We don't do this in board examinations. We don't do it in written examinations. And that's one of the reasons why the prediction rate on written examinations is relatively low. But the fact is that those skills are important. And we don't have a good handle for assessing them in any kind of norming examination.

Dr. Eskridge: Even though we don't have a way of really measuring social skills, we do understand and appreciate the significance of what we call the patient/doctor relationship and the ability of the doctor to deal with the patient. That, to some extent, is evaluated in the schools and colleges, and perhaps even at the state board level. We can't have a paper and pencil evaluation of that; it has to be judgment by the practitioner. Even though one practitioner evaluates it one way and one practitioner evaluates it another way, it is still one of the four very necessary aspects of competency evaluation because it is so important in the final outcome of patient care management. I think it's vital to have that.

Now, to comment upon the question of judgment ability of a practitioner over a period of time, I think it's just the other way around. I think that problem-solving skills are more enduring than those involved with operating some of the new equipment. Dr. Milavitz made the comment that he feels the students coming out of school are smarter than he is. I beg to disagree with him. I think they might know how to use the binocular-indirect ophthalmoscope better than he does, but he has greater judgment ability and greater decision-making capability than they do because they have not been where he has been, yet. I think judgment increases over a period of years of time, but I think the skills in using equipment probably decay. I would also say that there needs to be continuing competency evaluation.

Dr. Gross: It's a very good question that you raise. The whole issue of continuing competence really developed because the knowledge base is expanding so rapidly. My feeling has been for a long time that if there is to be relicensure within a profession, it should be one geared toward insuring that the individual has kept up with the changes. Nonetheless, there are many people in influential positions who are advocating that if there is to be relicensure within a profession, it should be the individuals taking the entry-level exam for that particular year. I don't think that that would be appropriate. I guess we keep getting back to the question of what it is we need to measure.

Dr. Irvin Borish, Indiana University: I think some of what I said may have left the impression that I feel that the only method of measuring competency is this "gut reaction" with which I concluded. I realize that it is difficult and almost logistically impossible to rely upon such types of evaluation. When I said that part of our problem is developing the tests and that we were talking as much about the tests, I did not mean that I, therefore, felt that these tests were going to be ineffective. We have, up to this time, tested those aspects of clinical performance that we might call "accumulation of data skills." What we are now trying to test is what will be done with that after having the data. I like the blood bank test aspect because it says: Here's the answer amongst a choice of answers; now you use your judgment and skills to get to that answer. I think these things can all be done and should be done. We've tried all of these things and they all are logistically difficult. They depend upon human relationships and they all depend upon different valuations of people. All of them have the defects that have been described for those performances. If Part III of the National Board examination is going to be a problem-solving situation, then I think that the problem that faces us is how to get the best problem-solving simulations. I don't think we are going to go anywhere if we debate whether or not it is a good test method. I don't know of any logistical method that we have that's going to be better.

Dr. Arol Augsburger, The Ohio State University: I would like to get the response of the participants on the aspect of peer review of clinician records as one factor in assessing this problem. As Dr. Borish mentioned, there is the difficulty in actually being in the room. That time can be compacted by looking at clinic record, of course, assuming that the record represents what, in fact, has been done. There appears to be obvious teaching advantages within the institutions, however, of having peer panels. Students as well as clinical faculty are involved. There's some educational impact in going through the exercise of looking at the cases and deciding if the appropriate things have been done in an individual case. There also is some administrative information generated from these types of peer groups, including students, to evaluate an individual clinician student? Do we have the proper people doing the evaluation? Is that the proper mechanism for looking at competency?

Dr. Eskridge: I think that PSROs, which is what is being talked about, in a sense, do have significant assistance in the area of competency evaluation, but they also have errors. As has been pointed out, did the individual who took the data consider it meaningful, or did he just go through the motions? One of the things that I noted in my earlier discussion was the need to know, or have the ability to know, what data to take. If you know the history and the individual takes the necessary data but doesn't fill the whole sheet, perhaps you can utilize that in making an assessment of whether he was responsive to this information, to put it all together to make the differential diagnosis, the definitive diagnosis, and then apply the treatment. Consequently, I think that an evaluation of records can be helpful in assessing capability of an individual. One of the problems in a school situation might be to determine decision-making ability, because you may not be sure whether an individual made the

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decision or whether it was in conjunction with the instructor who encouraged him to make that decision. With a practitioner, of course, you don't have that information, so you can't use that at all. Can this be used in continuing competency? Some of the organizations that are involved in PSROs are doing exactly that. They stop in and evaluate the records and see what tests the individual's taking and how he is using his time with the patient to determine whether he is competent or not. I believe that is a means of assessing some elements of competency.

Dr. Frederick Hebbard, The Ohio State University: I was encouraged by listening to the comments of all the key speakers because they show quite clearly that they recognize that evaluating clinical competency is a very complex procedure. The thing that we have to realize, at least in an examination setting, is that we are actually sampling over a limited period of time — whether it's one day, two days, three days, or whatever — and that's true even in a teaching situation — whether we are talking about mid-terms, finals, or practical examinations, we are still sampling performance. Of course, the real effort is to make something that's as representative and extensive as possible. When trying to make things as extensive as possible, one has to realize, even in a clinical situation, that evaluation of clinical proficiency cannot be divorced from the development of clinical proficiency in the teaching situation. Whether a student sees 250, 500, or 1,000 patients during his four years in the optometric curriculum, he or she still doesn't see all types of patients in the clinic in a hands-on situation. So there are, of course, efforts made to provide simulations and, to a certain extent, some of those same approaches can be used for testing purposes. Tests serve as teaching tools, as well as vice-versa.

Dr. Michael Heiberger, State University of New York: Several of the speakers have mentioned something called "problem-solving ability." If there is, in fact, such an ability, is it possible that we can establish an admissions instrument, or test, which could be administered with the OCAT exams, and which would test for this ability *before* a student is admitted to the professional program?

Dr. Gross: There are very big differences between admissions and credentialing examinations, and I think there needs to be. The admissions exam looks at the potential and the credentialing exam looks at the realization of that potential; that is the specific achievement. Obviously, on the admissions exam, it would be content-free from the standpoint of knowledge of optometry. To the extent that what we are teaching is problem-solving, I don't know how much of that can be tested on the admissions examination. As an example, in applying for graduate school within my own field, the admissions exam dealt with certain of my abilities. As a researcher and psychometrician, however, it was only when my professors challenged my interpretations of things and my own diagnostic skill within research, that I could say I really learned how to apply specific problem-solving skills. Thus, I don't think it would have been valid to measure that before I started the program.

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Dr. Eskridge: As a clinician who has worked with a number of students, I've often felt that there is a built-in ability to have clinical decision-making skills. Some students are as capable as can be in the classroom; when they get in the clinic, however, they know how to obtain the data, but they just don't seem to know how to synthesize it. At one time, I thought it was an inherent trait or characteristic in a student. I'm still somewhat of that opinion. I do believe, however, that we can teach decision-making skills, but one of the problems in optometric education is that we have not been teaching these skills. I hope that we can put more emphasis on developing clinical decision-making skills in the schools and colleges.

Dr. R. Lewis Scott, Indiana State Board of Optometry: In Indiana, we've always spent a great deal of time in the clinical area, and we've had good cooperation from the school. But we've had two problems: one was patients; the second was the clinical examiner. We had one clinical examiner one year who passed no one. Every patient is different, but we do try to provide an extensive examination in the clinical area. I think I have heard the answer to the problem of practical examination in this symposium. If we could obtain patient actors and design a clinical examination that they could somehow portray; get an audio-visual set-up, and as five clinical examiners watch this person perform; and then, as a group, decide whether he should pass or not, based on his skills, his ability to take good histories and solve the problem. Then, after that, if we could issue a one-year license and watch him for one year; then we could call him in at the end of the year and have him graded on his record; he could feel free to choose to bring in any of the patients he had examined during that year. In the meantime, we would have gotten complaints that would have been lodged against him. At that time, we could really update and assess this man as to whether he can put it all together in the final act. You see, it's very difficult. I will say one other thing. We've always gone back and looked over our failures and said, "What happened here?" On looking back, we see that individuals who scored low on NBEO exams generally exhibited poor academic performance. So, somewhere along the line, it does fit together. □

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The Future of Optometric Education

Henry B. Peters, O.D.

Predicting the future is hazardous at best and, in time of significant changes in social priorities, such predictions are really perilous. However, it is my concern that many in optometric education may not have a clear and realistic perception of the current forces at work in our society and specifically in relationship to optometric education. So few have had the opportunity to be concerned or involved with social and health policy, public health, broad manpower issues, the health delivery system and the political process. Therefore, I will attempt to examine some of the issues that must be resolved and some of the forces that must be accommodated in order for optometric education to have a future, as I see it.

First, schools of optometry, and universities in general, have been living "high on the hog." At no time in our nation's history have they enjoyed such magnificent facilities or such public and private support. Of course, we think we have earned this, and deserve it, because of our dedicated service to the public's visual welfare; but to presume that this support will continue and increase is foolishness. A major value shift has been building in the body politic which, expressed as a tax revolt or a new conservatism, simply no longer will support higher education institutions in the opulence they have come to expect. This, combined with the faltering economy of inflation and recession, certainly will put serious pressure on the resources available for optometric education, particularly at the state level. Some schools already have witnessed the beginnings of this change. It is only the beginning.

Furthermore, President Reagan and the Congress may seriously alter the federal priorities for health manpower legislation and for research support through the National Institutes of Health (NIH). Both of these matters came before the 96th Congress and it is doubtful they will be resolved in the 97th Congress. The issues are in doubt. Certainly President Reagan won't be able to stop inflation.

Secondly, optometry, supported by its schools, has achieved remarkable success in expanding its role and scope, its inclusion in social and health programs, and its professional image in the past two decades. Witness the expansion of optometric research and curricula, the passage of legislation related to the use of drugs and the inclusion of optometry in the Veterans Administration, Champus, and other similar programs. Again, we tend to believe that this is due to our virtue and is our rightful desert. But opposition is building, specifically because of our successes, as the efforts of P.E.N. and mandatory referral legislation clearly indicate. Any optometric educator who believes these efforts will not impact upon optometric education is deluding himself.

A basic operating premise of mine, as a dean, is that the responsibilities of optometric education, state associations and state boards are essentially different and separate. They each have their constituencies, responsibilities, and lines of accountability: the schools are responsible to their parent institution, to the Council on Optometric Education and to the students; the association, the political arm of the profession, is responsible to the membership and organized under state associations and the AOA for political and social action; the state boards are responsible for the public welfare through the administration of the law. Frequently, these three have developed antagonistic or confrontational postures with regard to each other. This simply will not work in the current climate: we cannot indulge ourselves this luxury. Schools of optometry must take an active leadership role in assuring smooth and harmonious communication, the resolution of internal conflicts and the setting of appropriate goals for the profession.

Thirdly, our schools have successfully expanded in number and enrollment over the past two decades. Federal support was sought and obtained for such development. We now have nearly 5,000 students in optometry school and sixteen schools.

Two major problems present themselves with an immediacy that should engage our attention, however. First, there is a serious, continuing decline in the applicant pool. Since 1973 there has been a decrease in the number of OCAT takers each year with a current cumulative reduction of 35 percent. While this is taking place throughout all professions and all sections of the nation, the viability of our schools is at stake, both public and private. This is compounded further by the reduction of federal support for student loans, the increased cost of optometric education and the reduction of student recruiting efforts by state and national optometric organizations. We, as educators, must bring this problem to the attention of our associations, secure their support and address this problem aggressively. The alternative is to try to accommodate educational programs to a reduction in both the quality and quantity of students.

The second problem is the predicted surplus of physicians—70,000 by 1990, 120,000 by the year 2000. Almost certainly, this surplus will have an effect on all non-physician health care providers. Medical doctors will be doing everything, just to make a living. Witness the changing practice modes and geographic distribution of ophthalmologists over the last ten years. If ophthalmology is a surgical subspecialty, as they claimed for half a century, then clearly there are too many ophthalmologists. At least 80 percent of an ophthalmologist's time is spent doing work that is within the legal scope of optometry, and increasing numbers have moved to smaller cities and towns.

The federal government, in an attempt to build capacity, overshot the

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mark and now is changing priorities in its support for health manpower education. However, the pipeline is full and no serious change in the numbers, even if started today, will impact upon this surplus for ten years. In building this capacity, they also built a constituency of vested interest of considerable power that won't let the federal government off the hook, at least not without a considerable fight. We as responsible educators must consider the implications of these problems and develop alternatives. The GMENAC report* is a good place to start. While challenged, the report does bring the issues of numbers, types, and distribution of health manpower to the forefront. Who will speak for optometry?

Fourthly, I must call attention to the decline in interprofessional relations with ophthalmology. Although things were definitely on the upswing in the 1960s, this has all changed. The ostensible reason is because of optometry's thrust toward diagnostic and therapeutic use of drugs. The drug issue is a red herring, however. My own view is that the truly basic issue is economics: the increasing number of ophthalmologists and their need to invade optometry to survive. The real struggle is over control of primary vision care. For this reason, I strongly urge development of constructive interprofessional relations with primary care physicians. They are receptive, and the relationship will be rewarding.

Further, for this same reason, I strongly urge the encouragement of graduating optometry students to pursue graduate education, doctoral degrees in the basic sciences, particularly pathology. We will get less and less support from ophthalmology in our educational programs. We must grow our own experts.

While I am on the subject of the use of drugs, I want to share some of my concerns. The only reason for the existence of a separate profession of optometry is the uniqueness of its services to the public need. We no longer can argue that it is a manpower problem: ophthalmology is growing too rapidly for that. If our uniqueness has made and kept the profession viable for a hundred years, we should examine the elements of that uniqueness, preserve those that are of special value, and actively search for and develop new unique services to meet the needs of society. This, to me, means preserving our heritage in ophthalmic materials, vision training, contact lenses, low vision and many others. A logical extension of this point is a list of research needs that would include: studies of unmet needs, strategies for prevention, cost-effectiveness, outcome assessment, studies of the chronic nature of vision problems and competency assurance. Surely, too, this implies becoming the consumer advocate for excellent vision care.

Adopting this point of view gives direction to our efforts and our discretionary resources. It indicates possible, or desirable, curriculum modification, research and public service.

My concern is that the current thrust of many of our younger professionals and faculty is toward an increasing intrusion into ophthalmology—diagnostic use of drugs, therapeutic use of drugs, minor surgery of the anterior segment, etc. If successful, this strategy will lead to a continuing convergence with ophthalmology. Sooner or later, a cost-conscious university president will ask why we need both programs. This subject already has been raised by at least one dean of a medical school.

If that isn't enough to cause concern, I offer a few predictions—13 to be exact.

1. Optometric faculty, of necessity, will generate an increasing amount of their income through intramural practice as other resources decline.

2. There will be an increase in graduate optometric education, particularly residencies in optometric specialties and the development of specialty certification procedures.

3. There will be increasing pressure for national licensing and certification of health professionals.

4. There will be increasing pressure for competency assessment and recertification.

5. An increasing number and variety of affiliated clinics for training of optometry students and residents that will require new forms of quality assurance and accreditation will be established.

6. There will be increasing pressure on faculty for international involvement in establishing optometric education in developing nations.

7. There will be increasing pressure to justify and validate clinical procedures.

8. There will be increasing pressure to explore cost-effectiveness and the efficiency of optometric care.

9. There will be an increasing need to address the epidemiology of vision problems.

10. There will be an increasing demand for health promotion and and vision health education materials on the part of consumers.

11. There will be increasing pressure on optometric professionalism, particularly among those new graduates deeply in debt for their education, exerted by commercial chains and exacerbated by the actions of the Federal Trade Commission.

12. The possibility of utilizing National Board Examinations for promotion and graduation from optometry school similar to the programs currently operating in over half the medical and dental schools will be seriously considered.

13. There will be increasing pressure on faculty of schools of optometry to define the role of the primary care optometrist and provide the appropriate educational program.

While there are more problems to be solved, some of which may be of greater importance, and many more that will surface in the decade ahead, these will do for now.

The essence of my message is that faculty are part of the profession, must become involved in policy formation, have an obligation to become knowledgeable about the broader issues, and use their considerable talents to design options for the development of the profession and optometric education. It is not enough to be just an excellent clinician or researcher. One must be aware of the basic social forces, as well as the onslaughts and game plans of specific groups that impact upon optometry.

We must not delude ourselves as to our invincibility because of our past successes. We must be prepared to take advantage of these social forces for our development or to defend what we have — a balance dependent upon knowledge and sensitivity. The future of optometric education depends upon our response to these challenges.□

Henry B. Peters, O.D.

**Report of the Graduate Medical Education National Advisory Committee.* U.S. Department of Health and Human Services, Health Resources Administration, September, 1980.

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New England College of Optometry • State University of New York
Pacific University • Pennsylvania College of Optometry • Southern
California College of Optometry • Southern College of Optometry

Financing Continuing Education in Schools and Colleges of Optometry

Richard B. Elliott

The following abbreviations have been used to identify the schools and colleges listed in this article: ALABAMA—University of Alabama in Birmingham, School of Optometry; BERKELEY—University of California, Berkeley, School of Optometry; FERRIS—Ferris State College, College of Optometry; HOUSTON—University of Houston, College of Optometry; ILLINOIS—Illinois College of Optometry; INDIANA—Indiana University, School of Optometry; NEW ENGLAND—The New England College of Optometry; NEW YORK—State University of New York, State College of Optometry; OHIO STATE—The Ohio State University, College of Optometry; PACIFIC—Pacific University, College of Optometry; PENNSYLVANIA—Pennsylvania College of Optometry; SOUTHERN CALIFORNIA—Southern California College of Optometry; SOUTHERN—Southern College of Optometry.

In the spring of 1980, a survey was taken of continuing optometric education programs in American schools and colleges of optometry.[1] This survey was largely demographic in content, giving statistical information regarding the size of continuing education programs at each of the optometry schools. Since this was the first survey to be completed covering all optometry schools and their continuing education programs, it seemed useful to do a second survey to explore the financial factors involved in presenting continuing education programs and keeping such programs operating throughout the country.

In the fall of 1980, a questionnaire was sent to thirteen schools of optometry in the United States, directed to the continuing education departments. There were ten questions to answer, several with sub-questions regarding a particularly categorical question. By December of 1980, replies had been received from twelve of the thirteen schools. In-

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diana University School of Optometry being the only one failing to reply.

Of the twelve responses, only Ohio State University, College of Optometry, did not offer sponsored continuing education. This, of course, was already revealed in the first survey. Frederick W. Hebbard, O.D., Ph.D., dean of the college, did respond to the second questionnaire with a detailed explanation as to why Ohio State University does not conduct continuing education. As he wrote, the university has no provision for continuing education in terms of budget or personnel for the College of Optometry. "Therefore, the faculty organization is able to put on an excellent program, and they are not required to go through the various bureaucratic procedures that would be necessary if we did it under university sponsorship. The optometrists in Ohio do not seem to feel that this detracts from the quality of the program. In fact, it gives the faculty members flexibility in that they can more readily hold such programs off campus. There are numerous charges for use of rooms, overhead, and all sorts of other things when such programs are held in university facilities."

Such a situation, as reported by Dr. Hebbard, is not unusual in state operated schools. Usually, such institutions have large self-supported continuing education departments which operate for the entire organization. These departments are strictly controlled by rules which often are restrictive to college of optometry faculty. The result is, the faculty will conduct continuing education programs on their own without university sponsorship, often in cooperation with their optometric alumni associations or local optometric groups.

The University of California at Berkeley is rather typical of the state operated postsecondary institution. A few optometry courses are offered through the university extension program. However, the majority are handled by the alumni association or by individual faculty members. Ferris State College conducts all of its optometric continuing education through the college's Office of Continuing Education. So there is some indication that state operated schools, where there are central continuing education offices which conduct all campus programs, tend to restrict, to some degree, the development of optometric continuing education. It is no surprise, then, that the three largest (based on gross income) and most active (based on number of courses offered) continuing optometric education departments come from private schools: Pennsylvania College of Optometry, New England College of Optometry, and Southern California College of Optometry. The one exception is the State University of New York, State College of Optometry. It is more active, in some ways, than New England in that it offered more courses in 1978-79, and it is a state operated school, though it conducts its continuing education program on a non-self-support basis.

Status of Self-Support

The questionnaire concerned itself exclusively with financial aspects of continuing education: (1) Is your continuing education program designed to be self-supporting? (2) Are administrative and staff salaries for continuing education part of the college payroll? (3) Gross income is usually considered the total amount of money taken in for continuing education operations; what was your gross income? (4) What amount was expended for administrative and staff salaries? (5) Do you have a standard tuition rate? (6) Does your institution charge you for any services it provides? (9) Do you have a standard formula for paying instructors for their teaching time? (10) Do you assess a percentage of course income for administrative overhead? The answers to these major questions and a number of subquestions follow.

Question number one asked if the continuing education program was designed to be self supporting. Under this question were four sub-questions relating to self-support: (a) has the program operated in the black for the past three fiscal years; (b) if it is not self-supporting, how is it financed; (c) how are deficits financed; and (d) what would happen if the program failed to be self-supporting for several years? Following is a summary of the answers received to this question.

ALABAMA: The continuing education program is designed to be self-supporting, has been totally self-supporting for the past three years, and should it fail to achieve full self-support for several years running, "it would dissolve."

BERKELEY: Continuing education is intended to be a self-supporting program at Berkeley, and it has been self-supporting for the past three fiscal years. Question 1c. was not answered; therefore, one could assume a deficit has never arisen. However, they did indicate, if a deficit ever should arise, the School of Optometry would "make up" the deficit.

FERRIS STATE: Continuing optometric education is expected to be self-supporting at Ferris State and the program has achieved this goal for the past three fiscal years. If deficits are incurred, the college will continue to support the program.

HOUSTON: The continuing education program is only funded by tuition for courses and has been self-supporting for the past three years. Temporary deficits must be covered with future income from continuing education courses. The continuing education program is only permitted to operate on funds it generates.

ILLINOIS: The program is designed to be self-supporting. In the 1978-79 fiscal year, self-support status was achieved. In 1977-78 that status was not achieved, and no report was made for 1976-77. Should a deficit arise, it was reported that it would be financed out of alumni association guarantees. Also, if the program failed to achieve self-support regularly, Illinois' director indicated "there would be questioning of the director."

NEW ENGLAND: This school is an exception to the rule in that continuing education is not expected to be self-supporting. However, the program definitely is moving in that direction. When deficits occur, the college supports them as they have for the past three years. If deficits should continue to appear for several years running, the director would be forced to cut overhead costs.

NEW YORK: The continuing education program is not designed to be self-supporting; rather, it is supported out of the general college budget and from tuition.

PACIFIC: Although the program is designed to be self-supporting, it has not achieved that goal since 1976-77. However, administrative salaries are paid by the college and, evidently, not charged against the continuing education budget. Therefore, one would guess it is largely a case of the programs supporting themselves without administrative overhead charged back against the program. Nonethe-

TABLE 1
Gross Income

	1976-77	1977-78	1978-79
ALABAMA	$ 20,000	$ 16,000	$ 18,000
BERKELEY	Not available for any of the three years		
FERRIS	?	3,360	2,520
HOUSTON	23,373	45,282	27,406
ILLINOIS	Not available for any of the three years		
NEW ENGLAND	50,000	50,000	50,000
NEW YORK	28,900	25,325	30,600
PACIFIC	30,000	20,000	13,000
PENNSYLVANIA	204,999	280,504	233,356
SOUTHERN CALIFORNIA	67,984	190,428	103,930
SOUTHERN	23,070	24,245	90,131

TABLE 2
Amount Expended for Administrative and Staff Salaries

	1976-77	1977-78	1978-79
ALABAMA	Not available for any of the three years		
BERKELEY	Not available for any of the three years		
FERRIS	?	$ 62,000	$ 62,000
HOUSTON	$ 11,643	16,364	22,861
ILLINOIS	Not separated; no separate continuing education office		
NEW ENGLAND	Around $30,000 – $33,000 for each of the three years		
NEW YORK	25,280	34,230	29,430
PACIFIC	7,000 (estimate)	8,000 (estimate)	9,000 (estimate)
PENNSYLVANIA	59,000	67,000	75,000
SOUTHERN CALIFORNIA	31,203	32,000	33,499
SOUTHERN	12,384	19,486	35,516

TABLE 3
Overview of Financial Status of Continuing Education Programs in Schools and Colleges of Optometry

School or College	Self-Supporting	1976-77 Surplus	1977-78 Surplus	1978-79 Surplus	1976-77 Gross Income	1977-78 Gross Income	1978-79 Gross Income	1976-77 Staff Salaries	1977-78 Staff Salaries	1978-79 Staff Salaries	Tuition Rate	Charge for Services	Standard Instructor Pay Formula	Instructor Pay	Overhead Assessment	Percent of Overhead
Alabama	Yes	Yes	Yes	Yes	$ 20,000	$ 16,000	$ 18,000	N/A	N/A	N/A	$110/hr	Yes	Yes	$100/hr	Yes	20%
Berkeley	Yes	Yes	Yes	Yes	N/A	N/A	N/A	N/A	N/A	N/A	No	No	Yes	$100/hr	Yes	40%
Ferris	Yes	Yes	Yes	Yes	N/A	3,360	2,250	N/A	$ 62,000	$ 62,000	Cost+	Yes	Yes	$ 25/hr	Yes	17%
Houston	Yes	Yes	Yes	Yes	23,373	45,282	27,406	$ 11,643	16,364	22,861	$ 10/hr	Yes	Yes	$125/hr	Yes	N/A
Illinois	Yes	No	No	Yes	N/A	N/A	N/A	N/A	N/A	N/A	Cost+	N/A	Yes	N/A	No	N/A
Indiana	No response															
New England	No	No	No	No	30,000	50,000	50,000	30,000	31,500	33,000	$ 12/hr	Yes	Yes	$ 75/hr	No	N/A
New York	No	N/A	N/A	N/A	28,900	25,325	30,600	25,280	34,230	29,430	$ 7/hr	No	Yes	$ 60/hr	No	N/A
Ohio State	No continuing education program															
Pacific	Yes	Yes	No	No	30,000	20,000	13,000	7,000	8,000	9,000	$ 90/da	No	Yes	$100/hr	Yes	20%
Pennsylvania	Yes	No	No	No	204,999	280,504	233,356	59,000	67,000	75,000	$10/hr – 15/hr	Yes	Yes	$100/hr	Yes	50%
So. California	Yes	Yes	Yes	Yes	67,984	190,428	103,930	31,203	32,000	33,499	$ 10/hr Cost+	Yes	Yes	$ 50/hr	Yes	35%
Southern	Yes	Yes	Yes	Yes	23,070	24,245	90,131	12,384	19,486	35,516	$ 10/hr	Yes	Yes	% of salary	Yes	20%

less, in spite of two years of operational losses, the losses have been small enough to be covered by funds earned in past years and carried forward. A series of large deficits would result in programmatic changes such as deletion of certain programs, revision of fiscal policies and change in publication format.

PENNSYLVANIA: The continuing education program is self-supporting and has been successfully so for the past three years. The program is underwritten by the college, which would pick up deficits, should they occur. However, should a series of yearly losses occur, these probably would result in a change in the structure of the program, both administratively and financially, with possible consideration of discontinuance.

SOUTHERN CALIFORNIA: This is a self-supporting operation which has been so for the past three years. Any deficit which might occur would be supported through college funds. If faced with a series of yearly deficits, the board of trustees would reconsider structuring the program of the department and there always would be a possibility of discontinuance.

SOUTHERN: Like Pennsylvania and SCCO, Southern's continuing education department operates as a self-supporting program and has done so successfully for the past three years. Any deficits, as with other private colleges, would be covered by general funds of the college. However, unlike the others, Southern has a built-in commitment to continuing education. One of the five stated purposes of the college is "to afford graduate optometrists . . . continuing education." Thus, one can assume, should there be a series of losses, the college would continue to fund the continuing education department.

Salaries and Gross Income

Question number two regarded how the administration and staff salaries are paid. All but two respondents answered that these salaries are paid from the payroll of the parent institution. One exception is the University of Houston which replied that "all salaries and direct operating costs are paid from income generated." The other exception, Pacific University, did not explain how salaries are paid, if not from the college payroll. In answering question number one, Pacific indicated that "administrative salaries [are] contained in the budget." So there is an evident discrepancy here which is not explained.

Two institutions, though answering "yes" to question number two, did make some conditional statements regarding payroll. Both Pennsylvania and Southern California indicated that, although salaries are paid by the college, income from continuing education courses must cover payroll costs. In other words, continuing education must reimburse the college for payroll costs of their office personnel. However, this could be assumed in all instances where a program is self-supporting. One thing, though, was not clear in the question and therefore was not answered: that is, if benefits to personnel are also paid by the parent institution, are they reimbursed by the department?

The third question asked for gross income for the past three years. Question number four asked for the amount expended for administrative and staff salaries for the past three years. Responses to these two questions are presented in tables 1 and 2.

Tuition Charges

Tuition charges were the subject of question number five, which asked if the department had standard tuition rates. Most colleges did. Those which indicated they did not, nevertheless, had a formula which they applied.

ALABAMA: $110 per hour. They also have a season ticket charge of $200 which entitles the ticket holder to eight twelve hour continuing education weekends.

BERKELEY: No standard rate. Courses may be budgeted under the alumni association, under the university extension program, or under the department. Each of these jurisdictions charges differently, usually based upon an estimate of course costs and probable attendance.

FERRIS: Costs of instruction plus administrative service equals tuition.

HOUSTON: $10 per lecture hour; additional costs are added for luncheons and laboratory courses.

ILLINOIS: Cost of program, costs of speakers, etc.

NEW ENGLAND: $12 per lecture hour and slightly more for lab courses.

NEW YORK: $7 per lecture hour. If the program has a limited maximum attendance, the tuition is based upon cost.

PACIFIC: $90 for one-day programs (8 hours); $135 for two-day programs (16 hours).

PENNSYLVANIA: $10 per hour for lecture, $15 per hour for clinic except for pharmacology courses which are direct costs plus 60 percent administrative fee divided by number of expected enrollees.

SOUTHERN CALIFORNIA: $10 per classroom hour for optometric courses; $7.50 per hour for paraoptometric courses; with a $50 minimum tuition for optometric classes. Additional charges made for limited enrollments, laboratory equipment use, lunches, etc., all based upon actual costs pro-rated against enrollment estimates.

SOUTHERN: $10 per hour. $120 per quarter system hour (10 hours) for external studies programs.

Other Operating Costs

Questions six, seven, and eight dealt with utilities and services supplied by the colleges and whether continuing education departments were charged for these services, such as telephone, heating and electricity, office supplies, on-site duplicating services and first-class mail. Answers to these questions were fairly uniform; certain items from the list were charged back to the department and had to be paid out of tuition revenues. On a school-by-school basis, the following was indicated.

ALABAMA: Office supplies, photocopying, on-site duplicating and first-class mail are charged to the department. Purchases are made through the university by using an account number.

BERKELEY: All services are paid through the university.

FERRIS: Continuing education must provide from fees for contracted services such as telephone, office supplies, travel, etc., while office space, heating and electricity costs are paid by the college's general fund account.

HOUSTON: The college pays utility costs, local telephone and photocopying charges. All other expenses are paid by the department.

ILLINOIS: Utilities, telephone and office supplies are charged the department by means of transfer of funds.

NEW ENGLAND: Office supplies, one half of on-site duplicating and all first-class mail are paid for by charge-backs or transfer of funds internally.

NEW YORK: No charges are made. All items are paid for out of general college budget.

PACIFIC: No charges are made. Telephone, utilities and mail are paid through university indirect costs; office supplies and on-site duplicating costs are contained in the College of Optometry's budget.

PENNSYLVANIA: Office supplies and on-site duplicating are paid for by paper transfer from one cost center to another after approval of the continuing education administrator.

SOUTHERN CALIFORNIA: Only office supplies are currently on a charge-back basis as part of the yearly budget reimbursed by revenue. Possible addition of telephone and first-class mail as cost centers are developed by new computer.

SOUTHERN: Utilities, office supplies and first-class mail are paid for by interdepartmental charges. Others are covered by building use funds which are paid through proportional charges to each department.

Instructor Pay

Instructor pay was considered in question nine. A standard formula for paying instructors was asked for if appropriate, or, if there were other ways to arrive at stipends for faculty, that basis was requested.

ALABAMA: $100 per hour for lecturers, $50 per hour for laboratory instruction.

BERKELEY: No standard rate of pay is established. Each salary is negotiated, starting at a minimum of $100 per hour. Probably $150 per hour is the most usual current stipend.

FERRIS: $25 per instructional hour plus expenses.

ILLINOIS: The college has a formula which it reserves the right to modify if the situation dictates; however, the formula was not provided.

NEW ENGLAND: $75 per hour for the first hour, $50 per hour for each additional hour, plus expenses.

NEW YORK: $60 per lecture hour.

PACIFIC: $100 per program hour.

PENNSYLVANIA: $100 per hour for lecture, $40 per hour for clinic plus expenses for food, room and travel.

SOUTHERN CALIFORNIA: For optometrists, $50 per lecture hour; laboratory hours at 43 percent of lecture stipend, plus expenses for food, room and travel; non-faculty salaries negotiable. For paraoptometrics, exactly one half of the above, plus expenses.

SOUTHERN: For college faculty, lecture at hourly salary rate plus 5 percent times 3; laboratory at hourly rate plus 5 percent times 1.5; clinic at hourly rate plus 5 percent times 1; for non-college faculty, minimum of $50 per hour plus expenses for travel, motel, etc.

Administrative Overhead

The final question asked was whether, when working with a program budget, there is an assessment of a percentage of the gross income for administrative overhead, and if so, what is the percentage; if not, how are administrative costs reimbursed to the department. In addition, have the percentage or techniques changed over the past three years?

ALABAMA: The standard assessment for administrative overhead is 20 percent.

BERKELEY: When courses are handled through the university extension program, the administrative overhead assessment is 40 percent. When courses are handled through the alumni association or the department, no assessment for overhead is made.

FERRIS: An assessment of 17 percent of direct costs is made for administrative overhead.

HOUSTON: Administrative overhead costs are encumbered at the beginning of each fiscal year and reimbursed from income generated.

ILLINOIS: No overhead percentage. Costs are not reimbursed since the office out of which continuing education is administered is also responsible for five other areas and costs are not spread.

NEW ENGLAND: No assessment of overhead was made, and no explanation was given regarding reimbursements.

NEW YORK: No assessment of overhead was made; all costs are covered from the general college budget.

PACIFIC: A 20 percent administrative overhead charge is made which was established in 1979 and has not changed since.

PENNSYLVANIA: A 60 percent administrative overhead charge is made which was increased from 49 percent in 1976-77.

SOUTHERN CALIFORNIA: A 35 percent administrative overhead charge is made, increased from 25 percent in 1980-81.

SOUTHERN: A 20 percent administrative overhead charge is made.

One of the most interesting findings of this report is the apparent lack of commitment to continuing education by the majority of schools of optometry. It is clearly a peripheral activity that exists only because it can support itself. If program revenues should fail to materialize in sufficient amount to cover costs, most programs would fold. The two outstanding exceptions to this are Southern College of Optometry, where there is a stated college goal of providing continuing education to alumni, and the State University of New York, where the program is an integral part of the college budgeting process and there is no attempt to make it self-supporting.

Clearly, some commitment to continuing education does exist among the schools, otherwise, twelve out of thirteen would not have programs. Nonetheless, the level of commitment to continuing education does not appear to be high; it is not considered integral to the college operation. This is further supported by the smallness of the majority of departments. Of the twelve schools reporting, only four showed gross income over $50,000. As pointed out in the first survey, "given a greater incentive, optometric continuing education would become a far more important factor in the schools of optometry." The previous survey revealed that only two schools—Southern California College of Optometry and Pennsylvania College of Optometry—have full-time administrators in charge of continuing education. □

References

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ASCO's NEW OFFICERS

Willard B. Bleything, O.D., M.S., *President*

Dr. Bleything is dean of the College of Optometry at Pacific University, Forest Grove, Oregon. In addition to numerous civic and professional affiliations, Dr. Bleything is past chairman of the Commission on Continuing Education of the American Optometric Association and is a member of the Board of Regents of Beta Sigma Kappa, International Optometric Honorary Fraternity. He also has served as president of the Oregon Optometric Association and president of the Oregon Board of Optometry.

In 1977, Dr. Bleything was appointed optometric consultant to the Surgeon General, United States Air Force, and also serves as mobilization augmentee to the chief of the Biomedical Sciences Corps, Air Force Reserve Medical Management Committee of the Office of the Surgeon General.

Listed in "Who's Who in the West," Dr. Bleything has received the President's Award of the Oregon Optometric Association, the American Association for the Advancement of Science Research Award, and has been recognized as Outstanding Biomedical Sciences Corps Officer of the Year, USAF Reserve. In addition, he has contributed more than 45 articles to the *Oregon Optometrist* since 1951.

Richard L. Hopping, O.D. *President-Elect*

Dr. Hopping is president of the Southern California College of Optometry, Fullerton. He is a trustee of the Association of Independent California Colleges and Universities, a member of the Health Manpower Training Assistance Review Committee for the Veterans Administration, a member of the Health Advisory Board for the State of California and serves as chairman of the Section on Primary Care Optometry for the American Academy of Optometry.

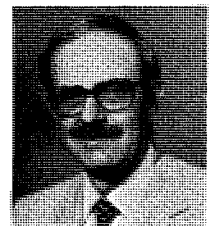
Dr. Hopping served for six years as an officer of the Ohio Optometric Association including president in 1964. He was elected to the Board of Trustees of the American Optometric Association in 1966 where he served in a number of offices within the organization and as its president in 1971-72.

Besides his extensive involvement in many civic and professional organizations, Dr. Hopping has been the recipient of numerous awards and honors including the Optometrist of the Year for the State of Ohio, Outstanding Young Man of the Year for the City of Dayton and one of the Ten Young Men of the Year for the State of Ohio.

Edward R. Johnston, O.D., M.P.H., *Vice-President*

Dr. Johnston is president of the State University of New York, State College of Optometry, in New York City. Dr. Johnston holds various appointments and offices within the profession, including ex-officio member of the Executive Board of the New York State Optometric Association, member and chairperson of the Commission on Continuing Education of the American Optometric Association, member of the Optometry Advisory Committee to the Veteran's Administration Nationally and Executive Director of the Optometric Center of New York Foundation.

Dr. Johnston has been recognized with numerous awards and honors, among them the "Alumni Award" for academic achievement from the Pennsylvania College of Optometry, the "Beta Sigma Kappa Award" for leadership and "Honorable Mention" for clinical proficiency from the Pennsylvania College of Optometry, and the American Optometric Foundation Fellowship to study public administration.

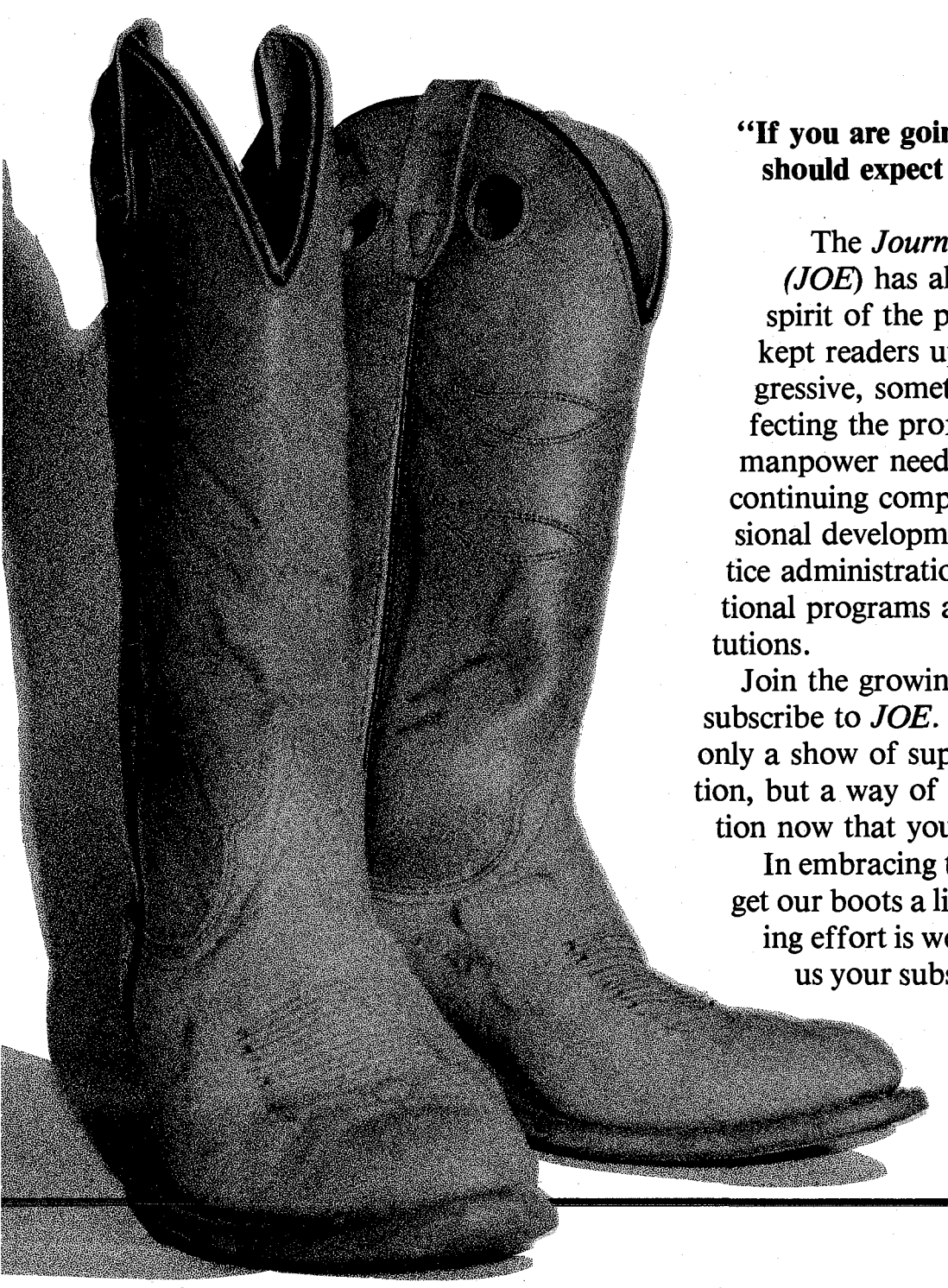


Jack W. Bennett, O.D., *Secretary-Treasurer*

Dr. Bennett is dean of the College of Optometry at Ferris State College, Big Rapids, Michigan. Dr. Bennett's professional career has included appointment to the Michigan Optometry Association —Michigan Ophthalmological Society Joint Interprofessional Task Force, service as associate professor of optometry at Indiana University, membership on the Indiana State Department of Welfare Medicaid Peer Review Committee, and conducting private practice for over a decade.

Dr. Bennett has had a distinguished record of holding various administrative appointments. He currently is a member of the Board of Directors of the Michigan Association of the Professions, served for five years as a trustee of the American Optometric Association, and was trustee and then president of the Indiana Optometric Association.

Dr. Bennett has authored numerous papers on various aspects of optometric manpower, curriculum developments and vision care practice, and has co-authored numerous accreditation and consultation reports. He received the Distinguished Service of Optometry Award from the Indiana Optometric Association in 1974 and was named Indiana Optometrist of the Year in 1975.



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